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An Exploration of the Effectiveness of Missing Children Publicity Appeals

Daniel Hunt

A thesis submitted to the University of Huddersfield in
partial fulfilment of the requirements for the degree of
Doctor of Philosophy

University of Huddersfield

September 2018

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Abstract

Missing children raise considerable concern by their family, friends and members of the public for their well-being. A common approach in these circumstances by law enforcement and charities is to publish an appeal through the media that requests members of the public to help them locate the child. Despite its frequent use and importance in helping to locate missing children, the research literature is very limited in exploring the effectiveness of these appeals in locating a missing child with most of the research being performed in the USA. The present thesis therefore investigated factors that are associated with the effectiveness of missing children appeals to fill in the gap in the literature and to enhance our understanding. Three exploratory experimental research studies were performed to explore the factors associated with recall accuracy and recall error from the descriptions, photographs and type of format design of mock missing children appeals. The results found that shorter and more newsworthy content enclosed in the type of descriptions of missing children and an increase in the time spent observing the appeals were significantly associated with improving recall accuracy. The current thesis also found that presenting participants with multiple photograph appeals of different missing children significantly reduces identification accuracy. Moreover, higher individual levels of confidence in own recall accuracy, text-based and photograph-based information within mock missing children appeals, and the initial recall accuracy scores, were also found to significantly influence the level of recall accuracy by members of the public.

The current thesis also sought to explore the underlying motivations behind the general public in contacting or not contacting the police. Presently, there is no research study that has explored the willingness to report missing children to the police with the wider associated, but limited, research only focusing on contacting the police by victims of a crime. The study therefore sought to explore whether a participant would or would not contact the police and why this may be the case when they believe to have located a missing child. Across the three experimental studies, the importance of locating the missing child, the perceived belief of experiencing future negative feelings of guilt, high level of confidence in recall accuracy, and considering the missing person in relation to themselves or to a known individual, were found to increase the likelihood of contacting the police. In contrast, the belief that contacting the police would waste the police's time and resources and having a low level of confidence in their own recall accuracy were factors found to reduce the likelihood of contacting the police by members of the public. The implications and the application of the findings in real-life settings, the limitations and future research directions are also discussed.

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Publications Arising from this Thesis

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Journal Articles Under Review

Hunt, D., Ioannou, M., & Synnott, J. (under review). Missing Children Appeal Designs: Is Recall Accuracy Influenced by the Design of the Appeal? *Current Psychology*.

Journal Articles in Development

Hunt, D., Ioannou, M., & Synnott, J. (in development). Effectiveness of Descriptions in Missing Children Appeals: Exploration of Length, Type of Content, and Confidence on Recall Accuracy.

Hunt, D., Ioannou, M., & Synnott, J. (in development). Reporting Missing Children to the Police: A Qualitative Exploration of the Underlying Motivations for Contacting and Not Contacting the Police.

Conference Presentations

Hunt, D., Ioannou, M., & Synnott, J. (2019, July). Effectiveness of Missing Children Photograph Appeals: Exploring the Effects of Appeal Frequency and Short Identification Delay. *Paper presented at The Fourth International Conference on Missing Children and Adults, Liverpool, UK.*

Hunt, D., Ioannou, M., & Synnott, J. (2018, November). Are Missing Children Appeals Effective in Helping Us Find Them? *Paper presented at the Criminology and Criminal Justice Conference 2018, Oldham, UK.*

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Chapter 1: Introduction

1.1. Background to Missing Children Appeals

When a child goes missing, it is a common occurrence for charities and law enforcement to release images and news articles through different sources of the media to request help from the general public in locating the missing child quickly and prior to experiencing harm (All-Party Parliamentary Group [APPG], 2016; Lampinen, Miller & Dehon, 2012; Lampinen & Moore, 2016; Lampinen & Sweeney, 2014; Sweeney & Lampinen, 2012). Despite its importance, there is currently only a handful of research that has explored appeal effectiveness to help locate missing children. This is primarily due to the difficulties in ascertaining causality between the release of an appeal and the locating of the missing child through the public's assistance (Drivsholm, Moralis, Shalev-Greene & Woolnough, 2017). Additional difficulties in ascertaining causality arise in the presence of the underlying psychological processes relating to attention, identification and retrieval (Miller, Griffin, Clinkinbeard & Thomas, 2009).

When a missing child appeal is released, it is hoped that a member of the public will be able to help identify and locate the child and then contact the police who can safely return the child back to their residence. However, for this to occur there are a series of stages that must be successfully achieved ranging from the attention provided to the missing child's appeal and the encoding of the information presented, to the successful recognition and retrieval of information, to the final stage of contacting the police (Lampinen, Curry & Erickson, 2016). If an individual provides enough attention to an appeal for the information to be accurately encoded, they must then be able to successfully retrieve this information. If only a limited amount of attention is provided to the appeal, the information would not be encoded accurately which significantly decreases the likelihood for that individual to locate a missing child.

Once the information of an appeal has been encoded and stored successfully, the members of the public must have the ability to correctly identify the missing child should

they happen to pass them in their daily activities. One of the most widely used sources of cues for recognition is through facial perception which helps to identify another individual's identity (Gier, Kreiner & Lampinen, 2017; Mian & Mondloch, 2012). Research has indicated, however, that humans are generally quite poor at recognising faces especially when those faces are unfamiliar (Davis & Valentine, 2009; Megreya & Burton, 2006, 2008). Like eyewitnesses of a crime, individuals trying to locate a missing child must be able to recall numerous aspects of the event relating to the child's disappearance (Wright, Gabbert, Memon & London, 2008). Thus, even if an individual successfully identifies the missing child they must be able to accurately retrieve the information associated with this cue. Members of the public must be able to retrieve older encoded information related to the appeal with this new information of the child and correctly match the source together for recognition to occur (Anderson, 2000; Radvansky, 2017).

In addition to recognition, members of the public must be able to accurately recall the entire stored information to produce an accurate recollection of the event. Illustrated through the generate-recognise model of recalled information (Jacoby & Hollingshead, 1990), individuals must be able to identify new cues presented to them such as a young child and associate this with stored information of a previously encoded event, such as an appeal as discussed above. This individual would then be required to further cross-reference the new information with the old information to accurately generate a complete recollection of that memory source of the event (Jacoby & Hollingshead, 1990). Once they have successfully achieved this, they will be able to recognise the child as the missing child they observed earlier.

Once this information has been cross-referenced and the individual successfully identifies the missing child and recalls the associated information, they must be able to contact the police to make them aware of the child and will then be able to locate and return the child back to safety (Lampinen, Arnal & Hicks, 2009). However, research exploring the factors associated with members of the public contacting or not contacting the police in relation to missing children is non-existent. The associated literature exploring the likelihood of contacting the police for non-missing related topics have focused primarily on

the likelihood of victims of crimes to contact the police (Miler et al., 2009). Due to the reliance on missing children appeals for the public to help locate missing children, there is a great deal of urgency for research to explore the underlying motives behind contacting or not contacting the police.

Nevertheless, wider research has indicated that there may be several factors associated with the likelihood of contacting or not contacting the police. Research has suggested that the belief of an individual that someone else is better equipped to help the child may play a significant role in not contacting the police (Miller et al., 2009). Likewise, gender and ethnicity biases have also been found to affect the likelihood of contacting or not contacting the police (Eagly & Crowley, 1986; Katz, Cohen & Glass, 1975; Shalev-Greene, Clarke, Pakes & Holmes, 2019). In contrast, research has shown that the perceived sense of danger to the individual if not reported (Miller et al., 2009), and general empathy (Batson, Elklund, Chermok, Hoyt & Ortiz, 2007), may help to increase the likelihood of contacting the police. Finally, an individual's level of confidence has been found to influence the likelihood of contacting and not contacting the police but may only play a weak and impractical role (Kassin, Tubb, Hosch & Memon, 2001).

Therefore, it is of great significance for researchers to explore the effectiveness of missing children appeals and to identify the factors that may reduce recall and identification accuracy. There is also a great need for research to explore the factors associated with contacting or not contacting the police as this would also help to improve the likelihood of contacting the police so that the missing child can be located quickly and prior to experiencing any form of harm. Are missing children appeals effective in increasing recall accuracy? Does the level of confidence play a role in accuracy? Why do some individuals contact the police and others do not contact the police despite observing the same information? These are just some of the questions that this thesis aims to answer.

1.2. The Present Thesis

The present thesis focuses on the effectiveness of missing children appeals through recall accuracy and recall error produced during an initial and a follow-up retrieval task. The exploratory research studies presented within this thesis will attempt to gain an insight into some of the factors that influence recall accuracy and recall error of retrieval of information enclosed within mock missing children appeals. The experiments will include an experimental memory recall paradigm that presented participants with an aspect of a mock missing child appeal before recalling the information in a free-recall design immediately after observing the appeal and again after a short three-day interval. The present thesis' aims and objectives are presented in sub-categories in relation to the associated literature.

1.2.1. Aims and Objectives

The overall aim of the present thesis is to explore the effectiveness of missing children appeals on recall accuracy and recall error of memory retrieval of information. A secondary aim is to examine some of the underlying motivations for either contacting the police or for not contacting the police when an individual believes that they may have located a missing child. To achieve these research aims, the thesis consists of the following objectives.

1.2.1.1. Attention

The literature surrounding attention and memory retrieval of information has suggested that recall accuracy would be affected if the individual did not pay enough attention to the information or if they only allow a limited amount of their time to be spent observing different appeals (Lampinen, Peters & Gier, 2012; Miles, 2005; Nobel & Shiffrin, 2001). Considering this, the research presented in this thesis will explore whether the length of time spent observing the information within the missing children appeals affects the subsequent recall accuracy and recall error of information retrieval.

1.2.1.2. Length of Appeals

The research literature surrounding the effect of the length of an appeal on recall accuracy and recall error is non-existent. Thus, the research presented in this thesis will explore the effect that the length of descriptive information provided within missing children appeals has on the overall recall accuracy and recall error of information retrieval.

1.2.1.3. Type of Content in Appeals

Similarly, the research surrounding the effectiveness of the type of content within the missing children appeals and the effect it has on recall accuracy and recall error is also non-existent. For this reason, the research presented in this thesis will explore whether the type of content, namely newsworthy or non-newsworthy, affects the subsequent recall accuracy and recall error of information retrieval.

1.2.1.4. Number of Appeals

The research literature has indicated that the number of missing children appeals observed in a short period of time can influence the subsequent recall accuracy and recall error (Sweeney & Lampinen, 2012). For this reason, the research presented in this thesis will explore whether recall accuracy and recall error of information retrieval is affected by the number of missing children appeals presented at the same time.

1.2.1.5. Type of Format Design

The type of format design of a missing child appeal has not previously been examined in relation to the effect it may have on the subsequent recall accuracy and recall error of information retrieval. As a result, the research presented in this thesis will explore the effect that the type of format design of the missing child appeal, namely a Child Rescue

Alert format type or Twitter appeal format type, has on the subsequent recall accuracy and recall error of information retrieval.

1.2.1.6. Confidence

The literature surrounding the effect of confidence on recall accuracy and recall error in relation to missing children appeals is near non-existent. In the wider eyewitness testimony research, findings have been mixed with the majority of researchers believing confidence is only weakly associated (Goodsell et al., 2009; Kassin et al., 2001). Therefore, the research presented in this thesis will explore whether the level of confidence in recall accuracy affects the overall recall accuracy and recall error of the retrieval of information.

1.2.1.7. Initial Accuracy and Error

The exploration of the effect that initial recall accuracy and initial recall error scores have on subsequent recall accuracy and subsequent recall error scores in relation to missing children appeals are non-existent. For this reason, the research presented in this thesis will explore whether the initial recall accuracy score and the initial recall error score affects the subsequent follow-up recall accuracy score and follow-up recall error score following a short three-day time duration between experiments.

1.2.1.8. Contacting the Police

Finally, the research literature focusing on the motivations underlying an individual's likelihood of contacting the police and not contacting the police in relation to reporting missing children is non-existent. The associated literature that does focus on the willingness of individuals contacting or not contacting the police focus solely on victims of crime reporting the crime to the police (Miller et al., 2009). Hence, the present thesis will determine some of the underlying factors that increase and decrease the willingness and

likelihood of an individual contacting the police in relation to a missing child that has potentially been located.

1.3. Significance of the Research

This thesis has the potential to have a significant impact on both practical and academic settings. First, the thesis will fill in the gaps in the current knowledge of the effectiveness of missing children appeals and identify factors that improve accuracy and identification, and factors that affect inaccuracy and misidentification. This could lead to an improvement in the way missing children appeals are presented to the public to maximise the chance for accurate encoding, retrieval, recollection, and identification of the missing children.

Second, the thesis will explore some of the underlying motivations behind the public's willingness to contact or not contact the police. This exploration would therefore help to identify the factors associated with increasing and decreasing the likelihood of contacting the police so that members of the public may be more willing to report a potentially missing child that will further help the police to locate the child quickly and return them to their home residence.

Finally, the thesis will present a novel methodological design for exploring and analysing the effectiveness of missing children appeals. As will be discussed subsequently, one of the primary reasons for a lack of research is due to the difficulty in determining causality between the appeal and the successful location of the child (Drivsholm et al., 2017). This thesis therefore presents a novel approach to examining the effectiveness of appeals via an experimental method that explores the causality between the identification and recall accuracies of the child and the appeal of the missing child that was observed.

1.4. Thesis Structure

To equip the reader with a suitable understanding of the current thesis, the thesis will first present an introductory chapter on missing persons to demonstrate the difficulty in

researching missing persons, the scale of the phenomenon, and the factors associated with going missing and with being missing. The thesis will then present additional introductory chapters on the use of the media for missing persons investigations, and the acquisition and retrieval of information presented within these appeals and factors associated with acting upon this information. Chapter five presents the research methodology utilised followed by four subsequent chapters relating to each of the three individual experimental studies. The final chapter presented in this thesis summaries the key findings across the three studies and discusses the main implications that can be made from the findings, the applicability to real-life appeals, the limitations and future directions, and an overall conclusion.

Chapter 2: Missing Persons

A missing child represents a significant societal problem that raises much alarm and concern for the child's wellbeing from parents, friends, other relatives, and members of the general public (APPG, 2016; Lampinen, Arnal, Adams, Courtney & Hicks, 2012; Lampinen, Miller & Dehon, 2012). This concern increases further the longer that the child remains missing due to the associations with increased risks of enduring numerous types of harm (APPG, 2016; Drivsholm et al., 2017). In addition, with an estimated financial cost of over £2,400 per missing persons investigation for the police and an estimated 25% reduction in government funding equivalent to £2.3 billion, there is an ever-increasing pressure for police efficiency in missing person investigations (Shalev-Greene & Pakes, 2013; National Audit Office, 2015). Thus, the media can help play a prominent role in this endeavour (Min & Feaster, 2010). The following chapter therefore presents an overview of the missing persons phenomena.

2.1. Prevalence of Missing Children

It is estimated that over 340,000 incidents are created by the police each year within the United Kingdom [UK] in relation to missing persons (National Crime Agency [NCA], 2017). An additional 38,259 incidents were classified as being absent (NCA, 2017). In relation to missing individuals, it is estimated that over 180,000 individuals go missing each year which is the equivalent of 368 missing individuals every single day (NCA, 2017). Proportionally, this results in one missing persons report made every 90 seconds and makes the UK produce one of the highest international rates for missing persons reported (European Commission, 2013; Fyfe, Stevenson & Woolnough, 2014; Missing People, 2018; National Policing Improvement Agency, 2010).

Within the UK, 60% of missing incidents relate to missing children with those aged 15-17 years old accounting for 35% of the total annual missing incident reports (NCA, 2017). Therefore, approximately 122,000 missing children incidents are received annually

(NCA, 2017). This figure is alarming particularly when compared to other more populated countries. For instance, there are an estimated 100,000 missing children incidents made annually in Germany, 45,000 incidents in Russia, and 20,000 incidents in Spain (International Centre for Missing and Exploited Children[ICMEC], 2017). In non-European countries, India received approximately 70,000 missing children incident reports annually, followed by Canada with 45,000 incidents, Australia with 38,000 incidents, and Chile with 19,000 incidents (ICMEC, 2017). The only country with higher annual missing children incidents than the United Kingdom is from the United States of America who reports approximately 465,000 annual missing incidents (Federal Bureau of Investigation [FBI], 2017).

One of the major reasons behind this high estimation of UK missing children incidents could be due to the location in which the child has been reported missing from. Hayden and Shalev-Greene's (2016) study which analysed missing children reports from a local police force declared that the majority of missing children incidents reported to the police originated from institutional locations. Children who go missing from an institutional location may indeed be more prone to going missing than children living in non-institutional locations due to the increased presence of push and pull factors (Child Exploitation and Online Protection Centre [CEOP], 2011; Scott & Skidmore, 2016; Sharp, 2012). Alternatively, missing children reports from institutional locations may be over-represented statistically due to the formal protocols that are in place whereby the employee of the institution is duty-bound to report all missing incidents to the police (Department for Education, 2014; Hertfordshire Safeguarding Children Board, 2011; Shalev-Greene, Schaefer & Morgan, 2009). This is not the case with parents or guardians of non-institutionalised residences who are not duty-bound to report an individual as missing.

A secondary reason behind the statistical estimates may be due to the number of repeated missing children whereby a child goes missing on two or more occasions (NCA, 2017). It is estimated that 59% of the annual missing children reports can be accounted for repeated missing episodes in comparison to 20% of adults (NCA, 2017). However, it is important to note that these statistics are estimated by dividing the annual total number of

incidents by the number of estimated missing individuals (NCA, 2017). Moreover, many children who go missing repeatedly are believed to remain unreported (Hill et al., 2016; Kiepal, Carington & Dawson, 2012; Shalev-Greene et al., 2009; Smeaton & Rees, 2004). These children may therefore remain hidden from police statistics which signifies a significant under-representation of the true scale of missing and repeatedly missing episodes.

For instance, Shalev-Greene and Hayden (2016) analysed 1,321 repeat missing persons reports that were recorded from a UK police force and found 88% of missing children reported as missing were due to repeat incidences from institutional locations. Similarly, Biehal et al. (2003) explored survey responses from previously missing persons via the Missing People charity and discovered 19% had gone missing on three or more occasions with 73% of these individuals going missing for the first time between the ages 13-17. Finally, Smeaton and Rees (2004) examined 1,688 postal questionnaires from a random selection of northern UK secondary schools and found one in seven children had gone missing on two or more occasions. Therefore, these findings illustrate the difficulty in accurately estimating the true scale of individuals who go missing.

2.2. Defining Missing Children

The missing persons phenomenon is multifaceted and complex that further increases the complications in defining what a missing person is (Biehal et al., 2003; Hayden & Shalev-Greene, 2016). When focusing on missing children, the terms 'missing' and 'runaway' have been used interchangeably (Malloch & Burgess, 2011). The term runaway is more appropriately applied when defining a child who remains away from their usual place of residence for at least one night, whilst the term 'missing' can define a child who remains away from their residence for a shorter period (Malloch & Burgess, 2011; Rosenthal, Mallett & Myers, 2006; Smeaton, 2013). However, these terms fail to fully enclose the wide array of situational, behavioural and trigger-related events that may influence the child to go

missing (Berelowitz, Firmin, Edwards & Gulyurtlu, 2012; Thompson, 2014), nor do they represent children who become missing unintentionally.

Previously, the term runaway had long been associated with delinquency primarily due to primitive research focusing on homeless youth (Malloch & Burgess, 2011). As such, one of the first recorded definitions of a missing child, termed as a runaway, was presented as a mental disorder within the second edition of the Diagnostic and Statistical Manual of Mental Disorders ([DSM-II], 1968). The DSM-II (1968, p.50) defined the act of running away as a child or adolescent who “characteristically escape from threatening situations by running away from home for a day or more without permission. Typically, they are immature and timid, and feel rejected at home, inadequate, and friendless. They often steal furtively”. Thus, although acknowledging a small number of potential triggers for going missing, the definition fails to account for other potential factors such as mental health difficulties, social or economic factors, and individual differences. Moreover, the definition also fails to acknowledge adults who go missing as well as characterising all missing children as perpetrators of theft.

More recently, the Association of Chief Police Officers ([ACPO], 2005, p.8) originally characterised missing persons as anyone whose “whereabouts [are] unknown whatever the circumstances of disappearance”. This simplistic definition, however, conceals the complex nature surrounding the factors associated with why the individual went missing (Fyfe et al., 2014). For instance, missing persons range from children who have strayed away from their parents through to an adult who refuses to return to a mental health institution, and to an individual who is presenting risky behaviours in the form of self-harming or via the behaviours of others such as sexual exploitation and abuse (Hayden & Shalev-Greene, 2016; James et al., 2008). Equally, a missing person may be an individual who became lost during their travels, a trafficking victim escaping authorities, an individual who has been abducted or may have simply gone missing voluntarily to escape their current situation (Alys et al., 2014).

In light of this, ACPO (2013, p. 5) updated their operational definition of a missing person to “anyone whose whereabouts cannot be established and where the circumstances

are out of character or the context suggests the person may be subject of crime or at risk of harm to themselves or another". This update acknowledges the variety of circumstances that may surround and influence an individual into deciding to go missing (Stevenson, Parr, Woolnough & Fyfe, 2013). Furthermore, the recent revision of the missing persons definition now also includes an additional category of missing persons termed as 'absent', which is defined as "a person not at a place where they are expected or required to be" (ACPO, 2013, p.5). The addition of the absent category was developed to lessen the strain on police labour and resources that are required for each missing persons investigation as reports categorised as absent are considered to have negligible risk and are thus exempt from requiring police action (ACPO, 2013; APPG, 2016; Shalev-Greene & Pakes, 2013; Harris & Shalev-Greene, 2016).

In contrast to operational-based definitions, Payne (1995) considers a missing child as a situation as opposed to an act. Payne (1995, p.355) encapsulates missing persons as:

A social situation in which a person is absent from their accustomed network of social and personal relationships to the extent that people within that network define the absence as interfering with the performance by that person of expected social responsibilities, leading to a situation in which members of the network feel obligated to search for the missing person and may institute official procedures to identify the person as missing. (Payne, 1995, p.355).

Payne's (1995) missing persons definition suggests that if an individual becomes unexpectedly missing from their regular societal networks and is both distressing and an undesirable act to those who are left behind, others may define that individual as missing and have the right to seek an explanation by actively searching for that individual (Biehal et al., 2003; Parr & Fyfe, 2012; Stevenson et al., 2013). Likewise, Payne's (1995) definition also implies that the act of terming an individual as missing derives from those who are left behind and thus places the 'power' with the society as opposed to the individual who has gone missing.

2.2.1. Is 'Missing' Chosen or Attributed?

Current arguments surrounding the definition of a missing child appear to suggest that the main understanding of what and who a missing child is derives from the question of intention (Biehal et al., 2003). Unless an individual is in the care of another or has been confined under the Mental Health Act, any individual aged 18 or over has the entitlement to go missing (Bonny, Almond & Woolnough, 2016; Missing People n.d.). For instance, an adult who decides to leave their residential location to create a new life elsewhere may not consider themselves to be 'missing', although they may appear to be 'missing' by the individual(s) they have left behind (Biehal et al., 2003; Parr & Fyfe, 2012; Stevenson et al., 2013). Thus, the term 'missing' is predominantly defined by those who are left behind (Parr & Fyfe, 2012; Payne, 1995) which raises the questions of individual autonomy (Biehal & Wade, 2000), and to whom the absence is a problem for (Biehal et al., 2003).

On one hand, the power of terming an individual as missing by those who are left behind may be appropriate for cases that may involve individuals with mental health difficulties, medical conditions that require frequent medication, or very young children. On the other, the power of labelling individuals as missing may turn out to be problematic (Payne, 1995). For instance, an individual may have gone missing from an abusive environment wherein the abuser who was left behind retains the power of terming the abuse victim as missing (Payne, 1995). This would result in the police and society in assisting with the locating and returning of the 'missing' individual (Payne, 1995).

Similarly, for an individual to be ascribed as missing, they must have been noticed as present in the first place (Parr & Fyfe, 2012). Specifically, the missing individual must have another individual who is aware of their absence and is concerned for their well-being (Payne, 1995). Hence, individuals who are short of any associations with family, friends, the local community or social service agencies, and are affiliated with particular culturally diverse background groups, are likely to be overlooked and therefore remain unreported (James et al., 2008; Kiepal, et al., 2012; Sveticic, Too & Leo, 2012).

2.3. Antecedent Factors for Going Missing

A child may go missing due to an array of potential triggers that includes mental health difficulties, family problems, living in residential or foster care residences, school-related problems, or peer influences (HM Inspector of Constabulary [HMIC], 2016). This further increases the complexity associated with the missing persons phenomenon, although relatively little research is present. However, as this is not the main aim of the current thesis, the subsequent sub-sections will only provide a brief overview of some of the potential antecedent factors associated with children going missing to highlight the complexity in understanding why an individual may have gone missing and to demonstrate the importance of locating the missing individual quickly.

2.3.1. Mental Health

Research has recently explored the association between going missing and enduring ongoing mental health difficulties with a recent report by the Missing People charity (2019) suggesting that mental health difficulties are strongly associated with the underlying motivations held by children who go missing. Missing People (2019) analysed 214 return home interviews within three police enforcement locations and found that one in five children who completed the interview (21%) indicated that they currently had depression or another form of mental health difficulty. However, it is important to note that these statistics could be a significant under representation as not every child located agrees to complete a return home interview and the data from the interviews were only accessed from three local areas. Children who refuse to complete the return home interview and children who had gone missing from other regions may present significantly greater risk and greater associations for going missing with enduring mental health difficulties.

Despite the potential limitations to the data presented within the report, the NCA (2017) report similar findings from a nation-wide perspective with an estimated 25% of the annual missing persons reports indicating that an individual went missing due to depression or anxiety in which 19% of these are children. The Missing People (2019) report also

presents similar findings to those exploring mental health difficulty associations and going missing with adults such as Biehal et al. (2003) who explored survey responses from adult participants finding 39% had reported having a mental health difficulty or disability with 22% reporting the endurance of depression. Likewise, Stevenson et al. (2013) found that 76% of randomly selected participants held within Police Scotland's database reported having at least one mental health difficulty which increased to 85% if undiagnosed and self-diagnosed difficulties were included. Hence, these findings suggest that both children and adults who go missing may have underlying mental health difficulties which could increase the risk of harm experienced.

Other individuals who go missing do so with the aim of committing suicide (Hayden & Shalev-Greene, 2016; Woolnough, Alys & Pakes, 2016; Woolnough, Magar & Gibb, 2019). For instance, the Missing People (2019) report which analysed 214 return home interviews with missing children found that one in eight children who had completed the interview (13%) presented behaviours that increased the risk for self-harm with 4% of respondents suggesting they were at high risk for suicide (Missing People, 2019). This finding is similar to those found nation-wide by the NCA (2017) which indicate that in 1,522 incidents, the individual had gone missing to commit suicide in which 23% of these were children. Moreover, in relation to gender-based differences, it is estimated that males are three times more likely to commit suicide than females (Gibb & Woolnough, 2007). In contrast, however, Kokkevi et al.'s (2014) research with adolescents across 40 European countries found that females demonstrated higher rates of suicide attempts compared to males despite the males going missing more often.

Research has also explored the relation to going missing with attention deficit hyperactivity disorder [ADHD] which is present in 1% of children in the United Kingdom (Gibb & Woolnough, 2007). Characteristics of ADHD often include impulsivity, short attention spans, becoming easily distracted, excessive talking and have little or no sense of danger (Eales, 2016; Trejo et al., 2018). Thus, children who go missing with ADHD are at significantly higher risk for the potential of harm when missing compared to children without ADHD (Gibb & Woolnough, 2007). Missing children with ADHD were found to travel greater

distances and have an increased risk of harm due to difficulties in social skills and danger awareness than children without ADHD (Gibb & Woolnough, 2007).

2.3.2. Family Difficulties

Research findings have frequently indicated that children are significantly more likely to go missing if they are enclosed within a family structure in which there are high levels of conflict and low levels of warmth, as well as the presence of sexual abuse, violence and neglect (Biehal et al., 2003; Dadds, Braddock, Cuers, Elliot & Kelly, 1993; Hill et al., 2016; Rees, 2011; Shalev-Greene, 2011). For instance, Mitchell (2003) found that the most common reason indicated by children for going missing was due to family conflicts (35%), followed by experiencing abuse by a parent (24%). However, the neighbourhood in which the individual resides within may also significantly increase the likelihood for that individual to go missing. This is because dangerous neighbourhoods are more likely to increase negative parental behaviours (Hill & Herman-Stahl, 2002).

Rees (2011) demonstrated how 23% of children who had gone missing within the last 12 months lived within a low warmth and high conflict family environment. In comparison, those who lived within a family environment that enclosed high warmth and low conflict resulted in less than 2% of children having gone missing in the last 12 months (Rees, 2011). Similarly, children who endured ongoing abuse within their family environment were significantly more likely to go missing than children who did not experience any form of abuse (Tyler et al., 2001). In addition, recent changes in the family structure have also been found to influence the likelihood of going missing, with children being three-times more likely to go missing following parental changes such as divorce, than children who did not have any family structure changes (Rees, 2011).

2.3.3. Living in Care

Children who live in care may be more vulnerable to a variety of different harm and criminal activities than children who do not live in care. Moreover, children who live in care

are estimated to be three times more likely to go missing than children who do not live in care (Rees, 2011). Similarly, the APPG (2012) suggest that one in ten children who are in care will be reported missing yearly compared to just one in 200 children who do not live in care. Additional findings by the Missing People charity report (2019) suggest that children living in care are not only more likely to be reported missing but that they are significantly more likely to go missing on multiple occasions. From 214 return home interviews, Missing People (2019) found that 57% of children living in care were reported missing on two or more occasions compared to just 36% of children who do not live in care.

Children who live in care may be more likely to be reported as missing, and go missing on more occasions, than children who do not live in care due to a variety of reasons. Some of the underlying motives for going missing more frequently may include being unhappy in their current placement, wishing to meet with another whom they believe to be in a relationship with, desire to re-visit family members or friends from a previous location, or going missing due to peer pressure influences (Thompson, 2014). Likewise, children who were separated from single-parent environments and had experienced more placement environments for shorter durations of time were also more likely to go missing repeatedly based on data derived from 8,047 case reports of children living in care (Lin, 2012).

2.3.4. School Problems

School suspensions and performing poorly academically has also been found to be associated with the rate of going missing (English & English, 1999; HMIC, 2016; Tyler & Bersani, 2008). For example, Missing People (2019) analysed 214 return home interviews from missing children and found 51% had truanted frequently from school, had poor school attendance, or had been excluded. Likewise, Rees (2011) analysed responses from children who had gone missing in relation to how they felt about their school finding that children who had gone missing within the last 12 months were significantly less likely to agree that they believed school was interesting (25%) compared to those who did not go missing (43%). Similarly, 46% of children who had gone missing disagreed that they liked being in

school in comparison to 22% of children who had not gone missing (Rees, 2011). Finally, 55% of children who had gone missing disagreed with the belief that they looked forward to going to school, whilst 32% of non-missing children disagreed with the same statement (Rees, 2011). In contrast, Mitchell (2003) estimated that only 7% of missing children go missing due to experiencing school difficulties and thus may imply that the influence of school difficulties on the rate of going missing is only one aspect of a multitude of potential triggers for going missing.

2.3.5. Peer Influences

Research has suggested that the role of a child's peer group is an important factor in the influence of going missing, although relatively little research has addressed this concept (Brennan et al., 1978; Tyler & Bersani, 2008; Tyler, Hagewen & Melander, 2011). Individuals who had gone missing on at least one occasion within the last 12 months had reported having significantly lower quality friendship groups than those who had not gone missing (Rees, 2011). However, it has been suggested that peer influence on the rate of going missing is only significant if the individual is experiencing family difficulties at the same time (Brennan et al., 1978). The presence of family difficulties increases the vulnerability of the individual to the influence of their peers, thus highlighting the importance of exploring a multitude of antecedent factors as opposed to the analysis of a singular trigger (Brennan et al., 1978).

2.4. Risks of Harm with Being Missing

When a child goes missing, they face considerable risks that may include involvement in criminal activities, sexual or physical assaults, substance abuse, murder, injuries, sexual exploitation, homelessness, or infections (Biehal et al., 2003; Biehal & Wade, 2000; Hayden & Shalev-Greene, 2016; Hill, Taylor, Richards & Reddington, 2016; Parr & Fyfe, 2012; Quinet, 2012; Rees, 2011; Thompson, Bender, Lewis & Watkins, 2008; Tyler, Hoyt, Whitbeck & Cauce, 2001a, 2001b). Although the annual figures provided by

the NCA (2017) indicate that the majority of missing individuals will not experience harm (96%), it is believed that these findings may remain a significant under-representation as individuals who had experienced harm whilst missing typically refuse to disclose this harm to officials upon their return (Hill et al., 2016). Nonetheless, the statistics indicate that missing children are more likely to have endured sexual harm than missing adults during their missing period (Alys et al., 2014; NCA, 2017), although relatively little research exists for the association between going missing and risks of harm.

2.4.1. Sexual Exploitation and Trading Sex

The act of going missing is widely considered to be one of the strongest indicators of child sexual exploitation as variations within a child's frequent missing episodes can conceal the sexual abuse by the abusers and thus minimises the attention from parents, police and other statutory agencies (Barnardo's, 2011; Berelowitz et al., 2012; Sharp, 2012). For example, Missing People (2019) analysed 214 return home interviews and found that seven in ten children who were victims of child sexual exploitation had gone missing on at least one occasion. Moreover, one in seven children (14%) had indicated that they were either a current victim of sexual exploitation or had experienced being a victim (Missing People, 2019). Sexual exploitation is also found to increase the risk of enduring other forms of harm that includes drug and alcohol misuse, physical violence, sexually transmitted infections, self-harming behaviours, and pregnancy (Barnardo's, 2011; Beckett, 2011; HMIC, 2016).

The Department for Education ([DFE], 2017, p.5) defines sexual exploitation as "occurring where an individual or group takes advantage of an imbalance of power to coerce, manipulate or deceive a child or young person under the age of 18 into sexual activity in exchange for something the victim needs or wants and/or financial advantage". Moreover, child sexual exploitation may also occur even "if the sexual activity appears consensual" (DFE, 2017, p.5). Sexual exploitation may also frequently involve violence and intimidation, wherein the perpetrators occupy a sense of power over their victims by virtue of their intellect, age, gender, strength, or economic status (DFE, 2017). Similarly, sexual exploitation may also occur in the absence of immediate gains such as when the perpetrator

persuades the child to send sexual images or videos of themselves via the internet (Brodie & Pearce, 2012).

Female children are significantly more likely to experience sexual exploitation than male children, with individuals aged 12-15 at the highest risk (Brodie & Pearce, 2012; Tyler et al., 2001). Younger missing children are considered to be easier targets for predators due to being in unfamiliar environments during their missing period as well as being more susceptible to grooming methods that may include propositions of attention, love and affection (Smeaton, 2013). For instance, Brodie and Pearce (2012) found that several young individuals within their sample had decided to go missing to be with an adult whom they believed to be their boyfriend or girlfriend. Similarly, Missing People (2019) analysed 214 return home interviews and found almost two in five children (39%) had an older girlfriend or boyfriend or was known to be associated with older individuals. Likewise, Smeaton (2013) interviewed children and young people who were victims of sexual exploitation and had gone missing frequently and discovered that the child's belief of having a sexual relationship with an older adult was a powerful sensation that increased the desire to participate in the sexual relations with their abuser.

Research has also widely illustrated the increased vulnerability for sexual exploitation of children who live in care (Berelowitz et al., 2012; CEOP, 2011; Office of the Children's Commissioner [OCC], 2012). However, it is important to note that all children who go missing are at risk of being sexually exploited, irrespective of the length of time that they remain missing for (CEOP, 2011; Plass, 2007). For example, Berelowitz et al. (2012) demonstrated how children who were being sexually exploited were more likely to go missing more frequently but remained missing for shorter periods of time than missing children who are not being sexually exploited. One main reason for this finding is that sexual exploitation perpetrators are aware that longer and infrequent missing periods will generate suspicion and would increase the attention toward their abuse (All-Party Parliamentary Group [APPG], 2012; Sharp, 2012; Smeaton, 2013). Moreover, Missing People (2019) found that 19% of the 214 return home interviews from missing children in

care had included details that they were currently a victim of child sexual exploitation or had experienced child sexual exploitation in the past.

Alternative research studies have explored a variety of background factors that have shown to increase the missing child's vulnerability to becoming a victim of sexual exploitation other than living in care. Background factors that have been found to increase the vulnerability of sexual exploitation include having family or educational difficulties, misusing drugs or alcohol, experiencing neglect and other forms of abuse, living in care, truanting and exclusion from school establishments, gang associations, depression, and delinquency (Beckett, 2011; Brodie, Melrose, Pearce & Warrington, 2011; Jago et al., 2011; Missing People, 2019; Scott & Skidmore, 2006; Smeaton, 2013; Tyler, 2009). Similarly, having friends who are also being sexually exploited may also increase the potential for a missing child to experience sexual exploitation. For instance, Smeaton (2013) interviewed 41 young adolescents and children who had experienced being sexually exploited whilst missing and found that the majority began to endure sexual exploitation only when they began to increase the amount of time that they would spend with a friend who was already being sexually exploited. Likewise, Missing People's (2019) analysis of 214 return home interviews found that one in ten missing children (10%) who were victims of child sexual exploitation had friends who had also been a victim of child sexual exploitation.

Sexual exploitation may also take place due to the behavioural responses of the missing children in the form of survival techniques with a view of gaining control over their current circumstances, or for material gains (Smeaton, 2013; Sturrock & Holmes, 2015; Walls & Bell, 2011). Sex trading is one of the most common and risky survival techniques performed by both missing children and adults whereby the missing individual exchanges sexual acts and behaviours to their abuser in return for food, shelter, drugs, money, alcohol or other desires (Tyler, Gervais & Davidson, 2013; Walls & Bell, 2011). A report by Missing People (2019) found that one in five children had resorted to stealing, begging, or doing "other things" in order to survive whilst missing, whilst 18% had slept rough or stayed with someone they had only just met (Rees, 2011). Hence, despite the potential for harm from the abusers and the subsequent dangers such as violence, depression, pregnancy and

sexually transmitted infections (Busen & Engebretson, 2008; Tyler, Hoyt & Whitbeck, 2000), trading sex for items may be perceived by some missing persons as being an easier alternative than acquiring items via other means such as theft or sleeping rough (Smeaton, 2013).

Children who go missing due to the endurance of physical or sexual abuse by their parents or care providers have been found to engage in trading sex behaviours more than those who did not experience abuse (Tyler et al., 2001; Whitbeck & Hoyt, 2004). The dependence of drugs or alcohol is also positively correlated with engaging in trading sex behaviours either by the association within a substance-using family environment (Shalev-Greene et al., 1999), or due to individual addictions and usage (Chen, Tyler, Whitbeck & Hoyt, 2004; Smeaton, 2004). For example, the report of 214 analysed return home interviews by Missing People (2019) found three in ten children (30%) misused alcohol and two in five (40%) children misused substances. Equally, peer relationships may also play a part in the influence of engaging in trading sexual behaviours via coercion from friends who are already trading sex (Tyler & Johnson, 2006), or by imitating their actions with abusers (Tyler et al., 2000).

2.4.2. Death

The gravest danger that may be endured by a missing child is their death, either accidentally or intentionally (CEOP, 2011). Although only a small handful of missing children and adults are found deceased (Newiss, 2004, 2011; NCA, 2017), the risk of dying whilst being missing significantly increases the longer that the individual remains missing, with adults facing a much higher risk than children (Newiss, 2006). For example, Newiss (2006) analysed 32,705 cancelled reports of missing persons' data that were held within the database of the Metropolitan Police Missing Persons Bureau and found that 0.6% of missing persons reported were found deceased in which 95% of these related to missing adults. Similarly, Newiss (2011) analysed reports of missing persons that were held in the database of the Missing People charity in which the individual was located deceased. Newiss (2011) discovered that in almost two-thirds of the sample, the individual had died from a natural

cause as opposed to accidental or purposeful deaths. Thus, the rate at which a missing child will be found deceased when missing is extremely small, although additional vulnerabilities may increase this likelihood and thus additional research is required to explore this association further.

2.4.3. Crime

Although the act of going missing is not acknowledged as a conventional criminal investigation due to crimes not typically being involved, during an individual's missing period there may be a small number of factors that do relate to the criminal justice system which are associated with the outcome of the investigation or the motives of the individual (Alys et al., 2014; James et al., 2008; Quinet, 2012). For example, a small number of missing persons have been found to engage in deviant and criminal behaviours as a method of survival that includes shoplifting, theft, drug selling and prostitution (Kim, Tajima, Herrenkohl & Huang, 2009). A report by Missing People (2019) found that 13% of children in care indicated that they were currently a victim of child criminal exploitation or had experienced being a victim in the past. However, there is limited research on the associations between going missing and criminal behaviour, with the majority of work having focused on the relationship between sexual exploitation and going missing.

Similarly, Shalev-Greene and Pakes (2013) analysed 1,321 cases contained within the COMPACT database of the police and found that 2.7% of the sample had committed a crime during their missing period. Moreover, 75% of those who had committed a criminal act had been reported as missing from private care homes, despite the total sample size of missing persons from private care homes equating to 57.1% of the sample. Thus, the findings imply that individuals who go missing from private care homes are significantly more likely to commit a criminal act whilst missing than individuals reported missing from family residential locations.

In contrast to the motives of the missing individual, the associations between criminal behaviours and missing persons may relate to abductions by known assailants or strangers, although this is a rare occurrence. Most stranger abductions are sexually

motivated, although other cases that are non-sexual in nature may be motivated by financial gains or for the use of participation in criminal activities, such as forcing the abducted individual to participate in a theft or burglary (CEOP, 2011). The majority of known-assailant abductions derive from parental custodial disagreements and encompass cases where the mother or the father of the child has lost their custody rights over that child and decides to acquire their custodial rights via the abduction of the child and escaping to another location (CEOP, 2011).

2.4.4. Other Associated Risks

Alongside the potential for a missing child to come to harm in the form of sexual abuse or death, other forms of harm may still be present. For instance, many children who go missing do so with the aim of committing suicide (Hayden & Shalev-Greene, 2016; Missing People, 2019), as discussed previously. Other potential risks of harm that may be experienced whilst missing include becoming a victim of a wide variety of crimes (Hayden & Shalev-Greene, 2016), becoming associated with gang-related activities (Missing People, 2019), and trafficking for sex or labour purposes (APPG, 2012). It is estimated that 60% of children who are suspected of being a victim of trafficking will go missing from care residences, and that two-thirds of these will never be located again (CEOP, 2011). This may be due to the individual running towards their trafficker as a 'pull' response, either from fear of punishment towards the victim or their family or because they believe that they have no other choice in returning (Alys, Massey & Tong, 2014). However, relatively little is known about the associations between going missing with trafficking victimisation, with the minimal research that does exist demonstrating incomplete and unreliable data.

2.5. Chapter Summary

This chapter has presented an overview of the missing persons phenomenon with a specific focus on missing children. The chapter illustrated the prevalence of missing persons within the United Kingdom and the difficulties that arise in ascertaining what a missing

person is. This is due to the array of factors associated with influencing an individual to go missing, the power associated with terming an individual as missing, and the numerous sources of harm that could be encountered whilst missing. The following chapter will demonstrate the use of the media in locating missing persons and the difficulties in establishing its effectiveness.

Chapter 3: Use of the Media

The coverage of missing children within the media is potentially even more important than covering other forms of news and crimes as the recovery of the missing child may hinge on the positive identifications made by members of the public (Jeanis & Power, 2017). The amount of coverage given to the missing person by the media may also have a significant effect on the police investigation (Gilchrist, 2010). For instance, if the media coverage of a missing child is significantly high, the public's attention and subsequent police funding will also increase (Gilchrist, 2010). As a result, the missing child is more likely to be located in a shorter period of time as more resources are available to the police to aid with their search of the child.

3.1. Sources of Media Used

When a child goes missing, it is a common approach for many law enforcement agencies to release images of the missing child via the media to request help from the public in finding this missing child (Lampinen, Miller & Dehon, 2012; Lampinen & Moore, 2016; Lampinen & Sweeney, 2014; Sweeney & Lampinen, 2012). The media is recognised as a vital resource for law enforcement agencies as the media has access to a vast amount of possible witnesses who may hold beneficial information concerning the missing child (Fyfe et al., 2014; Taylor et al., 2013). Moreover, many individuals who may not hold information relating to the missing child but do interact with the media on a frequent basis may feel compelled to help by sharing the picture of the missing child with their own social media followers (Drivsholm et al., 2017). Thus, the number of individuals the original missing child appeal may reach significantly increases.

The use of a public appeal is not a novel approach as various forms and channels have been utilised in the past. Publicity appeals have been used both offline and online via numerous forms such as posters, websites, radio and television broadcasts, social media, newspaper advertisements, professional partner networks, billboards, and much more

(Drivsholm et al., 2017). For instance, one of the first methods utilised by law enforcement agencies included the use of milk carton advertisements during the 1980s that asked families to help locate a particular missing child (Drivsholm et al., 2017). This approach ended however after paediatricians criticised the milk carton advertisements as being too traumatic for children to witness in the morning with others arguing the fact that the milk carton advertisements would still be in circulation even when the child has been located (Drivsholm et al., 2017).

More recently, Missing Children Europe developed the innovative 'NotFound.org' application in 2012 which replaces the 404-error pages of broken website links with poster appeals of current missing children (Drivsholm et al., 2017). The application was first piloted in Belgium prior to being fully utilised by seven EU member states (Drivsholm et al., 2017). Ever since the application's launch, over 74.6 million missing children poster appeals have been displayed that includes a mix of recent, long-term, and cold case disappearances of children (Drivsholm et al., 2017). However, although the benefits associated with the use of the media to disseminate missing children appeals appear unquestionable, there are some potential negative issues associated with these appeals. For instance, once an image of a child who is missing is displayed and circulated online, this may be how the individual is perceived for the rest of their life (Drivsholm et al., 2017). Similarly, questions can also be raised in relation to that child's and the child's family's privacy and wellbeing with having their information disseminated online that can be viewed forever (Drivsholm et al., 2017).

3.1.1. Rescue Alerts

One of the most widely recognised methods for disseminating missing children appeals are child alert systems such as the America Missing Broadcast Emergency Response alert ([AMBER]; Lampinen & Moore, 2016), and the Child Rescue Alert within the United Kingdom (NCA, 2014). The AMBER and Child Rescue alerts issue state-wide public alerts of abducted and non-abducted missing children who may be at an imminent risk of serious harm (NCA, 2014; U.S. Department of Justice, 2015). In addition, they help to minimise the

likelihood of negative historical appeals as they are able to retract the appeal upon the location of the missing child.

It has been estimated that over 200 AMBER alerts are issued to the public every year across America which has led to some critics arguing the AMBER alerts may be more of a “crime control theatre” for the public than an essential tool for information as the alerts are overused and may result in the public tuning the alerts out due to habituation (Griffin & Miller, 2008, p. 160; Griffin et al., 2007). Nevertheless, the primary role of an AMBER alert is to request the public to help search for both the missing child and the perpetrator and then inform the police who will be able to locate them both much faster than without the aid of the public (Miller, et al., 2009). This approach thus relies on several questionable assumptions relating to the underlying psychological processes such as attention, retention, and identification, that must be involved for the alert to be effective (Miller et al., 2009). These processes will be discussed further in the subsequent chapter.

Similarly, the Child Rescue alert is also utilised to request information from the public although in contrast to the AMBER alerts, the Child Rescue alerts only interrupt local radio and television broadcasts and are used rarely to minimise overuse of the missing children alerts (BBC, 2007, 2014; NCA, 2014). When an alert is formulated, members of the general public are requested to provide any relevant information associated with the appeal to the police (BBC, 2007, 2014). If segments of the information provided matches to particular key terms and data related to the missing child appeal, this information is prioritised by the police to begin further investigations with this potential new investigative lead (BBC, 2014; Hedges & Shalev-Greene, 2017).

3.1.2. Social Media

Social media and other online sources are the most popular and widely used sources for the dissemination of missing children appeals with an estimated 71% of appeals provided via these routes (Missing Children Europe, n.d.). The use of social media will allow the missing children appeals to reach a greater number of individuals than offline methods would as many individuals who observe an appeal typically ‘re-share’ the appeal to their

own followers. This would result in a snowball effect of different people becoming alerted to the appeal which could potentially increase the likelihood of someone locating the child. For instance, the National Centre for Missing and Exploited Children ([NCMEC]; 2015) demonstrates how social media could be of significant use in locating missing children.

In 2015 in the USA, a lone woman was walking her dog and discovered a small deceased child that was abandoned and wrapped up in a bin bag (NCMEC, 2015). The local law enforcement began investigating the child's identity to try and match them to a reported missing child and requested the help of the NCMEC to develop a facial reconstruction of the child and disseminate via social media for help from the public (NCMEC, 2015). The social media appeal was viewed over 50 million times and was thus able to reach an extensive amount of people in a short period of time which may not have been possible via offline media sources (NCMEC, 2015). Nevertheless, over two months after the discovery of the child, the child's identity was discovered and criminal charges relating to the death of a child began (NCMEC, 2015).

Despite the use of social media appearing to be highly successful in reaching a wide range of individuals that may not have been reached via offline methods, the use of social media may also have a negative impact on missing children. For instance, some of the missing children have been found to be given more media attention than other missing children who have received no media attention regardless of the circumstances surrounding their disappearance (Min & Feaster, 2010). This is of great concern as the children who are not given media attention may be significantly less likely to be located quickly and prior to experiencing harm than the children who are given media attention. The media may also increase the amount of essential resources and time required by the police in following up public-led leads of enquiry that may be highly inaccurate. Therefore, the question remains as to how beneficial the media really is for assisting the police with missing children enquiries. However, compared to other types of victimisations such as homicide (Biehal, Mitchel & Wade, 2003), there is extremely limited research that has focused on the missing persons phenomena with even more limited research focusing specifically on the effectiveness of media appeals of missing children.

3.2. Media (Mis)Representations

At present, there is very little empirical data available that explores the potential bias within media campaigns of missing persons that may help to explain why some individuals who go missing receive media attention and other individuals receive no media attention (Sommers, 2017). The small number of research studies that have explored this potential bias have found disparities between the amount of media attention given to missing individuals and the missing individual's race or gender (Gilchrist, 2010; Min & Feaster, 2010; Moscovitz & Duvall, 2011; Newiss, 2005; Simmons & Woods, 2015, Taylor et al., 2013).

For example, Shalev-Greene and Reddin (2015) aimed to examine journalists' and editors' perspectives on why some missing children may receive more media attention than others via an online snowballing survey method. It was found that journalists and editors declared that they were less likely to provide media attention to missing children if they had gone missing previously, were living in care or foster residences, had a criminal record, or if the photograph of the child provided was blurred or non-existent (Shalev-Greene & Reddin, 2015). In contrast, children who were believed to be in danger, had a good reputation within their community, were attractive, performed well academically, were very young, had gone missing locally, and had a major appeal from the parents, were significantly more likely to receive increased media attention by journalists and editors (Shalev-Greene & Reddin, 2015). Thus, the findings suggest the characteristics and the circumstances surrounding the missing children influence the likelihood of receiving or not receiving media attention.

Similarly, Drivsholm et al. (2017) aimed to explore the decision-making processes behind making publicity appeals of missing children, the type of information included within appeals and explore the effectiveness of these appeals via survey data collected across the European-wide network of missing children hotlines. The researchers found that the potential risks to the child were the major factor behind making an online appeal with

almost 74% of cases, whilst a key factor in not making a public appeal was due to having a lack of valid information about the child that they could supply to the public (Drivsholm et al., 2017). In relation to the type of information included within publicity appeals, the most prevalent details used include the child's first and last names, the area they were last seen or known to be in, the age of the missing child, the date and time they had gone missing, a picture of the missing child, clothes last worn, a contact number, and the current risk factor (Drivsholm et al., 2017). Therefore, the characteristics and circumstances surrounding the missing child appear to influence the likelihood of receiving media attention which would subsequently influence the population's understanding of missing children.

3.2.1. Ethnicity

Researchers have discovered two major characteristic biases found within the disparities of media attention of missing individuals. The first characteristic bias relates to the ethnicity of the individual with some research evidence suggesting that missing persons who have a white ethnic background are significantly more likely to receive media attention than missing persons who have non-white ethnic backgrounds (Min & Feaster, 2010; Sommers, 2017). For instance, Bjornstrom et al. (2010) analysed a stratified random sample of 660 television news stories relating to abductions that were aired between the years 2002-2003. The researchers found that women with white ethnic backgrounds were more likely to be presented as a victim of abduction than women of non-white ethnic backgrounds (Bjornstrom et al., 2010). In contrast, the perpetrators of the abductions were more likely to be presented to the public as male and were of non-white ethnic origin compared to white ethnic background males (Bjornstrom et al., 2010).

Furthermore, Gilchrist (2010) analysed six local media cases of missing women that were made up of three white ethnic women and three non-white ethnic women for comparison. Gilchrist (2010) found that the missing women with white ethnic backgrounds were mentioned within the media 511 times compared to only 82 times for the missing women with non-white ethnic backgrounds. Similarly, missing white ethnic women were found to have 187 articles devoted to them with 135,249 words in total compared to just 53

articles and 28,493 words devoted to non-white missing women (Gilchrist, 2010). Thus, missing women with non-white ethnic backgrounds are found to be mentioned in the media 6-times less, have 3.5-times less coverage, and have 1.4-times fewer words than missing women with white ethnic backgrounds (Gilchrist, 2010).

Min and Feaster (2010) further support this finding via their content analysis of missing children stories within national television news broadcasts to explore whether the media stories portray missing children accurately when compared to official national statistics. After excluding irrelevant broadcasts, the total sample yielded 185 cases wherein each of these cases were coded to reflect both the information provided of the missing children used within the news broadcasts, and details of the missing child such as gender, the reason for going missing, and ethnicity (Min & Feaster, 2010). The results found that missing female children and all missing children with non-white ethnic backgrounds were significantly underrepresented when compared to official national missing children statistics (Min & Feaster, 2010). In addition, missing children with white ethnic backgrounds were significantly more likely to receive media attention if they had gone missing due to an abduction than non-white ethnic background missing children (Min & Feaster, 2010).

More recently, Jeanis and Powers (2017) built upon the work by Min and Feaster (2010) by exploring localised missing person cases and newspaper articles between the years 2009-2013. After filtering out irrelevant cases, the total sample size of 782 was content analysed to identify codes reflecting the missing individuals' characteristics, and details of the missing persons within each of the media articles (Jeanis & Powers, 2017). The analysis discovered that approximately 65% of cases consisted of missing males and 47% related to missing children (Jeanis & Powers, 2017). Moreover, white ethnic background individuals received almost 3-times more media attention and significantly more words-per-article than non-white ethnic background individuals (Jeanis & Powers, 2017).

Finally, Simmons and Wood (2015) analysed 619 media segments derived from archive news broadcasts that were aired across five major news source channels in America between the years 1987-2011. The analysis revealed that missing female children were

present in 49% of media broadcasts but had accounted for 55% within the official national missing children statistics suggesting a slight underrepresentation (Simmons & Wood, 2015). However, missing children from non-white ethnic backgrounds made up only 7% of the total news broadcasts but had accounted for 35% of the official missing children statistics (Simmons & Wood, 2015). Therefore, missing children with non-white ethnic backgrounds are significantly underrepresented across the media when compared to national statistics of missing children in America which presents a major problem in relation to the likelihood of the public helping law enforcement to find all missing children as quickly as possible.

3.2.2. Gender

The final major characteristic bias found within the media for displaying certain appeals of missing children relates to the gender of the child. For example, Taylor et al. (2013) systematically examined the differences between newspaper articles of various forms of abductions with the national abduction rates. The study yielded a sample of 69 newspaper articles that related to the abduction of children wherein 54% included female victims and 59% included children aged 11 and under (Taylor et al., 2013). The study found female children who were victims of family or non-family abductions were significantly more likely to appear across the media articles than male children despite the official national statistics indicating male and female children are equally likely to be the victim of both family and non-family abductions (Taylor et al., 2013). In addition, articles that included female children had an average word count of 541 words compared to male children who had an average word count of 357 words (Taylor et al., 2013). Therefore, the media are significantly more likely to include additional words and coverage of female victims of abductions than for male children (Taylor et al., 2013).

Similarly, Paulsen (2003) explored the news coverage of homicides and found that the American paper *Houston Chronicle* was significantly more likely to provide additional coverage for female victims of homicide than male victims despite female victims of homicide being statistically rare within national statistics. Johnstone, Hawkins and Michener

(1995) also compared the rates of homicide coverage across the media with police recorded statistics and found the American papers *Chicago Tribune* and *Chicago Sun-Times* were significantly more likely to report female victims of homicide, that were statistically rare victims, than male victims. Similar results were also found within the UK as Peelo, Francis, Soothill, Pearson and Ackerly (2004) found the newspapers *The Times*, *The Mail*, and *The Mirror* were significantly more likely to report statistically rare female victims of homicide than males who are statistically more likely to become a victim of a homicide. Thus, missing females appear to receive significantly more media attention than missing males.

3.3. Newsworthiness and Framing

Individuals experience a range of diverse emotions whilst reading the same news content which occurs due to the information that is presented to them as well as their individualised assessment of the news content in relation to their own values or goals (Gross & D'Ambrosio, 2004). Journalists frequently select news items that are considered unusual and dramatic to captivate their audience and are thus newsworthy stories (Gilchrist, 2010). For instance, news items containing dramatic, high-profile and unusual homicides receive a vast amount of public attention and are thus covered in excessive detail across numerous forms of online and offline media compared to low-profile and predictable homicides (Lundman, 2003). Moreover, researchers have found the media to provide biased and increased attention to homicides that feature female victims (Peelo et al., 2004), young children or the elderly (Pritchard & Hughes, 1997), white ethnic victims (Paulsen, 2003), victims with a higher socioeconomic status (Johnstone et al., 1995; Peelo et al., 2004), stranger homicides wherein the offender has no relation to the victim (Peelo, et al., 2004), homicides with multiple victims (Paulsen, 2003; Gruenewald et al., 2009), and homicides that feature the use of firearms (Gruenewald et al., 2009).

For example, Gekoski, Gray and Adler (2012) interviewed ten UK journalists to explore their opinions on what they consider a newsworthy homicide. Gekoski et al. (2012) found that 80% indicated that a homicide is newsworthy if the story includes a perfect

victim such as a young child or an attractive female, compared to a non-perfect or undeserving victim. One participant specified that a perfect female victim is someone who is young, attractive, middle to upper class, and is white (Gekoski et al., 2012). The results also indicated that statistically rare events were also considered to be highly newsworthy by journalists, followed by events that involved the homicide offender who is still to be captured by the police, and events that are considered to be highly violent and alarming (Gekoski et al., 2012).

Thus, in relation to missing persons, newsworthiness may have a significant effect on the knowledge and emotional response to missing children as research studies appear to suggest that missing children who comprise of desirable journalistic characteristics will receive much higher media attention than missing children who may not have these desirable characteristics (Gruenewald et al., 2009; Paulsen, 2003; Peelo et al., 2004; Pritchard & Hughes, 1997). Likewise, a small number of children may go missing due to stranger or non-stranger child abductions which is one of the most universally feared events faced although this is relatively rare (Miller, Kurlycheck, Hansen & Wilson, 2008). Nevertheless, perceived child abductions capture the public's attention and would increase their fear for the child's wellbeing which thus fulfils the required journalistic newsworthy elements and has become a popular type of crime for journalists to report (Dowler, 2003; Gruenewald et al., 2009; Paulsen, 2003; Peelo et al., 2004; Pritchard & Hughes, 1997). As a result, it could be argued that a perceived child abduction would be significantly more newsworthy than an event which is much more common such as a child going missing due to family difficulties (Biehal et al., 2003; Dadds, et al., 1993; Hill et al., 2016; Rees, 2011; Shalev-Greene, 2011).

The main aim of a public appeal of missing individuals is to request assistance from the public in locating that individual (Fyfe et al., 2014; Taylor et al., 2013). Therefore, the overrepresentation or underrepresentation of specific characteristics or types of missing individuals shown within the media may lead to both misplaced fears by the community for some missing children than others, and a greater possibility for inaccurate risk assessments on the missing individuals (Simmons & Woods, 2015). Similarly, individuals who receive

more media attention are more likely to be located quicker and potentially prior to experiencing harm, than missing persons who do not receive media attention which raises serious concerns for the wellbeing of all individuals who go missing (Bjornstrom, Kaufman, Peterson & Slater, 2010; Miles, 2005; Simmons & Woods, 2015; Taylor et al., 2013).

3.4. Chapter Summary

This chapter has presented an overview of the use of the media in disseminating missing children appeals to the public. The types of sources used to disseminate missing children appeals was discussed alongside the potential positive and negative outcomes of using the media for the missing children and for the police. Finally, this chapter further highlighted the near non-existent research that is available for exploring and understanding the effectiveness of missing children appeals. Even though the media is the most widely used source for dissemination of appeals, this area remains a significant gap in the literature.

Chapter 4: Factors Associated with the Effectiveness of Missing Children Appeals

Missing children appeals may be significantly more important than other forms of appeals across numerous types of crimes as the relocation of the missing child and investigative response may centre prominently around positive identifications made by the public (Lampinen & Moore, 2016; Sweeney & Lampinen, 2012). However, there is a very limited understanding of the effectiveness of missing children publicity appeals with the majority being explored within the USA (Drivsholm, et al., 2017; Lampinen & Moore, 2016; Lampinen, Peters & Gier, 2012; Sweeney & Lampinen, 2012). Despite the frequency of publicised appeals across numerous countries, the limited research available suggests that these publicity appeals are in fact highly ineffective and may actually hinder police investigations in relocating the missing individual as opposed to facilitating them (Drivsholm et al., 2017). Furthermore, the research literature suggests that the human ability for individual recognition is highly questionable (Lampinen & Moore, 2016), which raises the question of whether missing children publicity appeals are the most appropriate and effective methods for safeguarding vulnerable individuals who go missing.

4.1. Stages of Appeals

A member of the public may encounter a missing child prior to observing the missing persons appeal, or after the appeal has been viewed (Lampinen, Peters & Gier, 2012). However, there is a series of stages that must be followed in order for that member of the public to identify and report the missing child upon location. As Lampinen, Curry and Erickson (2016) highlight, the missing persons appeal must have been disseminated widely enough for members of the public to acknowledge it. If they do not know of a missing person in the first place, they will not be able to help identify them. Secondly, the public must have been paying attention to the appeal to acknowledge and encode the required

information (Lampinen et al., 2016). Third, the missing child presented within the appeal must be encountered followed by, forth, the public correctly identifying the missing child's facial features for recognition (Lampinen et al., 2016). Fifth, the missing child must trigger the public's recollection of the appeal before finally being confident enough to report the child to the police (Lampinen et al., 2016).

Failure within any of these stages would therefore result in the non-reporting of the missing child which may, of course, vary between the type of publicity appeal and on the demographic factors and the underlying reason for the disappearance of the missing child. This exploration is currently non-existent however and requires significant insight into this effect. Research into human memory may therefore help to further our understanding of why appeals may become ineffective and how we could improve these stages to subsequently improve the effectiveness of missing children appeals. Although there has been some debate for how the human memory acquires and stores information, it is generally considered that human memory is built on the foundation of three distinct stages: acquisition, retention, and retrieval (Loftus, 1979; Miller, et al., 2009).

4.2. Acquisition

Acquisition is regarded as the first stage of human memory and is the perception of the event, person, item, or other source of information (Loftus, 1979). This perception of a sensory stimulus may include a variety of visual, auditory, physical, scent or even taste information (Tulving & Craik, 2000). The sensory stimulus is first registered by the brain and this information remains in this stage for a brief period of time before being transferred to short-term and then long-term memory (Loftus, 1980; Tulving & Craik, 2000). However, in comparison to the other stages of memory, the acquisition stage may be the most difficult in relation to the processing of information as it is the individual themselves who decides what information to acquire (Loftus, 1979). Hence, perception is a constructive process that varies between individuals even when observing the same information.

An individual may encounter multiple daily missing persons appeals for numerous children wherein the majority may never be encountered due to being missing in a different geographical region to the individual (Lampinen & Moore, 2016). As the likelihood of locating the missing child will be extremely slim, the individual may simply decide this information is not required. As the number of appeals presented increases, the individual may associate these appeals collectively which then leads to the effect of habituation (Rankin et al., 2009). Habituation is the reduction of responsiveness to stimuli that is repeated frequently and is a basic form of learning (Lampinen & Moore, 2016). The reduction in responsiveness to stimuli occurs with not only stimuli that are identical, but of stimuli that is comparable to the original stimuli that have become habituated (Lampinen & Moore, 2016). It could therefore be argued that members of the general public who encounter multiple missing persons appeals generalise them which increases the rate of reduction to the responsiveness towards the appeals (Lampinen & Moore, 2016).

In contrast, if the appeals are limited, the public will be unaware of the appeal and the missing child thus minimising the potential to locate the child safely and increasing the ineffectiveness of missing children appeals (Taylor, Boisvert, Sims & Garver, 2013). Repeated exposure may therefore help to improve appeals as the more times an individual observes the event, the greater the potential for their recollection of that event (Bluck & Li, 2001; Loftus, 1979). Nonetheless, memory research has generally indicated that whether an individual observes an event once or multiple times, they would find it difficult to acquire and encode information accurately if they are distracted with other tasks at the same time (Sweller, van Merriënboer & Paas, 1998). This effect could be related to the phenomena of inattentional blindness.

Inattentional blindness is the inability for an individual to identify a highly visible object that is within their direct eyesight, due to their attention being elsewhere (Mack, 2003; Most, 2010). As discussed, only a limited amount of information available is acquired into memory which increases the inability to register and thus perceive an object that is deemed to be irrelevant to the current task (Horstman & Ansorge, 2016; Most, Scholl, Clifford & Simons, 2005). For instance, the widely known work by Simons and Chabris

(1999) requested 228 university participants to observe one of four video files that showed a group of three individuals wearing either white or black, and passing a basketball to each other as they moved in a random and circular direction. Participants were asked to count the number of times the ball was passed from person to person with an individual wearing a gorilla costume walking across the screen from one side to the other (Simons & Chabris, 1999). The results indicated that 46% had failed to spot the gorilla which is a highly visible object passing through the participants' direct eyeline due to their attention being directed to the basketball (Simons & Chabris, 1999).

Similarly, Hyman, Sarb and Wise-Swanson (2014) observed 396 individuals on their short journey across a path in which a tree branch overarched into the path, thus making the individuals having to move around or duck underneath to continue. Hyman et al. (2014) had attached three American dollar bills to the tree branch and found that the clear majority of individuals had failed to identify the money even though they had to interact with the branch to continue on their route. Additional research has also demonstrated how individuals fail to identify highly visible objects such as a plane having its engine disappear (Resink, O'Regan & Clark, 1997) and an experimenter who switches positions with another experimenter (Simons & Levin, 1998). Missing children publicity appeals may therefore provide no effect if the public observing them are distracted, simply choose to ignore them completely, and fail to remember and encode them (Miles, 2005; Miller, et al., 2009).

In contrast to some of these individual factors, event factors may also affect the acquisition of events (Loftus, 1979). These factors are related to exposure time, frequency, type of fact, detail salience, and the violence of the event (Loftus, 1979). The violence of the event relates to the presence of any violence during the event whereby less violence is associated with greater recall accuracy in most cases (Loftus, 1979). However, as this is not a current focus of the present thesis, this will not be discussed further. The remaining factors, however, may play a significant role in the effectiveness of missing children appeals.

4.2.1. Exposure Time

Exposure time is simply the length of time that an individual has available to observe and acquire eventful information with research frequently finding that longer exposure has better recall accuracy than shorter exposure (Loftus, 1979). For example, Memon, Hope and Bull (2003) presented 164 participants with a mock video reconstruction of a bank robbery in which the offender was visibly exposed for 45 seconds or for 12 seconds. Following the video clip, participants engaged in a short filler task prior to being presented with a 6-image photograph line-up (Memon et al., 2003). Within the line-up task, the participants were asked to either indicate which of these individuals was the target or to state that that target was not present in the line-up and indicate their level of confidence in their choices (Memon et al., 2003). The findings revealed that participants who had viewed the offender for the longer duration of 45 seconds had significantly greater recall accuracy than participants who had observed the offender for the shorter duration of 12 seconds (Memon et al., 2003). In addition, participants who indicated higher levels of confidence had been associated with higher overall accuracy than participants who indicated lower levels of confidence (Memon et al., 2003).

Similarly, Fahsing, Ask and Granhag (2004) analysed archival data of 250 eyewitness accounts following a series of bank and post office robberies to ascertain the effect of time duration on recall accuracy. The data derived from a large police force in Norway and compared the individual accounts of the offenders with the video footage of the crimes (Fahsing et al., 2004). The results found that individuals who had been exposed to the offender for a greater duration had greater recall accuracy for details of the crime and the offender than individuals who were only exposed to the offender for a short duration (Fahsing et al., 2004). Additionally, eyewitnesses recalling information when two offenders were present were significantly less accurate than eyewitnesses recalling information when just one offender was present (Fahsing et al., 2004).

Yarmey, Jacob and Porter (2002) sought to explore the effect that attention, analysed via the length of time spent observing a target individual, may have on the ability to recall information accurately. Three hundred and twenty participants were approached

by one of four confederates in public environments for either five seconds or for 30 seconds and were asked for some directions or finding lost jewellery (Yarmey et al., 2002). After a two-minute duration from being exposed to the confederate, participants were approached by a researcher and were presented with a short cued-recall test and asked to indicate their level of confidence on their accuracy (Yarmey et al., 2002). The results indicated that participants who had observed the confederate for 30 seconds had greater recall accuracy than participants who had observed the confederate for five seconds (Yarmey et al., 2002).

Finally, and more recently, Horry, Halford, Brewer, Milne and Bull (2014) analysed 295 archival data of crime eyewitness statements and subsequent offender line-ups from a large UK police force. Although analysing a variety of outcome variables, the research found that individuals who had observed the offender for a greater duration had significantly better recall identification accuracy than individuals who had only been exposed to the offender for a shorter duration (Horry et al., 2014).

Overall, the research findings presented seem to indicate that greater time exposure to a target is associated with greater recall accuracy. In relation to missing children appeals, it could thus be argued that if only a limited amount of time is available or willing to be given to observing missing children appeals, then an increase in the number of appeals presented will reduce the amount of time per appeal that is able to be given (Lampinen, Peters & Gier, 2012).

4.2.2. Frequency

Like exposure time, the frequency of an event is the number of times that the eventful information can be observed by an individual with more frequent observations producing better recall accuracy than less frequent observations (Loftus, 1979). For instance, Sweeney and Lampinen (2012) presented 96 participants with a missing child appeal that contained either one photograph of the child, or three different photographs of the same child and analysed their ability to identify the child. After being presented with the appeal, participants engaged in a team-sorting task whereby 50 images of children were displayed in which the participant had to place them into one of two groups (Sweeney &

Lampinen, 2012). The results indicated that participants who had observed multiple images of the same child had significantly greater identification accuracy than participants who observed the single-image appeal (Sweeney & Lampinen, 2012). Hence, higher frequency targets are associated with greater recall accuracy performance.

However, this effect is only effective if there is only one target that is required to be observed multiple times rather than multiple targets being observed. For instance, Lampinen and Moore (2016) analysed the recall accuracy of missing persons appeals for 465 participants. The participants were randomly assigned to view three separate missing persons appeals presented one appeal a day for three days, or one missing persons appeal on the last day of the experiment (Lampinen & Moore, 2016). Participants were informed that although the appeal was not real, the person in the appeal would be walking around the university campus and if they correctly identify them, they could win a share of \$200 (Lampinen & Moore, 2016). Participants had completed a recall task immediately after observing the videos to ensure the information in the appeal had been acquired. The results indicated that there were significantly greater sightings made by the one-video condition than the three-video condition (Lampinen & Moore, 2016).

Similarly, Lampinen, Peters and Gier (2012) performed a series of experiments to explore the effect of the number of missing children appeals and recall accuracy. The first experiment requested 78 student participants to observe mock missing children photographs followed by a team-sorting exercise as described previously. Participants were randomly assigned to observe either four photographs or 12 photographs sequentially for 15 seconds each and found that the participants in the 12-photograph condition had higher mistaken identifications than participants observing four photographs (Lampinen et al., 2012). The second experiment was identical to the first experiment except for the photographs being displayed for a total of 60 seconds meaning the four photographs were shown for a longer time duration than the 12 photographs (Lampinen et al., 2012). Participants observing 12 photographs were found to have significantly lower recall accuracy and higher recall error than participants observing the four photographs (Lampinen et al., 2012).

The final experiment was identical to the first and second experiment except the photographs were now displayed simultaneously on a wall and the participants were free to spend as much or as little time observing the mock appeals (Lampinen et al., 2012). Although the participants were found to have spent a near-identical total time on average observing the appeals, when broken down into individual photographs, participants in the 12-photograph condition had significantly less time available to observe each appeal compared to the four-photograph condition (Lampinen et al., 2012). Moreover, participants in the 12-photograph experiment had lower recall accuracy than participants in the four-photograph condition (Lampinen et al., 2012).

Similarly, the work by Cary and Reder (2003) further supports the notion that increased targets reduce the recall accuracy. Cary and Reder (2003) analysed the recall ability of lists of words for 30 university students. Participants were presented with a list of words that ranged from 16 to 64 words followed by a recognition task that requested the participants to identify whether the word presented was included or not included in the original list of words observed (Cary & Reder, 2003). The results found that participants who had been presented with the shorter 16-word list had significantly greater recall accuracy than the participants who had observed the longer 64-word lists (Cary & Reder, 2003). Thus, these research experiments further support the notion that an increase in the number of targets required to be observed and the reduction of time available to observe them results in lower recall accuracy and higher recall error.

4.2.3. Type of Fact and Detail Salience

Type of fact in relation to an observed event relates to the acquisition of information relating to items such as an offender's height or hair colour (Loftus, 1979). Similarly, detail salience refers to the type of details that will be more likely to be accurately remembered than other types of details which will differ between different individuals who have different points of view and different focus interests (Loftus, 1979). This notion is demonstrated via the previously described work by Fahsing et al. (2004) who analysed archival data of eyewitness statements and compared them to available crime footage for comparison.

Fahsing et al. (2004) found that the most frequently cited attributes across the statements related to the offender's gender followed by the offender's height, upper body clothing, and build of the offender. Other frequently reported descriptions relate to the use of a weapon, the offender's age, and ethnic background (Fahsing et al., 2004).

Similarly, Yarmey, et al. (2002) analysed eyewitness statement accuracy from 320 individuals who were approached in the street by a confederate target. The participants were exposed to the target for five seconds or for 30 seconds and were approached after a two-minute delay to complete a short cued-recall test (Yarmey et al., 2002). Participants had reported a variety of physical characteristics such as hair colour, the age of the target and height, and clothing characteristics such as upper body clothing worn, lower body clothing worn and type of footwear (Yarmey et al., 2002). The results found that participants had significantly greater recall accuracy of the offender for physical characteristics than for clothing characteristics (Yarmey et al., 2002).

These two experimental results therefore demonstrate how individuals typically report descriptive and generic information rather than more detailed and identifying information. Additionally, in relation to missing children appeals, individuals observing photographs or descriptions of missing children may have lower recall identification accuracy if presented with multiple photographs and descriptions that share similar characteristics to the target missing child.

4.3. Retention

Retention is regarded as the middle segment of human memory and is the duration of time between the sensory acquisition and the retrieval of information acquired (Loftus, 1979). The retention of acquired information is subject to numerous cognitive processes within the short-term memory and then, if deemed important enough to store, within the long-term memory (Loftus, 1979). However, as this stage of human memory is not a primary focus of the current thesis, only a brief overview of short-term and long-term memory will be provided for reference.

4.3.1. Short-Term Memory

As the name suggests, short-term memory is only able to contain a small amount of acquired information for a considerably short duration (Smith & Kosslyn, 2007). The information contained in short-term memory is believed to be retained for approximately 30 seconds, although it does have a high degree of accessibility (Loftus, 1980; Smith & Kosslyn, 2007). Like the acquisition stage of memory, short-term memory determines which of this information is deemed to be necessary for storage and discards the remainder of this information as irrelevant (Loftus, 1980). Although the widely known multi-store model (Atkinson & Shiffrin, 1968) has some empirical support, it has been argued by others as being too simplistic by suggesting that the short-term memory consists of a single store (Baddeley & Hitch, 1974). Hence, Baddeley and Hitch (1974) developed the working memory model.

The working memory model (Baddeley & Hitch, 1974) proposes that memory consists of multiple components within each stage as opposed to the single store proposed in the multi-store model (Atkinson & Shiffrin, 1968). In relation to short-term memory, the working model argues that there are three key components present: the visuospatial sketchpad, the phonological loop, and the central executive (Gathercole, 1998). The visuospatial sketchpad is the storage of visual information, whilst the phonological loop is the storage of auditory information (Gathercole, 1998). In contrast, the central executive system can perform a series of high-functioning cognitive processes which includes the ability to regulate and control the flow of information throughout the entire working memory, as well as the retrieval of information from long-term memory, and the ability to perform logical strategies, mental arithmetic, and logical reasoning (Baddeley, 1986; Gathercole, 1998).

However, short-term memory is sensitive to losing acquired information via the displacement of newly acquired information due to the limited space available (Terry, 2009). Information is therefore more likely to be forgotten as time increases (Ebbesen & Rienick, 1998; Hannigan & Reinitz, 2000). Thus, in relation to missing children appeals, if

the appeal contains a vast amount of information or there are multiple appeals that enclose different information, an individual observing them may fail to accurately acquire all the available information as fresher details will displace the older details. It is thus imperative that individuals are presented with appeals frequently to prevent the information from being forgotten and minimise the likelihood of inaccuracy (Miller et al., 2009).

4.3.2. Long-Term Memory

The final stage of human memory, long-term memory, is the unlimited storage of information retained from the short-term memory via rehearsal (Loftus, 1980; Smith & Kosslyn, 2007). Like short-term memory, long-term memory is believed to consist of two primary storage-like components: explicit memory and implicit memory (Atkinson & Shiffrin, 1968). Explicit memory encloses information that is consciously available and is founded upon episodic memories, namely memory of specific events; semantic memories, relating to factual information; and autobiographical memories, information about personal experiences and events (Tulving, 1983). In contrast, implicit or procedural memory is unavailable in the unconscious and provides the ability to process actions performed such as riding a bicycle or using a pencil (Atkinson & Shiffrin, 1968). However, similar to short-term memory, some of this information is also sensitive to being lost or inaccessible via repression (Loftus, 1980).

4.4. Retrieval

The final segment of human memory relates to retrieval whereby the information that was stored in the long-term memory is recalled (Loftus, 1979). The most common approach for retrieving information is via the use of cues although errors can arise if a false cue is received which leads to false or a forced memory (Loftus, 1980). Other errors may arise via the way that the information is retrieved. Known as the serial position curve, an individual may retrieve only the information that was presented at the start of an event and at the end of the event as these details were the first and last items to be acquired (Corsini,

2002). Hence, the details that occur during the middle of the event may not be retrieved. The only exception to this, however, derives from the *von Restorff* effect which is the occurrence of an unusual detail during an event that increases the likelihood of retrieval (Corsini, 2002). The successful retrieval of information relating to a missing child may rely on a combination of attention, facial recognition, prospective memory, and retrospective memory (Lampinen et al., 2009; Lampinen et al., 2010; Lampinen et al., 2011).

4.4.1. Facial Recognition

Facial perception is one of the most widely used and distinctive cues available which is used to determine an individual's identity (Gier, Kreiner & Lampinen, 2017; Mian & Mondloch, 2012). However, research has frequently demonstrated how people are generally very poor at recognising unfamiliar faces (Davis & Valentine, 2009; Megreya & Burton, 2006, 2008), but can be quite accurate in identifying familiar faces (Burton, Wilson, Cowan & Bruce, 1999). Even individuals who have been specifically trained to recognise faces can be poor. For instance, White, Kemp, Jenkins, Matheson and Burton (2014) analysed the effectiveness of facial recognition from 30 passport officers during a passport control centre. A total of 34 student participants were provided with a passport that contained a fraudulent image but bore similar characteristics to the individual or a genuine photograph (White et al., 2014). The results found that the passport officers had wrongly rejected 6% of valid photographs and wrongly accepted 14% of fraudulent photographs thus highlighting the difficulty in the human ability for facial recognition (White et al., 2014).

Furthermore, Gier et al. (2017) analysed the accuracy of 330 student participants in identifying an elderly woman. Participants were presented with one of four video clips that contained an elderly woman followed by a short memory distraction task that requested the participants to remember as many words as possible (Gier et al., 2017). Once completed, participants were presented with a total of 40 photographs of white elderly women sequentially and for each one, asked whether the woman in the photograph was the same woman in the video clip observed previously (Gier et al., 2017). The results found that only 6.7% of participant responses were correct in identifying the woman which further

demonstrates how facial recognition is very poor even when the observation of the target was very recent (Gier et al., 2017).

Similarly, Lampinen and Moore (2016) analysed the ability of 465 student participants for correctly identifying a mock missing person. The participants were randomly assigned to view one missing persons appeal, or a total of three missing persons appeals presented one a day for three days in a row (Lampinen & Moore, 2016). Once the videos had been observed, the participants were told that the woman within the missing persons appeal would be around the university campus and if they correctly identify her, they could receive a share of \$200 (Lampinen & Moore, 2016). The results indicated that only 10% within the one-video condition were able to correctly identify the woman whilst only 4.68% within the three-video condition could accurately identify the woman (Lampinen & Moore, 2016).

In addition to the general poor accuracy in correctly identifying an individual, further difficulties arise when the target being sought physically differs from the original image observed by the participant. Although the majority of missing persons are located in a short amount of time, a small number will remain missing for a much greater duration (NCA, 2017). Hence, in a long-term missing child case, the missing child could physically change dramatically due to ageing which further increases the difficulty in others being able to correctly identify them (Lampinen, Arnal, Adams, Courtney & Hicks, 2012) However, very limited work has explored this.

The research findings presented have demonstrated how recognising unfamiliar faces is quite poor when asked to identify an individual they have just observed. In relation to missing children appeals, an individual must be able to correctly identify the missing child after observing the appeal only a limited amount of times, in addition to the missing child appearing spontaneously and in an unspecified location at an unspecified time (Lampinen, Curry & Erickson, 2016). Hence, the likelihood of accurately and spontaneously identifying a missing child are relatively slim when the encountering of the child is unexpected (Gier, Kreinger & Hudnell, 2012).

4.4.2. Prospective Memory

In addition to facial recognition, searching for a missing child also partly relies on prospective memory which is an event-based memory cue (Einstein et al., 2005; Lampinen, et al., 2016; Lampinen, Arnal & Hicks, 2009; Lampinen & Moore, 2016; Lampinen & Sweeney, 2014). During a missing child appeal, individuals are presented with a prospective memory cue which requests them to make a particular response in the future, via contacting the police, if they encounter the missing child (Einstein & McDaniel, 1990; Lampinen et al., 2016). In an experimental analysis, participants are typically presented with a mock appeal and then requested to complete cognitively demanding tasks whereby they will encounter the missing child throughout the task (Lampinen et al., 2016; Lampinen & Moore, 2016). Hence, the participant must be able to correctly recall the prospective memory cue for contacting the police once encountered. Findings have generally found this to be quite poor in both laboratory-based settings (Lampinen & Sweeney, 2014), and in real-life searches (Lampinen & Moore, 2016).

For instance, Sweeney and Lampinen (2012) analysed the prospective memory ability of 96 university participants who were presented with a set of mock missing children and were requested to press the letter 'H' on their keyboard if they encountered any of the missing children during the rest of the experiment. Participants then engaged in a team sorting task whereby participants were presented with 50 photographs of children in a randomised order and asked to place each child into one of two groups (Sweeney & Lampinen, 2012). The results found that participants' responses were quite low, although participants who observed multiple images of the same missing child had performed significantly better at contacting the police via the 'H' key than participants who had only observed one image of the missing child (Sweeney & Lampinen, 2012). Hence, observing multiple images of the same child was associated with better recall but may not have produced the same findings if participants were presented with multiple images of different missing children.

Similarly, Lampinen et al. (2016) explored the prospective memory ability of 249 students who had observed a mock news report of a missing person and were asked to

report the individual to the researchers if located. The individual in the mock missing persons appeal had walked around the university campus in view of the participants during their everyday activities after a three-day duration from observing the news appeal (Lampinen et al., 2016). The results found that not a single participant had contacted the researchers to report the mock missing individual despite many of the participants actively engaging with the target in conversation (Lampinen et al., 2016). Hence, the research demonstrates how ineffective missing persons appeals may be as despite acquiring the information of the missing individual, the public may fail to act on this information.

4.4.3. Retrospective Memory

In contrast to prospective memory, retrospective memory is an event-based cue that occurs when a member of the public identifies a child and then later encounters a missing child appeal for that child (Lampinen, Miller & Dehon, 2012; Lampinen & Sweeney, 2014). Retrospective memory would thus entail intentional memory of past events such as a memory test of a list of words previously observed (Einstein et al., 2005), or incidental memory of past events such as encoding information from an overheard conversation (West & Krompinger, 2005).

Sweeney and Lampinen's (2012) second experiment explored the retrospective memory ability of 200 university students. Participants engaged in a team sorting task whereby they were presented with 50 photographs of children and asked to place the children into one of two groups (Sweeney & Lampinen, 2012). Upon completion, participants were then presented with four mock missing children posters that contained one photograph or three photographs of the same child (Sweeney & Lampinen, 2012). Two of the posters were target photographs and the remaining two were foil photographs (Sweeney & Lampinen, 2012). The results found that participants were significantly more likely to correctly indicate that they had identified the child in the mock appeal during their team sorting task (Sweeney & Lampinen, 2012). Moreover, participants who had observed multiple images of the same child had better accuracy and higher confidence in their own

accuracy than participants who had observed just a single photograph of the missing child (Sweeney & Lampinen, 2012).

Despite the findings suggesting higher recall accuracy and confidence in the multiple image condition than the single image condition, this could be due to pure circumstance as the participants were unaware prior to the team sorting task that they would have to reidentify the children. Hence, participants may not have fully provided their attention to the faces of the children compared to prospective memory which requires participants to encode the information of the child's face. Nevertheless, the results show how a combination of facial recognition, prospective memory and retrospective memory is necessary to successfully retrieve information relating to a missing child.

4.5. Acting

As the above research has indicated, humans are generally quite poor in identifying unfamiliar individuals. However, even if an individual manages to accurately acquire the information enclosed within missing children appeals and successfully retains and retrieves the information either pre- or post-observation of appeals, they must then be willing to act on this information to help find the missing child (Lampinen, Arnal & Hicks, 2009). At present, there is no research exploring the willingness to report missing children appeals to the police with the wider related literature focusing primarily on the willingness to contact the police if the individual is a victim of a crime themselves (Miller et al., 2009). Hence, the current thesis will explore some of the underlying motives for contacting or not contacting the police to further our understanding of the effectiveness of missing persons appeals. Nevertheless, there may be two primary factors associated with contacting the police in relation to missing children: social influences and confidence.

4.5.1. Social Influences

Researching social influences may help to explore the underlying causes for the likelihood of contacting the police in relation to missing children (Miller et al., 2009).

Research has shown how the decision for contacting the police may be influenced by the notion that someone else will help the child (Miller et al., 2009), personal empathic concern (Batson, et al., 2007), and gender or ethnicity biases (Eagly & Crowley, 1986; Katz, et al., 1975; Piliavin, Rodin & Piliavin, 1969). The likelihood of contacting the police may also be influenced by the perceived sense of danger associated with the event such as the belief that an abducted missing child is in grave danger and must be reported (Miller et al., 2009).

The social phenomenon of the bystander effect is when an individual is less likely to aid another individual in need if there is a physical or imagined presence of other people (Garcia, Weaver, Moskowitz & Darley, 2002; Greitemeyer & Mügge, 2013), and has found strong support across numerous types of aid required (Fischer et al., 2011). According to Greitemeyer & Mügge (2013), there are three psychological processes that increase the possibility of the bystander effect: audience inhibition, social influence, and diffusion of responsibility. This may help to explain why some individuals may not contact the police despite potentially locating a missing child. For instance, audience inhibition would arise if the individual perceives that their helping behaviour would be considered in a negative light by others, whilst social influence derives from the observations of others' behaviours to consider if help is required (Greitemeyer & Mügge, 2013). Finally, diffusion of responsibility is when the individual recognises that other individuals are present and believes that someone else will be better equipped to help (Greitemeyer & Mügge, 2013).

To counteract the bystander effect, Latane and Darely (1969) believe that the bystanders must acknowledge their responsibility to help, feel confident in their ability to provide the help required, and for them to identify the event as an emergency due to its potential for harm to the individual seeking help. Fischer et al. (2011) support this notion via their meta-analysis which found that bystanders who believed the event is dangerous were significantly more likely to intervene than bystanders who do not consider the event to be harmful. Additionally, Miller et al.'s (2009) literature review for the effectiveness of AMBER alerts argues that members of the public would be more likely to help when they perceive the child to be in danger. However, significantly more research is required to explore this potential influence of the bystander effect in relation to missing children

appeals. The current studies will therefore address this issue by exploring why members of the public may or may not contact the police when they believe to have identified a missing child.

Other social influences that may influence the likelihood of contacting the police are associated with ethnicity and gender biases. The research literature has frequently suggested that an individual's recall accuracy would be considerably poor for different-race individuals than for same-race individuals (Dodson & Dobolyi, 2016; Evans, Marcon & Meissner, 2009; Marcon, Meissner, Frueh, Susa & MacLin, 2010; Rhodes, Sitzman & Rowland, 2013; Wilson, Hugenberg & Bernstein, 2013).

For instance, Smith, Stinson and Prosser (2004) analysed the recall ability of 161 Caucasian university students following an observation of a crime footage. Participants were shown one of five 90-second video clips of a mock crime that displayed an unknown woman withdrawing money from a cash machine which was then stolen by the offender (Smith et al., 2004). Three of the five videos contained a white offender and the remaining two videos contained a black offender (Smith et al., 2004). All offenders were seen in the video stood behind the woman with participants also being able to observe the offenders' faces prior to them running away from the scene (Smith et al., 2004). Once observed, participants were requested via a free-recall approach to describe the offender (Smith et al., 2004). Finally, participants were presented with a 6-image photograph line-up that had the offender present or not present (Smith et al., 2004). The results indicated that 46% of participants were correct with participants in cross-race conditions having significantly more errors than same-race conditions (Smith et al., 2004).

Research has also indicated an association between recall accuracy and gender finding females typically perform significantly better than males (Rehman & Herlitz, 2007). However, this difference may only play a minimal role (Wells & Olsen, 2003). For instance, Shapiro and Penrod (1986) performed a meta-analysis of over 190 research studies that totalled 960 experimental conditions for the effect of facial recognition performances. The meta-analysis found that females are more likely to make higher accurate identifications and higher inaccurate identifications than males, although these findings were not

significantly different (Shapiro & Penrod, 1986). One possible explanation for these results is that females typically have greater verbal abilities than males which may help to contribute to the overall memory recall accuracy (Herlitz & Rehnman, 2008). However, as the findings are generally mixed or low, additional research would be advantageous to explore the effect of gender on identifying missing persons.

4.5.2. Confidence

The final major factor associated with the likelihood of contacting the police is related to individual confidence which is one of the most widely used predictor variables examined via research exploring eyewitness testimony (Brewer & Wells, 2006). Confidence is the participants' own strength of their belief that they have correctly identified an individual or recalled information. However, the association between individual levels of confidence and overall recall accuracy is an ongoing debate but research has typically found the association to be weak and impractical (Kassin, et al., 2001). For instance, some studies have found a weak association between confidence and accuracy for older individuals (Goodsell et al., 2009; Wright & Stroud, 2002), although some have found a stronger association with younger adults (Wright & Stroud, 2002). The current research presented in this thesis will not aim to resolve this debate but will, however, measure this relationship to provide an insight in the potential variability of confidence and accuracy across missing children recall accuracy and error.

Brewer and Wells (2006) explored the confidence-accuracy association of 1,200 participants after observing short video clip of a simulated crime involving an offender stealing a credit card left on a counter (Brewer & Wells, 2006). After observing the video clip, participants were presented with a simultaneous eight-photograph line-up and asked to identify the offender and the waiter and then indicate their confidence in accuracy via a scale of 0% to 100% (Brewer & Wells, 2006). The results found that the participants who had higher confidence in their accuracy had more correct identifications and fewer incorrect identifications than the participants with lower confidence levels (Brewer & Wells, 2006).

Similarly, Sauerland and Sporer (2007) analysed the confidence-accuracy association of 192 individuals following the observation of a short video clip involving the theft of a pair of sunglasses. After observing the video clip, participants then engaged in a 30-minute distraction task followed by a line-up task presented one week later (Sauerland & Sporer, 2007). Participants were asked to identify the offender shown in the video clip from the 6-photograph simultaneous line-up and indicate their confidence from a scale of 0% to 100% (Sauerland & Sporer, 2007). The results found that the participants who had higher accuracy in identifying the offender within the line-up task had higher confidence ratings than participants who were incorrect in trying to identify the offender (Sauerland & Sporer, 2007).

In a related matter to confidence levels being associated with recall accuracy, individual levels of confidence and accuracy may also be associated with the likelihood of contacting the police generally. For instance, Felson, Messner, Hoskin and Deane (2002) analysed the responses from members of the public via the National Crime Victimization Survey in relation to reporting crimes to the police. Felson et al. (2002) identified that the main reason provided for not contacting the police in relation to a witnessed crime was due to the belief that they would be wasting the police's time and resources if they report the crime. Many of the participants felt this was due to the notion that police would find their information irrelevant (Felson et al., 2002). Similarly, Goudriaan, Lynch and Nieuwbeerta (2004) analysed public responses via the International Crime Victims Survey to determine some of the reasons behind contacting or not contacting the police. The results found that 40.10% of responses had indicated that the reason for contacting the police in relation to a crime was simply due to the belief that all crimes should be reported regardless (Goudriaan et al., 2004). Although these research findings are not directly related to missing children, they provide a significant insight into the underlying motivations for contacting or not contacting the police in relation to confidence and accuracy which could be applied to reporting a potentially missing child.

Nevertheless, despite the results indicating a positive association between levels of confidence and overall accuracy, many researchers maintain the notion that confidence-

accuracy associations are irrelevant (Kassin, et al., 2001). One way to improve this belief may be to ask the participants for their level of confidence in identification accuracy after every individual photograph via sequential line-ups as opposed to an overall confidence level via simultaneous line-ups (Sauer, Brewer & Weber, 2008). Sequential line-ups require participants to increase their memorial processes for information relating to the photograph compared to a simultaneous line-up (Dobolyi & Dodson, 2013). Additionally, participants would be unaware of the total number of faces remaining to be identified and will be unable to go back to a previously observed face to change their response (Dobolyi & Dodson, 2013; Steblay, Dysart & Wells, 2011).

4.6. The Present Thesis

As discussed throughout this chapter, there remains a significant gap in our understanding for how effective media appeals of missing children are and on what factors within missing children appeals could improve recall or reduce recall of the details enclosed. Therefore, the current thesis will attempt to explore some of the factors that influence recall accuracy and recall error of retrieval of information enclosed within mock missing children appeals. The thesis will explore these factors through the use of a novel methodological approach which utilises an experimental memory recall paradigm. Participants will be presented with an aspect of a mock missing child appeal before recalling the information in a free-recall design immediately after observing the appeal. The thesis will also utilise a photographic line-up design as utilised commonly in eyewitness studies to explore identification accuracy and error. In addition, the participants will repeat the free-recall or photographic line-up designs three days later as there is currently no study which explores the effects of missing children appeals following a short delay.

4.6.1. Aims and Objectives

The overall aim of the present thesis is to explore the effectiveness of missing children appeals on recall accuracy and recall error of memory retrieval of information by

members of the public. A secondary aim is to explore the underlying motivations for why some individuals would contact the police to report a missing child and why some individuals would not contact the police even when they believe that they may have located the missing child. To achieve these two research aims, the thesis consists of the following objectives.

4.6.1.1. Attention

As discussed previously in relation to the conceptual model of appeal effectiveness (Lampinen et al., 2016), the literature surrounding attention and memory retrieval of information appears to suggest that recall accuracy would be influenced depending on whether an individual did or did not pay enough attention to the information (Lampinen, Peters & Gier, 2012; Miles, 2005; Nobel & Shiffrin, 2001). To explore this effect further, the current thesis will explore whether the length of time spent by members of the public for observing the information within the missing children appeals influences the subsequent recall or identification accuracy and error.

4.6.1.2. Length of Appeals

Missing children appeals may contain varied lengths of information about the missing child, the reasons for going missing, and other important information however the research literature surrounding the effect of the length of an appeal is non-existent. Research by Cary and Reder (2003) suggests that longer lists of words will result in significantly lower identification accuracy than shorter lists of words. Therefore, the research presented in this thesis will aim to build on this gap further by exploring the effect that the length of descriptive information provided within missing children appeals may have on the overall recall accuracy and recall error of information retrieved.

4.6.1.3. Type of Content in Appeals

Similar to the length of content, the research surrounding the effectiveness of the type of content enclosed within missing children appeals and the effect it has on recall accuracy and recall error is also non-existent. Whilst some research suggests that the newsworthiness value of the content presented may influence the ability to remember the information (Cary & Reder, 2003; Gekoski et al., 2012; Paulsen, 2003; Peelo et al., 2004), this is yet to be explored. For this reason, the research presented in this thesis will aim to fill in this gap and explore whether the type of content, namely newsworthy or non-newsworthy content, influences the subsequent recall accuracy and recall error of information retrieved by members of the public.

4.6.1.4. Number of Appeals

The number of appeals has been explored previously with research suggesting that multiple appeals of different individuals is associated with significantly lower identification accuracy (Lampinen & Moore, 2016; Lampinen et al., 2012; Sweeney & Lampinen, 2012). Additionally, facial recognition abilities of members of the public appears to be quite poor (Burton, et al., 1999; Davis & Valentine, 2009; Megreya & Burton, 2006, 2008). To build on this work further, the research presented in this thesis will explore whether recall accuracy and recall error of information retrieval is influenced by the number of missing children appeals presented at the same time.

4.6.1.5. Type of Format Design

Similar to the length of appeals and type of content within appeals, the type of missing children appeal format design has not previously been examined in relation to the effect it may have on the subsequent recall accuracy and recall error of information retrieved. As a result, the research presented in this thesis will therefore explore whether the type of format design of the missing child appeal presented, namely a Child Rescue

Alert format type or Twitter appeal type, has an influence on the subsequent recall accuracy and recall error of information retrieved by members of the public.

4.6.1.6. Confidence

The literature exploring eyewitness accuracy has suggested that the association between the individuals' own level of confidence in accuracy and the overall accuracy rate is mixed and believe that confidence is only weakly associated (Goodsell et al., 2009; Kassin et al., 2001). Therefore, to build on this gap further in relation to missing children appeals, the research presented in this thesis will explore whether the participants' own level of confidence in their recall accuracy is associated with the overall recall accuracy and recall error of the retrieval of information.

4.6.1.7. Initial and Delayed Accuracy and Error

As with several of the aforementioned objectives, the exploration of the effect that the initial recall accuracy and initial recall error scores may have on the subsequent recall accuracy and subsequent recall error scores in relation to missing children appeals are also non-existent. The majority of the research literature which explores missing persons appeals will explore factors associated with improving or reducing the appeal effectiveness moments after observing the appeal as opposed to exploring these effects after a short time delay. For this reason, the research presented in this thesis will explore whether the initial recall accuracy score and the initial recall error score influences the subsequent follow-up recall accuracy score and follow-up recall error score after a short three-day break between observing the appeal and being required to recall or identify aspects of that appeal.

4.6.1.8. Contacting the Police

Finally, the research literature focusing on the motivations underlying an individual's likelihood of contacting the police and not contacting the police in relation to reporting

missing children is also non-existent. There is a small number of research studies that do focus on the willingness of individuals contacting or not contacting the police but this focus is solely on the victims of crime reporting the crime they were a victim of to police (Miller et al., 2009). Hence, the present thesis will explore some of the underlying motivations held by members of the public that may increase or decrease the willingness and the likelihood of an individual contacting the police to report a missing child.

4.7. Chapter Summary

This chapter has presented an overview of the related theoretical and empirical literature associated with factors that could influence the recall accuracy or recall error of missing persons appeals. The chapter has illustrated how a series of stages must be acquired by the members of the public to successfully report a missing child to the police. The public must be willing to provide their attention to the appeals, correctly encode and retain the information enclosed, retrieve the information required via facial recognition or via prospective and retrospective memory cues, and then act upon this information to successfully report a missing child to the police. Any inaccuracies or failed progression within these stages would result in the non-reporting of a missing child. However, as this model is conceptual, the current thesis aims to explore these stages empirically and help to fill in the gaps of our current understanding of how effective missing children appeals are. The chapter further identified the limited research literature available in determining the effectiveness of missing children appeals for contacting the police which the current thesis will explore further to ascertain the underlying motives by members of the public for whether they would or would not contact the police to report a missing child.

Chapter 5: Methodology

Methodology is defined as the approach for studying research matters and can thus be thought of in relation to the theoretical reasoning behind why individual research methods and techniques were used throughout the studies (Silverman, 2005). In other words, the methodology justifies why particular approaches were taken to answer the research questions and aims when alternative approaches could also have been implemented. Each research topic can be approached, collected and investigated in many ways wherein the researcher must ascertain the most appropriate approach for the research aims and questions (Silverman, 2005). Therefore, the following chapter provides a detailed account of the research design and the justification of the chosen methods and procedures that were employed throughout the research to achieve the research aims.

5.1. Research Paradigm

A research paradigm can be regarded as a discipline in which a series of basic beliefs regarding how the natural world is understood and explored by researchers (Guba, 1990). The research paradigm thus consists of the researcher's perceived nature of reality, relationships, concepts, and techniques, that are deemed to be most appropriate to exploring and understanding the proposed natural phenomena (Blaikie & Priest, 2017). Each of these approaches is further differentiated via their ontological, epistemological, and methodological stances (Bryman, 2012). Ontology, defined as the nature of reality (Gelo, Braakmann & Benetka, 2008), questions whether phenomena should be considered as a single entity or as socially constructive entities (Guba, 1990). Similarly, epistemology questions what should be regarded as an acceptable level of knowledge to explore and answer the ontological stance (Bryman, 2012). Thus, the methodological stance posits which principles are used in acquiring the epistemological and ontological stances (Gelo et al., 2008; Guba, 1990). Though many research paradigms exist, two of the most dominant

research paradigms utilised by researchers are of the positivism perspective and the interpretivism perspective (Teddle & Tashakkori, 2009).

5.1.1. Positivism

The positivist paradigm is associated with scientific methodology and posits that natural phenomena can be viewed with a degree of predictability and can thus be objectively examined to ascertain causality (Creswell, 2014). Accordingly, positivism is rooted in the realist ontological approach and views reality as a single entity that consists of a series of predictable laws (Guba, 1990). Hence, as phenomena are perceived to be predictable, positivism further adopts an objectivist epistemological approach as it is considered that reality can be measured and verified consistently (Blaikie & Priest, 2017). Given the prerequisite of obtaining reliable measures for exploring social phenomena, positivist paradigms typically utilise quantitative research methodologies (Blaikie & Priest, 2017).

Quantitative research methodologies place emphasis on numerical data with the concept of controlling the research variables to determine causality (Bryman, 2012). In principle, quantitative approaches fashion objective outcomes that are replicable by other researchers and when utilised across populations, as well as enabling the possibility of predicting future phenomena within comparable circumstances (Lakshman, Sinha, Biswas, Charles & Arora, 2000). Thus, quantitative methodologies exercise strong internal and external validity via the generalisability of findings across samples, populations and settings, and the inferences of cause and effect relationships between a sample with the population (Gelo et al, 2008).

However, some limitations do transpire. For instance, questionnaires and surveys that are devised, tested and retested to ensure validity, are still vulnerable to participant effects such as the participant's reluctance to provide truthful responses in fear of a perceived negative image, or as a misunderstanding of the research questions (Lakshman et al., 2000). In addition, quantitative methodologies fail to fully explicate all undefinable and uncontrollable phenomena (Lakshman et al., 2000). Nevertheless, quantitative research

methodologies have dominated the social sciences due to the ability to analyse large data of phenomena in a valid, replicable, and generalisable manner (Gelo et al., 2008).

5.1.2. Interpretivism

In contrast to the positivist paradigm, the interpretivism paradigm is rooted by the idealistic ontological approach wherein the belief of the world is considered to be socially structured and thus multiple reality entities exist (Blaikie & Priest, 2017). Accordingly, the interpretivism paradigm adopts a subjectivist epistemological approach wherein the emphasis of research surrounds the realities of individuals and thus can only be explored subjectively (Guba, 1990). Given this concept for acquiring knowledge of the phenomenon via socially constructed standpoints, interpretivism paradigms utilise qualitative research methodologies (Blaikie & Priest, 2017).

Qualitative research methodologies place emphasis on socially constructed phenomena such as motivations, beliefs and actions and typically utilise methods that include open-ended interviews, focus groups or observations (Gelo et al., 2008; Lakshman et al., 2000). Thus, qualitative methodologies collect and explore data in non-numerical formats with the aim of exploring and understanding phenomena via the perspective of those who are being researched (Bryman, 2012). The strengths of qualitative methodologies arise in the ability to explore uncontrollable and situational behaviours and actions to not ascertain causality and predictability but to understand the situational context (Lakshman et al., 2000). In addition, the exploration of naturalistic events and situations allows an inductive approach to be taken wherein the results of the research drive the theoretical development in contrast to the deductive approach taken by positivist paradigms (Gelo et al., 2008; Teddlie & Tashakkori, 2009).

However, qualitative research methodologies have been heavily criticised due to the limitations surrounding replicability and generalisability (Gelo et al., 2008). Nonetheless, it is important to note that as qualitative methodologies explore phenomena via the perspective of those being researched, questions arise for the appropriateness of replicability and generalisability of qualitative findings (Gavin, 2008). For instance, a

phenomenon experienced by one individual may not hold true to the experience of another individual for the same phenomenon. Thus, although the findings are not generalisable to the population, they remain valid to the individual who was researched and therefore remains valid in this respect. Nevertheless, due to the criticism relating to the inability to produce strongly generalisable and replicable findings, qualitative methodologies receive much less attention within social sciences than quantitative methodologies (Berg, 2009).

5.1.3. Answering the Research Objectives

The overall aim of the thesis is to explore the effectiveness of missing children publicity appeals on recall accuracy. The secondary research aim is to explore the underlying motives behind contacting or not contacting the police in relation to a possible sighting of a missing child. There are two possibilities for answering this aim that would require different methodological approaches.

The first option available would be to collect statistical data on the types and quantities of public appeals of missing children that were presented by the public and associating the individual appeals with the number of positive and negative identification matches made by the public. This could then be developed further to explore what type of information is presented to the police by the member of public reporting the missing child, and what the underlying motivations were for contacting the police. This approach would thus require a mixed-methods approach that entails both a positivistic and objective outlook and an interpretivist and subjective approach. However, as it is near impossible to ascertain the number of positive and negative identification calls made to the police per missing child appeal without having full access to the appeal and caller data, this approach was considered to be unfeasible.

The second option available to explore the effectiveness of missing children publicity appeals would be to explore the likelihood of an individual making a positive or negative identification of a missing child and investigating the underlying motives for why they believe that they would, or would not, contact the police. This option is, therefore, a much more feasible option to undertake to explore the effectiveness of appeals as data can be

collected and analysed to ascertain which aspects of an appeal, if any, may improve or reduce recall accuracy and recall error. Information can also be collected on not just why an individual may contact the police and what details they will include, but also why they would not contact the police. This would not be possible with option one as appeals can be observed by thousands of people which makes it extremely difficult and unethical to ascertain which members of the public had seen the appeal, approach these individuals, determine which individuals had seen an appeal and the missing child, and enquire why they did not contact the police. Thus, option two was chosen for the thesis.

Accordingly, the research will adopt a positivistic paradigm as the recall accuracy of participants, the dependant variable, can be explored by manipulating the different independent variables. This approach will allow the data to be objectively examined with a view to establishing causality between the relationships of the dependant variable and the independent variables (Bryman, 2012; Creswell, 2014). This approach would, therefore, allow the research findings to be potentially replicated by other researchers across other samples, cultures and time periods to ascertain its validity and generalisability (Gelo et al., 2008; Lakshman et al., 2000). The research also aims to discover some of the motivational factors behind why some individuals may contact the police with information about a missing child and others may not. To achieve this aim, the research also incorporates a short qualitative methodological aspect to explore the motivations of the participants from their own perspectives. This data will be analysed via thematic analysis methods to provide support to the research findings and will be discussed further within the present research method section.

5.2. Original Research Project and Transition

The original research project was to undertake a mixed methods approach of acquiring both quantitative and qualitative data of previously missing persons. Individuals within the United Kingdom who had previously gone missing would be presented with an online questionnaire to explore their experiences associated with going and being missing.

These responses would be open-ended and thus follow the interpretivist paradigm and methodology. The participants would also be presented with a personality inventory that analysed their personalities based on the International Personality Item Pool [IPIP] NEO-PI-R short scale (Goldberg et al., 2006), and a decision-making styles inventory based on the General Decision-Making Style inventory (Scott & Bruce, 1995).

The rationale for this approach was based upon the limited research available within the missing persons literature that fully explores the missing persons phenomenon via the missing persons' experiences directly as opposed to the more common approach of utilising missing persons police data. Personality is a concept of consistent behaviours across the lifetime which is strongly associated with differences between individual behaviour, thoughts and feelings (Dewberry, Juanchich & Narendran, 2013; Réale, Reader, Sol, Mcdougall & Dingermanse, 2007). For instance, different personality traits have been found to be associated with the likelihood of increased risky behaviours and risk taking (Soane, Dewberry & Narendran, 2010), as well as antisocial behaviours (Jones, Miller & Lynam, 2012; Miller & Lynam, 2001). Thus, it was hypothesised that the underlying personality traits of an individual will influence their subsequent behaviour and can therefore expand our knowledge of missing persons via likely actions undertaken by individuals during their missing period. These findings would then have been compared to individuals from the general public who have not previously gone missing to ascertain similarities and differences between behavioural responses when faced with potential triggers for going missing and decisions made whilst being missing.

The ethical application for this project was accepted at the beginning of 2017 with the data collection period for the project starting shortly after this acceptance. Unfortunately, acquiring participants who had previously gone missing to take part in the research grew problematic despite attempting to recruit participants via numerous charities, shelters, social media sites, forums, and on foot in small and large city centres. From the handful of previously missing participants that did take part within the research, the majority of the responses to the experiences of being missing and the motivations for going missing were minimal and were therefore not appropriate to apply the intended qualitative

research methodologies for analysis. The decision was therefore made to change the direction of this research project as over half of the time allocated to complete the PhD research had passed and the potential routes available to gain new participants who had previously gone missing were quickly diminishing.

Although it was unfortunate in relation to the lost opportunity of acquiring difficult to access data and participants, the setback was not a major issue as the current research of exploring the effectiveness of media appeals was already being considered from the start of the PhD project. In addition to contingency planning during the personality-focused research in the event of finding it difficult to acquire the sample sought, only a minimal amount of time was lost in the transition from personality-focused to media-focused differences of missing persons. The researcher does intend to continue researching individual differences of missing and non-missing persons in the future if this current thesis finds success and a suitable route is found to accessing a sample of individuals who have previously gone missing.

5.3. The Present Research Project

The current research project aims to explore the effectiveness of missing children publicity appeals on recall accuracy. The research also aims to ascertain some of the underlying motivations held by members of the public for contacting or not contacting the police in relation to information held over a possible sighting of a missing child. To achieve these aims, the current research utilises three quantitative, between-within subjects designs, to investigate the effectiveness of descriptions, photographs, and format types, of missing children appeals on the recall accuracy and recall errors of the general public. The three studies utilise a mixture of close-ended responses and open-ended free-recall questioning to examine the recall accuracy and error rates.

The rationale behind this project is that the media plays a prominent role in assisting the police with their investigations by presenting missing children appeals to a wider audience whom may hold information on the whereabouts of the missing child (Fyfe et al.,

2014; Min & Feaster, 2010; Taylor et al., 2013). However, exploring the effectiveness of these appeals is near non-existent with only a handful of researchers beginning to investigate this much-needed area (Lampinen, Miller & Dehon, 2012; Lampinen & Moore, 2016; Lampinen & Sweeney, 2014; Shalev-Greene and Reddin, 2015; Sweeney & Lampinen, 2012). Thus, due to the importance of public appeals in locating missing children, it is vital that additional research fully explores how effective these appeals really are, what factors increase and decrease the effectiveness of the appeals, and what may influence the public to contacting or not contacting the police with information surrounding a suspected located missing child. A detailed explanation of the methods utilised within the three research studies is provided in the subsequent section.

5.3.1. Pilot Study Constraints

Pilot studies are an important feature when designing experimental studies as they allow the researcher to preliminarily test measures and procedures utilised in the study to identify any potential limitations or errors that may need addressing. These errors or limitations can then be amended prior to beginning the experimental study so that they do not impact on the studies required to be analysed. Despite the benefits and importance surrounding pilot studies, the current research project was unable to perform any pilot studies for the three studies that will be presented and discussed subsequently.

As mentioned, the present project was not the original project designed which was to undertake a mixed methods approach of acquiring both quantitative and qualitative data of previously missing persons. Due to the difficulty in acquiring participants, the study had to change direction resulting in a loss of time available to complete the current project. This directional change and the limited time available therefore impacted significantly on the inability to perform pilot studies as this would have led to the potential non-competition of the current studies. Whilst pilot studies may have helped to reduce some of the methodological limitations discussed subsequently, it was considered that the non-use of pilot studies did not have a significant impact on the overall outcome for the three experimental studies within the present thesis.

5.4. Research Method

To address the research aims, all three online experimental surveys were completed by members of the general public. The research sought to recruit both male and female individuals from a diverse sample of background ethnicities, occupations, and ages, who were 16 years of age or older. An online experimental study was utilised for the three experiments due to the advantages it has over alternative offline methods such as individual interviews. For instance, the use of an online study allows the research to reach significantly larger and more diverse participants than offline methods that will be restricted to participants local to the research area and would thus result in an unrepresentative sample and unable to fulfil the recruit aims of the research (Buchanan, Johnson & Goldberg, 2005; Gosling, Vazire, Srivastava & John, 2004). Additionally, online methods allow the collection of participant responses to be recorded more efficiently and in a shorter time than offline methods that may be open to additional errors when transcribing the data (Buchanan et al., 2005; Gosling et al., 2004). Thus, it was deemed more appropriate and effective to utilise an online research study design to acquire a more representable sample and to fulfil the research recruit aims.

To address the secondary aim, participants were provided with a small number of open-ended questions during the follow-up experimental surveys. The open-ended questions were used to explore some of the motivations for contacting the police and what details the participant would provide, or the reasons behind not contacting the police when the participant indicated that they believe they may have information on a missing child that they have located. The use of open-ended questioning has numerous benefits for eliciting information on the motivations for contacting or not contacting the police when compared to close-ended questions. Open-ended questioning has been shown to not only extract highly detailed responses from participants (Lamb & Fauchier, 2001), but has also shown to increase the accuracy of the participants' recalled accounts of witnessed events (Hutcheson, Baxter, Telfer & Warden, 1995). This is primarily due to the freedom and

flexibility for the participant to report what they want to report and in a manner of how they would like to report it. Thus, the open-ended questioning was deemed to be more appropriate than close-ended questions for exploring individual motivations and beliefs.

All three online experimental studies were accomplished via the Qualtrics software which is an online research tool that allows the use of powerful data collection and statistical analysis measures to transpire (Qualtrics, 2018). In addition, the Qualtrics software does not require participants to download or install any computer or web-based programs to access the Qualtrics software and take part in the studies (Qualtrics, 2018).

5.4.1. Sampling Procedure

The samples for each of the three online experimental studies were recruited via opportunistic and snowball sampling methods. Opportunistic sampling is a recruitment technique that recruits participants from a population based on who is available and willing to take part in the research at that moment in time (Stuart-Hamilton, 2007). Similarly, snowball sampling is the process wherein a participant is asked to recruit other potential participants based on the individuals that they know (Stuart-Hamilton, 2007).

Thus, to recruit participants for all three research studies, details of the experiments were placed online via the researcher's social media sites such as *Twitter* and *Facebook* to request individuals to voluntarily take part in the research. The experimental details also requested members of the public to 're-post' and 're-tweet' the details to their own social media followings to try to recruit other participants who may not have originally seen the initial experimental posts. Details of the research studies were also posted on the social media accounts of the charities *Action Against Abduction*, *Missing People*, and *Missing Wales*. In addition, participants were also recruited via the university's experimental research participation system that allows all university students to observe the research study and request to take part. If participants were recruited via the university participation system, they received 0.5 credits for taking part in the research.

Any individual who observed one of the three research studies' recruitment posts and wished to take part, were randomly assigned to one of the conditions within that

research study to minimise any potential bias that may arise from the opportunistic and snowball sampling methods. These conditions will be discussed in more detail subsequently within the relevant study's procedures. However, it is important to note that due to the online and anonymous design of the studies, it was not possible to restrict participant access to these studies. As a result, some of the research participants may have taken part in more than one research study. With the target missing child identical across each of the experimental studies and within their experimental conditions, this could have the potential to bias aspects of the results. If a participant had observed the same target image on two or more occasions, this could have helped the individual to acquire additional details of the child which would have subsequently helped to improve their overall recall and identification accuracies.

5.4.1.1. Study 1: Length and Type of Content of Descriptions

Study one sought to achieve the following research objectives. First, to explore if the length of the description affects recall accuracy and recall errors immediately after observation and after a three-day time duration. Second, to investigate if the content within the descriptions used in missing children publicity appeals affects recall accuracy and recall errors immediately after observation and after a three-day time duration. Finally, to explore the motivations behind both reporting a possible missing child sighting to the police and the reasons for not reporting a possible missing child sighting to the police.

5.4.1.1.1. Sample

To determine an appropriate sample size for the experiment, a power analysis via GPower3 (Faul, Erdfelder, Lang & Buchner, 2007) was performed. An a priori power analysis of a medium effect size ($f = 0.25$) and $\alpha = 0.05$, specified a minimum sample of size of 76 was required to achieve a power of .95 within four groups and two measurements. Thus, the research sought to recruit a minimum of 80 participants for the experiment.

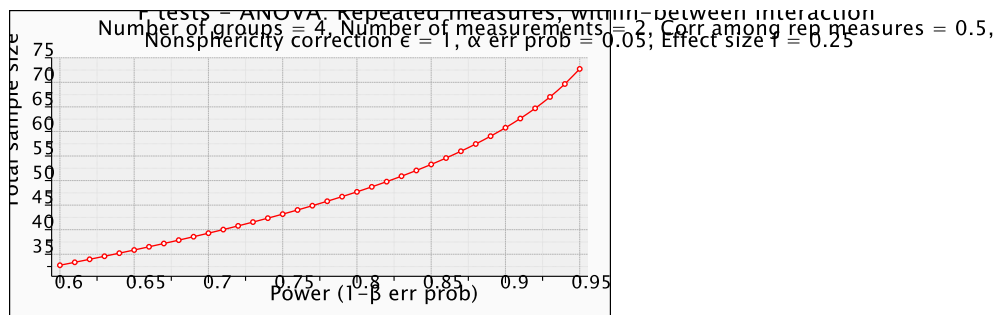


Figure 5.1. Power analysis as a function of estimating sample size

The sample consisted of 294 participants, although 71 participants had to be removed from the sample due to incomplete or inaccurate data provided. For instance, many of the participants removed misread the free recall task and incorrectly provided the words that they had recalled from the distraction task, as opposed to the information relating to the missing children. Thus, the final sample size was 223 participants comprising of 195 females (87.40%), 26 males (11.70%), and 2 (0.90%) participants reporting their gender as other. The sample had an average age of 24.42 years ($SD = 10.16$). In relation to ethnicity, 153 (68.60%) reported white British ethnic backgrounds, followed by Asian ($n = 31$; 13.90%); black ($n = 12$; 5.40%); white other ($n = 12$; 5.40%); Chinese, Japanese or Southern Asian ($n = 3$; 1.30%); and middle eastern ($n = 3$; 1.30%). A total of 9 (4.00%) reported other background ethnicity. The education level, employment status and marital status of participants are presented in table 5.1.

Table 5.1.

Demographic factors of participants within the description experiment.

Demographic Variable	<i>n</i>	%
Education		
Primary	1	0.40
Secondary	5	2.20
College/Sixth Form	156	70.00
Trade, Technical or Vocational	11	4.90
Associate Degree	6	2.70
Bachelors Degree	29	13.00
Masters Degree	10	4.50
Doctorate Degree	3	1.30
Other	2	0.90
Employment Status		
Full Time	21	9.40
Part Time	62	27.90
Unemployed	5	2.20
Retired	4	1.80
Student	168	75.30
Unable	3	1.30
Other	3	1.30
Marital Status		
Single	194	87.00
Married	22	9.90
Divorced	1	0.40
Other	6	2.70

Note. The cumulative percentages may be above 100% due to participants having the option to select more than one response

5.4.1.1.2. Initial Study Procedure

Participants were presented with an information sheet prior to starting the experiment. The information sheet detailed the study's research purpose, ethical guidelines that were followed, information on the data collected from the study, and contact details of the researcher and the researcher's supervisors. The contact details were provided to allow participants to contact the researcher or the researcher's supervisors should there be any queries prior to taking part in the research, or upon completion. Participants were then presented with an informed consent segment that requested participants to read through a small number of bullet-point statements to reiterate the information within the research information sheet and to confirm that the participants have read and fully understood this information.

Once participants had provided their consent to take part within the research, a message was displayed that informed the participants that they "will be shown a mock

missing child description that is frequently used within national missing children publicity campaigns". Participants were informed to "simply observe the description" and that they were "free to spend as much or as little time observing the descriptions". The message displayed to the participants also contained a warning notice that reminded participants that the description they will observe is fictional and thus should not contact any law enforcement agency in relation to any of the information contained within the study. Participants were then randomly assigned by the Qualtrics software into one of four experimental conditions: short argument; short abduction; long argument; long abduction.

The first description experimental condition, short argument, presented participants with a brief description of a missing child who was believed to have gone missing due to a family argument. The second description experimental condition, short abduction, also consisted of a brief description of a missing child but who was this time believed to have gone missing due to getting into a car of an unknown male. The third experimental condition, long argument, was near-identical to the first experimental condition but was longer in length and included additional details of the missing child and the circumstances for going missing. The final description experimental condition, long abduction, was near-identical to the second experimental condition but was longer in length and had included additional details of the missing child, the suspected unknown male, and the circumstances surround the missing child.

All four description experimental conditions were based upon the same missing child to allow comparisons between the descriptions during analysis. All four of the description experimental conditions included the same information relating to the missing child's name, age, hair and eye colour, clothing worn when last seen, and the time and date of going missing. The four experimental conditions also included the same identical message of contacting the local neighbourhood policing team if there were any information about the missing child. Thus, the experimental conditions three and four included additional information that related to the missing child's ethnicity, the details surrounding the missing event such as details of the unknown male's car, and information on the unknown male's appearance and clothing. Moreover, each of the four description experimental conditions

was timed in the background to ascertain the length of time each participant had spent observing the description. The timing was hidden from participant view.

Once the participants had completed their experimental condition, all four conditions were presented with the same task information sheet pertaining to the next part of the research study. This task was designed to prevent participants from rehearsing the information that they had just observed. All of the participants were informed that they would be presented with "5 different lists containing ten words each, totalling 50 randomised words". The participants were requested to "try and remember as many words presented as possible as you will be tested on this".

The distraction task consisted of 50 randomised single words that were displayed in five 2x5 tables for 20 seconds each. Thus, participants observed ten randomised words every 20 seconds, totalling 50 words in 100 seconds. Participants were unable to go back to a previous segment of the experiment or onwards to the next segment during this task. A timer was displayed at the bottom of each of the five pages that counted backwards from 20 to zero. The inclusion of the visible timer to participants served two purposes. The first purpose was to make participants aware that the page is still active and not 'frozen' to reduce the likelihood of refreshing their browser and thus resulting in the loss of data and withdrawal from the study. The second purpose was simply to allow participants to observe how much time they have remaining on this page.

After completing the distraction task, participants were requested to input as many details as possible from the description of the missing child that was presented earlier to them at the start of the study. Participants were also requested to rate their level of confidence for their recalled information on a scale that ranged from 0% confident to 100% confident. The designs and the content enclosed within the four experimental descriptions were created based upon real-case examples featured in the media (appendix 11 and appendix 12).

The primary target information used to describe the missing child within the four experimental conditions was chosen as research findings suggest that young white females are presented in the media significantly more often than non-white individuals and males

(Minn & Feaster, 2010; Sommers, 2017; Taylor et al., 2013). In addition, the family argument or abduction underlying reasons behind why the child had gone missing were chosen due to research suggesting that family problems are one of the most common reasons for why young people go missing (Biehal et al., 2003; Hill et al., 2016; Rees, 2011), and that abductions are deemed to contain newsworthy values (Lundman, 2003; Peelo et al., 2004).

Following the free-recall task, participants were presented with a quick demographic survey that requested some background information. Demographics requested included the participants' age, ethnicity, gender, the highest level of education completed, employment status, and marital status. Finally, participants were informed of a quick follow-up task that would take approximately 2-3 minutes of their time to complete and would be supplied in three days after completing the study. If participants were happy to consider taking part in the follow-up task they were requested to leave an email address that the follow-up task could be sent to.

The study then concluded with a full debrief that informed the participants what the research was about, what they had done during the experiment, why it was important that this was completed, information on the distraction task to prevent rehearsal of information, and to thank them for their participation. The debrief page also presented the same contact details of the researcher and the researcher's supervisors that was displayed on the information sheet at the start of the experiment, should any participant have any queries in relation to the study.

5.4.1.1.3. Follow-up Study Procedure

Participants who were happy to consider taking part in the follow-up experiment were sent a personalised web link via email to the email address that was provided by the participant. This follow-up experiment was sent to the participant exactly three days after completing the initial experiment. All individualised emails were generic in content that detailed why the participant was receiving the email, how long the follow-up task would

take to complete and to thank them again for taking part in the research. Each participant, however, received their own individualised weblink to access the follow-up experiment.

The use of personalised weblinks and emails served two valuable purposes. First, the completed follow-up experimental data would allow the initial experimental data from the same participant to be matched to the follow-up experiment. The second purpose was to minimise the drop-out rate as online research has a higher drop-out rate than laboratory experiments that further increases after a delay (Birnbaum, 2004; Hoerger, 2010). Thus, the personalised emails decrease the likelihood of participant dropout compared to generic messages (Göritz, 2006). Any participants who had failed to complete their follow-up study on time and had submitted their response after the three-day period resulted in their data being withdrawn from the study. This was to ensure validity in the data responses and to prevent the potential for time-related and memory-related biases during the analysis.

Prior to beginning the follow-up experiment, participants were presented with a short information notice that repeated why they were receiving the study. Participants were then requested to write down in as much detail as possible, all the information that was contained within the description of the missing child that was presented to them three days prior at the start of the initial experiment. Participants were also requested to rate their level of confidence for their recalled information of the description on a scale that ranged from 0% confident to 100% confident. Finally, participants were asked: "if the description presented to you was real and you believed that you may have recognised the missing child, would you believe that you would contact the police to confirm your sighting of the missing child?".

If participants responded to the "yes" option, they were directed to a secondary question that asked the participant "why do you believe that you would call the police and what information would you provide?". These options were open-ended. In contrast, participants who had responded to the "no" option, they were directed to a secondary question that asked the participants: "why do you believe that this is the case?". This option was also open-ended. Upon completion of the recall task, participants were presented with a

final debrief page that thanked them again for their continued participation in the experiment and detailed the reason for repeating the free-recall task.

5.4.1.2 Data Analysis

Data derived from the online experiments were coded into IBM's Statistical Package for the Social Sciences [SPSS] version 24 or NVivo Pro version 11. SPSS is an accessible software tool that allows advanced statistical analysis of data to be completed (IBM, n.d.), and was therefore deemed to be the most appropriate statistical software tool to use for the research. NVivo Pro 11 is an advanced data management software tool used frequently with qualitative data that allows data extraction and coding (QSRInternational, n.d.). Data that were available for analysis were comprised of the following variables and subjected to the following analysis.

5.4.1.2.1. Dependant Variables

The two quantitative dependant variables comprised of recall accuracy and recall error. Recall accuracy consists of the sum of all correct description variables that were 'present' during the participants' free-recall task, divided by the maximum number of potential correct responses and multiplied by 100 to derive a recall accuracy percentage. Similarly, recall error consists of the sum of all incorrect description variables that were 'present' during the participants' free-recall task, divided by the maximum number of potential incorrect responses and multiplied by 100 to derive the recall error percentage. The target words within the long abduction description (participant condition four) are demonstrated in figure 5.2.

Fears Grow for Missing 13-Year-Old Schoolgirl

The family of a missing 13 year old schoolgirl are desperate to find her after she disappeared following an argument with her parents about a new boyfriend.

Abigail Walters had gone missing at around 5pm on Tuesday evening after storming out of the family home. She was last seen heading towards the bus stop located two miles away from her home.

Abigail was last seen wearing a red fashion scarf, plain white t-shirt, blue jeans and white Nike trainers. She is described as white, 5ft 1in tall, of slim build, with long blond hair and green eyes. She usually goes by the name Abby.

A spokesman for the police said that they were highly concerned for her welfare and hope to find her soon. She has now been missing for 7 hours.

Any information should be reported to your local neighbouring policing team.

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Any information should be reported to your local neighbouring policing team.

Figure 5.2. Long missing child abduction description and target words

An error was defined as an attempt to provide a description variable that was incorrect, not the absence of a variable. For instance, if a participant had declared during the free-recall task that the missing girl in the description was aged 14 when in fact the missing girl was described in the description as being aged 13, this would count as a 'presence' in the error variable for age.

The research also comprises of one qualitative dependant variable that consists of the participants' motivations for contacting or not contacting the police in relation to holding information about a potential missing child. This data was analysed via thematic analysis which is a qualitative research method that analyses written and verbal communications to identify patterns (themes) and is widely used in psychology amongst other disciplines (Braun & Clarke, 2006; Elo & Kyngäs, 2008; Kloess et al., 2017). Despite some of the criticisms put forward for this analytical approach in relation to the simplistic and potentially subjective nature (Morgan, 1993), thematic analysis was deemed to be most appropriate for the analysis of the data as it allows inferences to be made from textual data.

To maintain a rigorous analysis of the data, the researcher initially read through all of the participants' responses in detail to be fully immersed with the entire data set as suggested by Braun and Clarke's (2006) approach. These extracts were read through three times to ensure accuracy in the initial analytic interests that were being found during the

initial read-through. The participant responses were then individually formatted via Microsoft Word and imported into NVivo Pro 11 to create a database of the extractions ready for coding. Each participant response was then differentiated into those who believed that they would contact the police and those who believe they would not contact the police. Within these two groupings, the participant responses were read individually in a line-by-line manner to generate an initial list of codes that reflect the data appropriately. The coding phase identified individual words or small groupings of words that captured a meaningful insight into the phenomenon of whether an individual would or would not contact the police. This coding process was performed three times in total in an inductive and data-driven manner to ensure all codes found during the analysis maintained their accuracy in reflecting the data.

Once the data coding phase was complete, the full set of codes identified were analysed further to identify thematically similar representations of the data. Codes that shared identical meanings were grouped together which started to develop over-arching themes which reflected the data and highlighted the differences in motivations behind contacting or not contacting the police. After the thematic development phase was complete, the themes identified were analysed again in a two-step process to ensure accuracy and validity. The first step involved reviewing the individual codes to consider whether they create a consistent reflection of the theme identified or whether there were some inconsistencies and needed to be reanalysed. The second step involved reviewing the entire data set to consider the validity of the individual themes. The themes identified were reviewed to consider whether they accurately reflected the participant responses to give a meaningful insight into the phenomenon of contacting or not contacting the police or whether themes were required to be re-analysed.

Following the confirmation in the second step in the post-thematic development phase that the themes are reflective of the data, the naming and defining of themes could commence. The themes identified were reviewed to determine what each theme implies about the data for why participants would or would not contact the police. Each theme was then appropriately named to reflect these underlying motivations held by members of the

public for their consideration in contacting or not contacting the police. Once named, the themes were then defined through a descriptive overview of what each of the individual themes involve and how these are reflected from within the data. Following this initial definition development stage, the themes and definitions were reviewed one final time with the full data to confirm that they do reflect the data accurately and that the themes help to provide an insight into the underlying motivations held by members of the public for why they would or would not contact the police to report a missing child.

5.4.1.2.2. Independent Variables

The independent variables consisted of the following. The type of description condition was categorical with four levels: short argument; short abduction; long argument; and long abduction. Each participant data also provided a time length recorded at the ratio level in seconds that was spent observing the description, as described in subsection 5.4.1.1.2. Recall confidence was coded twice at the interval level and ranged from 0 to 100 for both the initial recall confidence and the follow-up recall confidence. All demographic data were coded dichotomously as present (1) or not present (0), excluding age that was coded in years.

5.4.1.2.3. Choice of Statistical Analysis

Data were subjected to a variety of descriptive and inferential tests that includes one-way between groups ANOVA, Spearman's Rho correlations, two-way factorial ANOVAs, Kruskal-Wallis analysis, and Pearson product-moment correlations. A one-way between groups ANOVA was performed to establish whether differences in recall accuracy scores exist between the four condition groups (short argument, short abduction, long argument, long abduction) within the two time periods (initial recall and follow-up recall). Similarly, a secondary one-way between groups ANOVA was performed to establish whether differences in recall error scores exist between the same four condition groups (short argument, short

abduction, long argument, long abduction) within the same two time periods (initial recall and follow-up recall).

The one-way between groups ANOVA were deemed most appropriate for the current data analysis to simultaneously examine group differences between the four condition groups. In addition, a post-hoc Turkey Honestly Significant Difference [HSD] test was performed to ascertain which condition groups and time periods were significant from one-another. The Turkey HSD test was chosen due to its utilisation of scores when levels are equal as well as its low error rates (Field, 2018). Pearson's product-moment and Spearman's rho correlations were also performed to establish the relationships between recall confidence and time duration per description, recall accuracy scores and recall confidence scores, and recall error scores and recall confidence scores.

5.4.2.1. Study 2: Frequency of Photographs

Study two sought to achieve the following research objectives. First, to explore if the number of photographs of missing children displayed affects the recall accuracy and recall errors immediately after observation and after a three-day time duration. Second, to investigate if the level of confidence in identification accuracy is associated with the overall recall accuracy and recall error. Finally, to discover some of the motivations behind reporting a possible missing child sighting to the police and the reasons for not reporting a possible missing child sighting to the police.

5.4.2.1.1. Sample

To determine an appropriate sample size for the experiment, a power analysis via GPower3 (Faul et al., 2007) was performed. An a priori power analysis of a medium effect size ($f = 0.00$) and $\alpha = 0.05$, specified a minimum sample size of 66 was required to achieve a power of .95 within the three groups and two measurements. Thus, the research sought to recruit a minimum of 70 participants for the experiment.

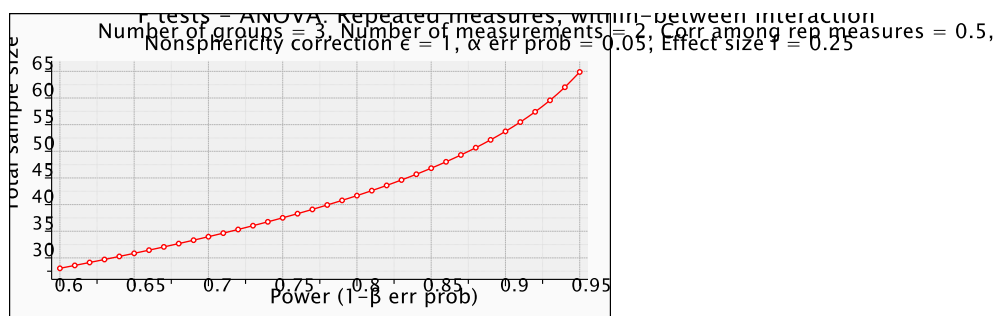


Figure 5.3. Power analysis as a function of estimating sample size

The sample consisted of 286 participants, although 44 participants had to be removed from the sample due to incomplete data provided. For instance, many of these participants had partially completed the required photograph line-up task which was necessary for the subsequent analysis. Thus, the final sample size was 242 participants comprising of 205 females (84.70%), 35 males (14.50%), and two (0.80%) participants reporting their gender as other. The sample had an average age of 23.32 years ($SD = 8.89$). In relation to ethnicity, 145 (59.90%) reported having a white British ethnic background, followed by Asian ($n = 51$; 21.10%), white other ($n = 16$; 6.60%), black ($n = 12$; 5.00%), middle eastern ($n = 5$; 2.10%), and Chinese, Japanese or Southern Asian ($n = 2$; 0.80%). A total of 10 participants (4.10%) reported other background ethnicity, and there was one (0.40%) ethnic background data missing. The education level, employment status and marital status of participants are presented below in table 5.2.

Table 5.2.

Demographic factors of participants within the photograph experiment.

Demographic Variable	<i>n</i>	%
Education		
No Schooling Completed	1	0.40
Primary	2	0.80
Secondary	5	2.10
College/Sixth Form	176	72.70
Trade, Technical or Vocational	11	4.50
Associate Degree	10	4.10
Bachelors Degree	29	12.00
Masters Degree	4	1.70
Doctorate Degree	3	1.20
Other	1	0.40
Employment Status		
Full Time	9	3.70
Part Time	84	34.70
Unemployed	8	3.30
Retired	3	1.20
Student	195	80.60
Unable	6	2.50
Other	2	0.80
Marital Status		
Single	215	88.80
Married	21	8.70
Divorced	1	0.40
Separated	1	0.40
Other	4	1.70

Note. The cumulative percentages may be above 100% due to participants having the option to select more than one response

5.4.2.1.2. Initial Study Procedure

Research participants were presented with an information sheet prior to taking part in the experiment. The information sheet presented was identical to the information sheet described previously for study 1 (see 4.4.2.2.). Thus, the research study's purpose, information on the data would be collected, ethical procedures followed, and contact details of the researcher and the researcher's supervisors were provided. Participants were then able to confirm or deny their consent for taking part in the research study via an informed consent segment that followed the information sheet. The informed consent segment presented participants with a small number of bullet-point statements that repeated some of the key information presented within information sheet to confirm that the participants

still wanted to participate in the study and that all information was read and understood entirely.

If participants gave their consent to taking part in the study, they were unknowingly randomly assigned to one of three conditions: 1-photograph; 4-photographs; 8-photographs. Participants within the 1-photograph experiment condition were presented with a short instruction that stated, "you will be shown a mock missing child photograph that is frequently used within national missing children publicity campaigns". This was followed by the secondary statement that the "mock missing child photograph will remain on the screen for 15 seconds before changing to the next task". The participants were presented with the mock missing child photograph for 15 seconds due to previous research that indicates individuals spend approximately 13 seconds observing a photograph (Lampinen et al., 2012).

In contrast, participants who were randomly assigned to the 4-photographs or 8-photographs experimental conditions were presented with the following short instruction: "you will be shown mock missing children photographs that are frequently used within national missing children publicity campaigns". The participants for both conditions were also informed that "there is no time limit on these photographs. You can spend as little or as much time as you would like per photograph". Participants were able to move on to the next photograph by pressing the '>>' button, although they were unable to go back to a previously seen photograph.

The rationale behind allowing the 4-photographs and 8-photographs experimental conditions to spend as little or as much time observing each mock missing child photograph arose for a variety of reasons. First, the 15 second time length set for participants within the 1-photograph condition can be used as a baseline to compare the average time spent per photograph when there is more than one photograph available to participants. Second, comparisons can be made between the length of time participants spent observing the photograph with the accuracy rate for identifying the missing child correctly, as well as the error rate for identifying a missing child incorrectly. Finally, participants can be analysed further to identify if there are associations between the length of time spent observing a

missing child photograph with the background characteristics of the missing child and of the participant.

Following the photograph task instructions, participants were presented with either one, four or eight photographs, as per their experimental condition. Participants who were randomly assigned to the 1-photograph condition were presented with a photograph of a young female child with a white ethnic background for 15 seconds. Participants who were randomly assigned to the 4-photographs condition were presented with the same photograph of the young female child with a white ethnic background presented to participants in the 1-photograph condition, in addition to a photograph of one young male child with a white ethnic background, one young female child with a non-white ethnic background, and one young male child with a non-white ethnic background. Participants who were randomly assigned within the 8-photographs condition were presented with the same four photographs that were presented to the participants in the 4-photographs condition, in addition to four extra photographs of one different young female child with a white ethnic background, one different young male child with a white ethnic background, one different young female child with a non-white ethnic background, and one different young male child with a non-white ethnic background. Each of these photographs in all conditions was displayed sequentially, one photograph at a time.

Once the participants had finished observing the mock missing children photographs, they were all presented with the same task information sheet that informed the participants of the next task of the research study. This task was designed as a distraction task to prevent participants from rehearsing the information presented in the photographs. This distraction task was identical to the distraction task described above in study 1 (see 4.4.2.2.). Thus, participants observed 10 randomised words in a 5x2 table for 20 seconds that totalled 50 words for 100 seconds.

Following the completion of the distraction task, all participants within all three experimental conditions were presented with the same line-up experiment albeit in a randomised order for each participant. The photograph line-up task consisted of a total of 29 photographs (see appendices) of children whereby eight of these were the target

photographs and an additional eight were foils. An example of a target, alternative, foil and non-foil photograph is shown in figure 5.4. The target photographs were either the identical image presented during the initial observation task or were of the same child but within a different photograph. This method was chosen to ascertain the participant's recall ability as previous research has shown that when participants are presented with a different image to one they had observed earlier, but still contained the same individual within the image, recall accuracy declines (Gier et al., 2012). In addition, a genuine missing child photograph within an appeal is also highly likely to differ from the child who is observed within a public environment, so it is of great significance that this effect is fully explored. Foil photographs are images of children presented to the participants who may hold similar characteristics, such as hair colour, to the target photograph.

The fairness of the photographs and the accuracy of the photographs used in the study were balanced in a critical manner. The target 1 photograph used in all three experimental conditions was chosen due to the research findings that suggest young white females are presented in the media significantly more often than non-white individuals and males (Minn & Feaster, 2010; Sommers, 2017; Taylor et al., 2013). The remaining three images used in the 4-photograph condition were therefore selected to counter-balance target 1 with a non-white female (Target 3), white male (Target 4), and non-white male (Target 2). The 8-photograph condition was identical to the 4-photograph condition albeit with two photographs per ethnicity and gender combinations.

Therefore, participants within the 1-photograph condition had one target photograph and 28 non-target photographs within the line-up task. Participants within the 4-photographs condition had four target photographs and 25 non-target photographs within the line-up task. Finally, participants within the 8-photographs condition had eight target photographs and 21-non-target photographs within the line-up task. All photographs within the line-up were identical for each condition group, albeit presented in a randomised and sequential order. The photographs were shown to participants sequentially as research suggests a greater accuracy in correct identifications via sequential line-ups than simultaneous line-ups (Lindsay & Wells, 1985). For each photograph in the line-up,

participants were asked to indicate if the child presented was one of the children presented to them earlier within the missing child photograph appeals displayed at the start of the experiment. Participants were also asked to indicate their level of confidence for their recognition on a scale of 0% confident to 100% confident.

Finally, upon completion of the line-up task, all research participants across all three conditions were presented with a quick demographic survey that is identical to the one described in study 1 (4.4.2.2.). Thus, participants were asked to indicate their age, ethnicity, gender, the highest level of education completed, employment status, and marital status. Participants were also similarly informed of a follow-up task that would take approximately 3-5 minutes to complete. If participants were happy to consider taking part in the follow-up task, they were requested to leave an email address so that the task could be sent to them after three days of completing this task. The study then concluded with a debrief page that informed participants of the full research rationale and aims, what they had done during the experiment, information relating to the use of the distraction task to prevent rehearsing and to thank them for participating in the study.

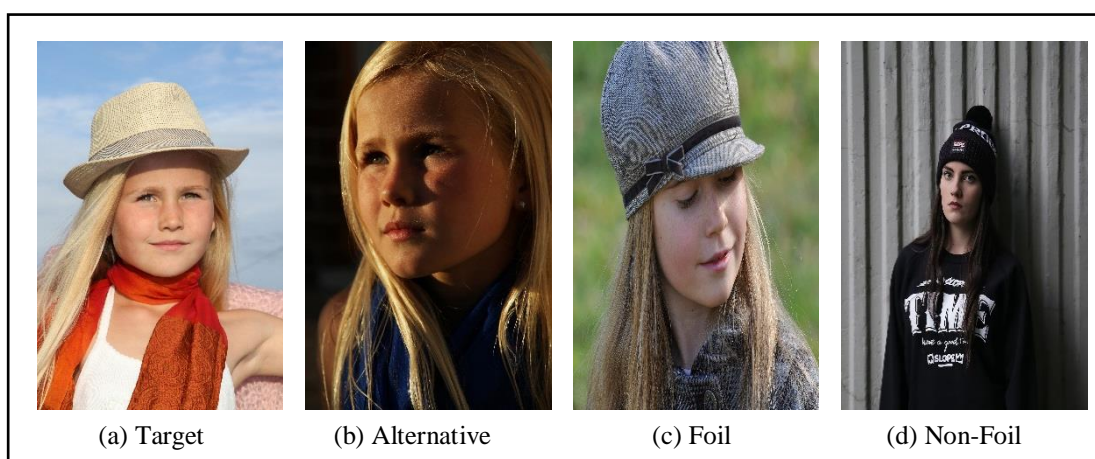


Figure 5.4. Example of target (a), alternative (b), foil (c) and non-foil (d) photographs used in line-up task

5.4.2.1.3. Follow-up Study Procedure

Any research participant who had indicated that they would be happy to consider taking part in a follow-up task was sent an individualised weblink via email. The follow-up

experiment was sent to participants after three days of completing the initial experiment. Similar to study 1 (4.4.2.3), the emails sent to the participants were generic in content that informed participants why they were receiving the email, how long the follow-up task would take to complete and to thank them for considering taking part. Each email sent to participants differed via the inclusion of personalised weblink that enabled the follow-up data to be matched to the initial experimental data for the same participant, and to minimise drop-out rates as described within study 1 (see 4.4.2.3.). Any participants who had failed to complete their follow-up study on time and had submitted their response after the three-day period resulted in their data being withdrawn from the study. This was to ensure validity in the data responses and to prevent the potential for time-related and memory-related biases during the analysis.

Participants were presented with a short information sheet prior to taking part in the follow-up task that reiterated why they were receiving the study and what they were required to do within the follow-up task. All participants were presented with the same line-up task as discussed in the initial experiment (4.4.3.2), albeit in a randomised order to one that they had initially observed. For each individual photograph, participants were asked to indicate if the child presented within the photograph was the same child within the initial missing child photograph appeal that had been observed at the start of the initial experiment, three days previously. Participants were also asked to indicate their level of confidence in their recognition from a scale of 0% confident to 100% confident.

If a participant had indicated that a photograph within the line-up was of the same child within the initial missing children photographs, they were asked if they "would contact the police to inform them of this child if you came across them?". Participants could respond to the question via a yes/no option that directed them to the next relevant question. If the participant indicated that they would contact the police, they were asked: "what sort of information would you provide to the police?". However, if the participant had indicated that they would not contact the police, they were asked: "what are some of the reasons behind why you have selected you would not contact the police when you believe that this child may have been in a missing child appeal?". The follow-up task then concluded with a debrief

page that detailed the rationale behind repeating the line-up task after a short time-delay period and to thank them for their continued participation.

5.4.2.2 Data Analysis

Similar to study 1, the data derived from the online experiments were also coded into IBM's SPSS version 24 and NVivo version 11.

5.4.2.2.1. Dependant Variables

The two quantitative dependant variables comprised of recall accuracy scores and recall error scores. Recall accuracy scores consists of the sum of all correct photograph identifications, divided by the maximum number of potential correct photograph identifications and multiplied by 100 to derive a recall accuracy percentage. Similarly, recall error scores consist of the sum of all incorrect photograph identifications made, divided by the maximum number of potential incorrect photograph identification responses and multiplied by 100 to derive the recall error percentage.

An error in this analysis was defined as the incorrect identification made by the participant on a child's photograph presented. For example, participants in the 1-photograph condition had just one target photograph and would thus have a 100% accuracy score if they correctly identified the child as previously missing and a 0% score if they failed to indicate that this child was missing. The remaining 28 photographs would thus count towards the recall error score if the participant incorrectly identifies one of these photographs as the missing child. In contrast, participants in the 4-photograph condition and the 8-photograph condition would need to correctly identify all four or eight targets respectively to acquire an accuracy score of 100%. Participants in the 4-photograph condition would thus have a maximum of 25 photographs in the error score whilst participants within the 8-photograph condition would have a maximum of 21 photographs in the error score.

The research also comprises of one qualitative dependant variable that consists of several sub-variables relating to the participants' motivations for contacting or not contacting the police. The sub-variables ranged from 0 to 29 as participants were only queried of their motivations for contacting or not contacting the police when they had indicated that they believed a photograph was of the same child that was shown to them in the initial missing children photograph appeals (See 4.4.3.3. for more detail). This data was also analysed via the same thematic analysis techniques as described in study 1 (4.4.2.4.1.).

5.4.2.2.2. Independent Variables

The independent variables consisted of the following. The number of photographs presented condition was categorical in nature with three levels: 1-photograph; 4-photographs; and 8-photographs. Each participant data also provided a time length recorded at the ratio level in seconds that was spent observing each individual target photograph. Recall confidence was coded from 0% to 100% once per photograph in the line-up task that totals 29 occurrences. The recall confidence scores were also repeated with the follow-up photograph line-up identification task. All demographic data were coded dichotomously as present (1) or not present (0), excluding age that was coded in years at the ratio level.

5.4.2.2.3. Choice of Statistical Analysis

Data were subjected to a variety of descriptive and inferential tests that includes one-way between groups ANOVAs, Spearman's Rho correlations, Kruskal-Wallis analyses, and binary logistic regression analyses. A Kruskal-Wallis analysis was performed to establish whether differences in recall accuracy scores exist between the three condition groups (1-photograph, 4-photographs and 8-photographs). Similarly, a secondary Kruskal-Wallis analysis was performed to establish whether differences in recall error scores exist between the same three condition groups (1-photograph, 4-photographs and 8-photographs).

The Kruskal-Wallis analyses were deemed to be most the most appropriate statistical test to simultaneously examine the group differences between the three photograph condition groups. Spearman's rho correlations were also performed to establish the relationships between the initial correct recall and level of confidence per photograph, the initial incorrect recall and level of confidence per photograph, the follow-up correct recall and level of confidence per photograph, and the follow-up incorrect recall and level of confidence per photograph.

5.4.3.1. Study 3: Type of Format Design

Study three sought to achieve the following research objectives. First, to explore if the format type of the missing children appeals affects the recall accuracy and recall errors immediately after observation and after a three-day time duration. Second, to investigate if the photograph or the content of the missing child appeal affects recall accuracy and recall errors immediately after observation and after a three-day time duration. Finally, to identify some of the motivations behind reporting a possible missing child sighting to the police and the reasons for not reporting a possible missing child sighting to the police.

5.4.3.1.1. Sample

Prior to initiating the study, a power analysis was performed via GPower3 (Faul et al., 2007) to determine an appropriate sample size for the experiment. An a priori power analysis of a large effect ($d = 0.80$) and $\alpha = 0.05$, specified that a sample size of 88 was required to achieve a power of .95 within two groups and two measurements. Thus, the research aimed to recruit a minimum of 100 participants.

The sample originally consisted of 243 participants, although 61 participants had to be removed from the sample due to inaccurate or partially completed data. For example, many of the participants that were removed had misread the free-recall task question that required participants to recall as much information as they could remember in relation to the missing child appeal they had observed. Instead, these participants had incorrectly recalled the words that were presented during the distraction task at the centre of the experiment. Therefore, the final sample size was 182 participants.

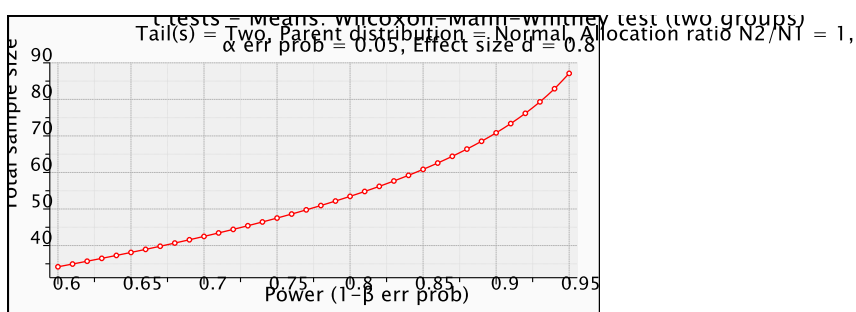


Figure 5.5. Power analysis as a function of estimating sample size

The sample demographics of the final 182 participant sample had a mean age of 25.72 ($SD = 11.61$) and comprised of 151 females (83.00%) and 31 males (17.00%). In relation to ethnicity, 111 (61.00%) reported having a white British ethnic background followed by Asian ($n = 34$, 18.70%), white other ($n = 15$, 8.20%), black ($n = 8$, 4.40%), middle eastern ($n = 8$, 4.40%), and Chinese, Japanese, or other Southern Asian ($n = 1$, 0.50%). There was a total of 8 participants (4.40%) who indicated that their ethnic background was other. The education levels, employment status and marital status of the sample are presented in table 5.3.

Table 5.3.

Demographic factors of participants within the format experiment.

Demographic Variable	<i>n</i>	%
Education		
Primary	1	0.50
Secondary	8	4.40
College/Sixth Form	117	64.30
Trade, Technical or Vocational	6	3.30
Associate Degree	6	3.30
Bachelors Degree	24	13.20
Masters Degree	14	7.70
Doctorate Degree	3	1.60
Other	3	1.60
Employment Status		
Full Time	24	13.20
Part Time	58	31.90
Unemployed	4	2.20
Retired	1	0.50
Student	124	68.10
Unable	3	1.60
Other	4	2.20
Marital Status		
Single	154	84.60
Married	18	9.90
Widowed	1	0.50
Divorced	1	0.50
Separated	1	0.50
Other	7	3.80

Note. The cumulative percentages may be above 100% due to participants having the option to select more than one response

5.4.3.1.2. Initial Study Procedure

Similar to studies 1 and 2, participants who participated within study 3 were presented with an information sheet that detailed the study's purpose, what would be required from the participants, ethical guidelines followed, data collection information, and contact details for the researcher and researcher's supervisors. Participants were also presented with the same informed consent sheet prior to starting the experiment that repeated the information sheet in short bullet-point phrases to confirm that the participant had read and fully understood this information. More information on the informed consent and information sheets can be seen in the study 1 method (4.4.2.2).

If participants gave their consent to participate in the study, a message was displayed that informed the participants that they would be shown a mock missing child

appeal that is frequently used by police and charities to alert the public of a missing child. Participants were told to “simply observe the appeal” and that they were able to spend “as much or as little time observing the appeal” as they wished. The message presented to the participants also contains a warning notice that reminded participants that these missing children appeals are just mock appeals and thus, any information related to these appeals are fictional. Participants were then randomly assigned to one of two experimental conditions: Child Rescue Alert or Twitter appeal.

Participants assigned to the Twitter appeal condition were presented with a mock twitter post from Greater Manchester Police. The tweet contained the following message: “can you help us find Abigail Walters from #Salford? Went missing due to argument and last seen getting in the car of unknown male”. The tweet also included an image of a young female child with a white ethnic background. This photograph was identical to one of the photographs used as a target photograph within study 2. In addition, the tweet had a time and date stamp of 10:56 am, 23rd July 2017, positioned underneath the photograph. In contrast, a participant who was assigned to the mock Child Rescue Alert was presented with a genuine replica of a Child Rescue Alert used within the UK. The Child Rescue Alert contained the same image of the young female child with a white ethnic background used within the Twitter appeal condition, which was placed on the left-hand side of the alert. The date and location last known was identical to the Twitter appeal condition, as were the missing child’s details such as her name and the reason for going missing. The Child Rescue Alert also provided details of the missing child’s eye colour, age, height, hair colour, and clothing the child was last seen wearing.

The target photograph used in the two experimental conditions were chosen as research findings suggest that young white females are presented in the media significantly more often than non-white individuals and males (Minn & Feaster, 2010; Sommers, 2017; Taylor et al., 2013). In addition, the designs were created based upon real-case examples of crime rescue alerts (appendix 13) and Twitter appeals (appendix 14) of missing children to aid validity and improve the realistic nature of the mock appeals.

Once the participants had finished observing their missing child appeal, all participants were presented with the same distraction task as described in study 1 (4.4.2.2.) and study 2 (4.4.3.2.). Thus, participants observed five pages of ten randomised words presented in a 5x2 table. Each page was displayed for 20 seconds and therefore totalled 100 seconds for 50 words. The participants were simply requested to "try and remember as many words presented as possible as you will be tested on this". Identical to studies 1 and 2, participants were unable to move onto the next page, or return to a previous page, during this task. A timer counting backwards from 20 to 0 was also included within each page that displayed ten words.

After completing this distraction task, participants were requested to try and write down as many of the details as possible that was presented to them during the mock missing child appeal at the start of the experiment. The participants were also requested to indicate their level of confidence in their recall accuracy by indicating their confidence on a scale from 0% confident to 100% confident. More information on the recall task and confidence rating can be seen under study 1's method (4.4.2.2.). Upon completion of the recall task, participants were presented with a quick demographic survey that requests some background characteristics. The background characteristics requested include the participant's age and ethnicity, gender, the highest level of education completed, employment status, and their marital status.

Finally, all participants were presented with a notice of the follow-up task that informed participants of the follow-up task and that it should take no longer than approximately 3-5 minutes of their time to complete. If participants were happy to consider taking part in the follow-up study, they were invited to leave an email address so that the follow-up study can be sent to them. This follow-up task would be sent to the participants three days upon completion of this initial study. The experimental study then concluded with a debrief page that informed the participants what the research was about, why it was important that the study was being completed, information relating to the use of the distraction task to prevent rehearsing the information in the mock children appeals and to thank them for their participation.

5.4.3.1.3. Follow-up Study Procedure

If participants had indicated within the initial study that they were happy to consider taking part in a follow-up study, they were sent a personalised web link via the email address that they provided. The follow-up experiment was sent to the participants three days after they had completed the initial experiment. Similar to studies 1 (4.4.2.3.) and 2 (4.4.3.3.), all emails sent to the participants were generic in content that explained why they were receiving the email, what they would need to do to complete the follow-up study, how long it would take to complete, and how to access the follow-up study. In addition to the generic email, all participants had received an individualised weblink to the follow-up study. This allowed the participants' follow-up data to be matched correctly to their initial experimental data. Any participants who had failed to complete their follow-up study on time and had submitted their response after the three-day period resulted in their data being withdrawn from the study. This was to ensure validity in the data responses and to prevent the potential for time-related and memory-related biases during the analysis.

Preceding the follow-up study, participants were presented with a short information sheet that repeated why they were receiving the study and what they were required to do to complete the task. Participants were then presented with the follow-up task whereby they were requested to write down as many details as possible relating to the mock missing child appeal that they had observed at the start of the initial experiment, three days earlier. Participants were also requested to indicate their level of confidence on the recall accuracy from a scale of 0% confident to 100% confident. Participants were finally asked to indicate if they would contact the police if "the description presented [to you] was real and you believe that you may have recognised the missing child".

If participants indicated that they would contact the police, they were directed to an appropriate secondary question that asked participants "why do you believe that you would call the police and what information would you provide?". However, if a participant had indicated that they would not contact the police, they were asked why they "believe that this may be the case?". Upon completion of the follow-up recall task, participants were

presented with a final debrief page that thanked them again for participating within the study, why the recall task was repeated, and what they follow-up task was aiming to achieve.

5.4.3.2 Data Analysis

Data derived from the online experiment was coded into IBM's SPSS version 24 and NVivo version 11. Data that were available for analysis were comprised of the following variables.

5.4.3.2.1. Dependant Variable

The two quantitative dependant variables comprised of recall accuracy scores and recall error scores. Recall accuracy scores consists of the sum of all correct format type variables that were 'present' during the participants' free-recall task, divided by the maximum number of potential correct responses and multiplied by 100 to derive a recall accuracy percentage score. Similarly, recall error scores consists of the sum of all incorrect format type variables that were 'present' during the participants' free-recall task, divided by the maximum number of potential incorrect responses and multiplied by 100 to derive the recall error percentage score.

Similar to study 1, an error was defined as the attempt to provide a format type variable that was incorrect, not the absence of a variable. For instance, if a participant declared during the free-recall task that the missing girl in the appeal had blue eyes when in fact the missing girl was described as having green eyes, this would count as a 'presence' in the error variable for eye colour.

The research also comprises of one qualitative dependant variable that consists of the participants' motivations for contacting or not contacting the police in relation to holding information about the potential missing child. Similar to studies 1 and 2, the data were analysed via the qualitative thematic analysis technique which can be found in more detail within sub-section 5.4.1.2.1.

5.4.3.2.2. Independent Variables

The independent variables of the research consisted of the following variables. The type of format type condition was categorical in nature with two levels: Child Rescue Alert; and Twitter. Each participant data also provided a time length recorded at the ratio level in seconds that was spent observing the type of format appeal. Recall confidence scores were coded twice, once at the interval level that ranged from 0 to 100 for the initial recall confidence and once at the interval level that ranged from 0 to 100 for the follow-up recall confidence. All demographic data were coded dichotomously as present (1) or not present (0), excluding age that was coded in years at the ratio level.

5.4.3.2.3. Choice of Statistical Analysis

Data were subjected to a variety of descriptive and inferential tests that includes Mann Whitney *U* tests and Spearman's rho correlations. A Mann Whitney *U* test was performed to establish whether differences in recall accuracy scores exist between the two format condition groups (Child Rescue Alert and Twitter). Similarly, a secondary Mann Whitney *U* test was performed to establish whether differences in recall error scores exist between the same two format condition groups (Child Rescue Alert and Twitter). A final Mann Whitney *U* test was performed to establish whether differences in recall confidence scores exist between the two format condition groups (Child Rescue Alert and Twitter).

The Mann Whitney *U* tests were deemed most appropriate to simultaneously examine the group differences between the two format type condition groups. Spearman's rho correlations were also performed to establish the relationships between the initial recall confidence and time duration per format type, the follow-up recall confidence and time duration per format type recall accuracy scores and recall confidence scores and recall error scores and recall confidence scores.

5.5. Ethical Considerations

It is imperative that research is performed in an ethical manner for both the researcher and the research participants whether human or non-human. The research studies presented within the thesis fully adhered to the code of ethics and conduct, as outlined by the British Psychological Society (2009), the code of human research ethics (BPS, 2014), and the University of Huddersfield's ethical guidelines. All research studies were reviewed and accepted by the University of Huddersfield's School Research Ethics Panel (SREP) prior to any data collection.

5.5.1. Participant Harm, Confidentiality and Anonymity

The BPS (2014) states that research should be considered "from the standpoint of the research participants... who may be potentially affected by the research" (p. 11). Thus, research studies need to consider the potential harm that may be endured by participants who participate in the research. Every effort was taken prior to research data collection stages to minimise all potential harm that may be endured. Participants were informed of the study prior to beginning the experiments and prior to each task within the studies. Participants were informed that they can withdraw from the experiments at any time without reason by closing their internet browser. In addition, contact information was provided to the participants to the charities Missing People and Samaritans should any participant wish to talk to someone in relation to either the experiments themselves or with a related matter.

In addition, participants were informed prior to, and throughout, the experiments that any data they provide during the online studies will be treated as confidential and will remain anonymous. The studies did not request any personalised information such as names, addresses or other identifiable data excluding email addresses. No single participant had provided confidential information, but if this were the case, this information would have been deleted or fully anonymised if required within the analysis. Email addresses provided were stored separately from the data collected from the experiments and kept securely

prior to being safely disposed of, as discussed below. Thus, no information received from any of the three experiments could be traced back to an individual participant

5.5.2. Informed Consent

As detailed within each research studies methodology, all participants were provided with an information sheet of the research study that detailed the study's aims, data collection information, and what the participant was required to do during the study. This was followed by a consent form that reiterated the information sheet in summarised bullet-points and allowed the participant to indicate that they had read all of the information, they understood what the information sheet detailed, and allowed the participant to agree or disagree to taking part in the study. In addition, the information sheet detailed the potential use of data for research purposes via conferences or journal publications as well as contact information should there be any questions prior, during, or upon completion of the study. No participant objected to the use of the data provided in being used for further publications. A full debrief of the study was also provided to the participants upon completion of the study

5.5.3. Safety of Researcher

In addition to participant safety, it is also important to consider the safety of the researcher during the research process. The University of Huddersfield's risk assessment and management form was completed to indicate potential risks to the researcher and how these can be minimised or prevented altogether. This includes both fieldwork and non-fieldwork throughout the research. The risk assessment and management form were submitted in addition to the ethical proposal that was submitted prior to beginning the research.

5.5.4. Data Storage

All data that were collected were stored in accordance with the Data Protection Act 1998 via a password protected storage drives on the University of Huddersfield's secure network. As detailed in the participant information sheets, debrief pages and ethical proposals, the researcher wished to collect participant email addresses for the sole purpose of a follow-up study which would be sent to the participant after three days of completing the initial study. Once the participants had completed the follow-up study, their email addresses were permanently and securely deleted. For participants who did not complete the follow-up study, the email addresses were also permanently and securely deleted after six days of being sent the follow-up study. Thus, there was a maximum of nine days whereby the researcher had stored participant email addresses. All data will be held for a maximum period of five years upon completion of the thesis. After this, all data will be securely and permanently deleted via the University of Huddersfield's internal and confidential disposal system.

5.6. Chapter Summary

This chapter has presented a detailed account of the methodology and methods that were used throughout the research studies to achieve the research aims, objectives and questions. Taking a positivistic approach, the three online experimental research studies aimed to explore the effectiveness of description, photographs, and format types that are used frequently in missing children publicity appeals. The chapter also provided an overview of the original research design and the ethical considerations that were taken to ensure no participant or researcher harm materialised.

Chapter 6: Effect of Length and Type of Content of Descriptions

The purpose of this study was to determine if there are significant differences in recall accuracy and recall error between the length and type of missing persons descriptions. The secondary purpose of the study was to determine if the participant's level of confidence is influenced by the type and length of the missing child description and how this associates with their level of recall accuracy or recall error. Finally, the research sought to explore the motivations behind why individuals may or may not contact the police.

The following chapter presents the results and subsequent discussion of the results of the experiment. The chapter will present descriptive statistics between the four condition groups (short argument, short abduction, long argument, long abduction) prior to inferential statistics in the form of one-way between groups ANOVAs, Kruskal-Wallis analysis, Spearman's Rho correlations, two-way factorial ANOVA, and Person product-moment correlations.

6.1. Descriptive Statistics of Experimental Conditions

As previously outlined in section 5.4.1.1., participants were randomly assigned to one of four experimental conditions (short argument, short abduction, long argument, long abduction). Of the final 223 participant responses analysed, 56 (25.10%) were assigned to the short argument condition, 55 (24.70%) were assigned to the short abduction condition, 55 (24.70%) were assigned to the long argument condition, and 57 (25.60%) were assigned to the long abduction condition.

6.1.1. Time

To determine if there was a significant difference between the four condition groups and the time spent observing the description of the missing child, a Kruskal-Wallis test was

performed as the Kolmogorov-Smirnov test of normality indicated that the variables were non-normally distributed ($p = <0.001$). In addition, the normal Q-Q plots and histograms for each condition were examined that further indicated non-normally distributed data. Following the Kruskal-Wallis analysis, approximate effect sizes were calculated manually using the following equation:

$$r = \frac{z}{\sqrt{n}}$$

Within the equation, the z relates to the z -score derived from the standardised test statistic computed within the pairwise comparisons analysis, and the n relates to the size of the observations in which z is based (see Field, 2018). The mean time in seconds that was spent observing each of the experimental descriptions is presented within table 6.1.

Table 6.1.

Mean time in seconds spent observing the missing child description per experimental condition.

Experimental Condition	m	SD	Min	Max
Short Argument	25.84	16.53	3.45	75.39
Short Abduction	35.09	26.30	6.00	135.89
Long Argument	44.32	27.55	15.71	145.87
Long Abduction	51.86	37.67	6.13	188.39

The time in seconds spent observing the description of a missing child was significantly affected by the type and length of the description, $H(3) = 38.54$, $p = <0.001$. Pairwise comparisons with adjusted p -values indicated that there were significant differences between time in seconds spent observing the description when individuals were presented with a short argument description compared to a long argument description ($p = <0.001$, $r = -0.45$), a short argument description compared to a long abduction description ($p = <0.001$, $r = -0.52$), short abduction description compared to a long argument description ($p = 0.045$, $r = -0.26$), and a short abduction description compared to a long abduction description ($p = 0.003$, $r = -0.33$). There were no significant differences between

a short argument description compared to a short abduction description ($p = 0.246$, $r = -0.19$), or a long argument description compared to a long abduction description ($p = 1.000$, $r = -0.07$). Thus, shorter descriptions regardless of the type of content were observed for a significantly shorter time than longer descriptions regardless of the type of content. No differences were found between the time spent observing descriptions and type of content.

6.1.2. Confidence

To determine if there was a significant difference between the four condition groups and the level of participant confidence in recall accuracy, a one-way between groups ANOVA was performed. A Kolmogorov-Smirnov test of normality was performed to examine the normality of the data and the results indicated that the short abduction ($p = 0.064$) and long argument ($p = 0.200$) conditions were normally distributed, although the short argument ($p = 0.009$) and long abduction ($p = 0.005$) conditions were non-normally distributed. In accordance with the central limit theorem (see Field, 2018), the data were deemed to be large enough for the non-normally distribution assumption to be overlooked. Additionally, an examination of the normal Q-Q plots for each condition indicated that data did not deviate too far from the line of expected quantiles.

The mean confidence scores across each of the conditions are presented in table 6.2. The one-way between groups ANOVA indicated that there was not a significant effect on the length and type of the missing child description on the participant's confidence level in recall accuracy, $f(3,219) = 0.650$, $p = 0.584$.

Table 6.2.

Mean confidence scores of recall accuracy per condition.

Experimental Condition	<i>M</i>	<i>SD</i>	Min	Max
Short Argument	60.11	27.91	1	100
Short Abduction	66.93	27.33	5	100
Long Argument	62.40	24.91	10	100
Long Abduction	61.53	28.43	0	100

6.2. Initial Recall Accuracy

As outlined within section 5.4.1.2.1., recall accuracy was determined by summing the total of the correct description variables that were 'present' within the participants' free-recall task during the initial experiment study and dividing this total by the maximum number of potential correct responses. This figure was then multiplied by 100 to derive a recall accuracy percentage score. Figures 6.1 to 6.4 illustrates the frequency of items that were correctly recalled by the participants during the free-recall task within each of the four experimental tasks. It is interesting to note that contacting the local neighbourhood police with information relating to the missing child was the least recalled item across all four experimental conditions. This finding could be due to participants forgetting this vital information, or simply feeling that this item is not required to be included. Hence, a cued-recall design may find an increase in the number of participants who correctly recall this item.

Nevertheless, during the free-recall design, the descriptive analysis indicates that the most correctly recalled items for individuals observing the short argument description was family argument ($n = 44$), red fashion scarf ($n = 39$), and new boyfriend ($n = 37$). Similarly, the unknown male ($n = 44$), white Nike trainers ($n = 39$), and Abigail ($n = 37$) were the most frequently recalled items in the short abduction description. In relation to the long argument description, blond hair ($n = 35$), family argument ($n = 34$), and new boyfriend ($n = 30$) were the most correctly recalled items, whilst unknown male ($n = 42$), red fashion scarf ($n = 42$), and getting into a car ($n = 38$) were the most correctly recalled items for the long argument description.

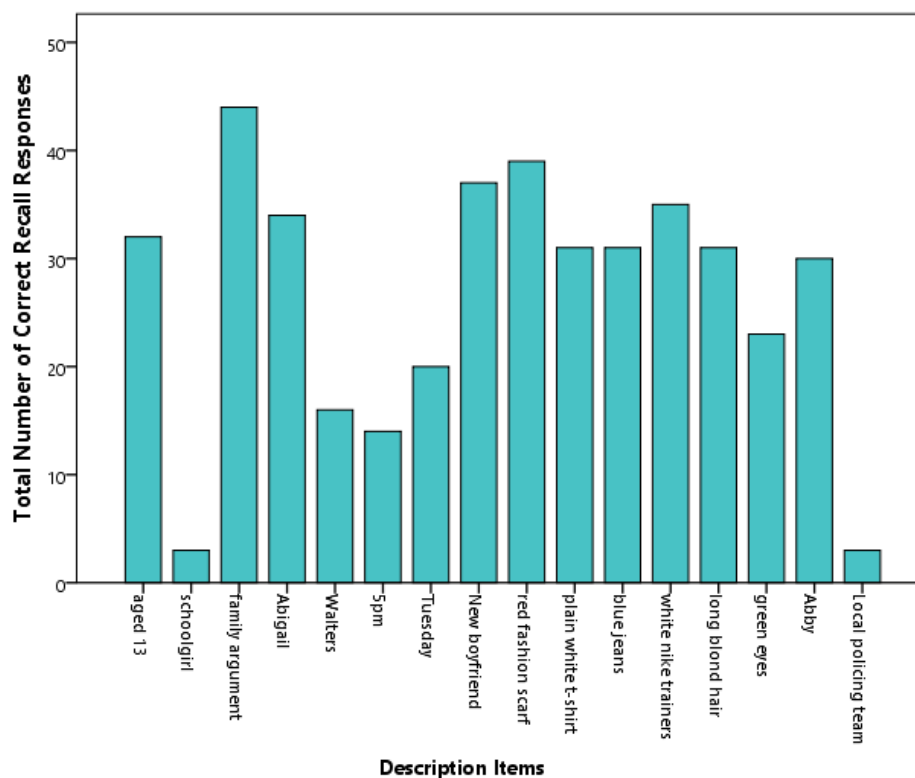


Figure 6.1. Total number of items correctly recalled by participants observing the short argument description.

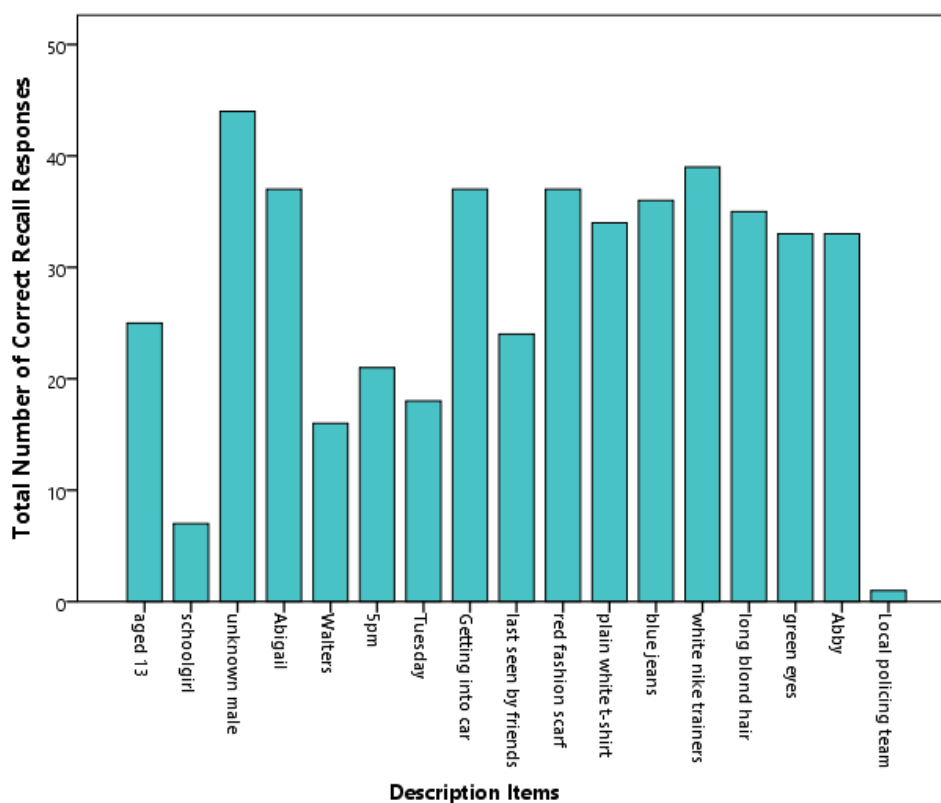


Figure 6.2. Total number of items correctly recalled by participants observing the short abduction description.

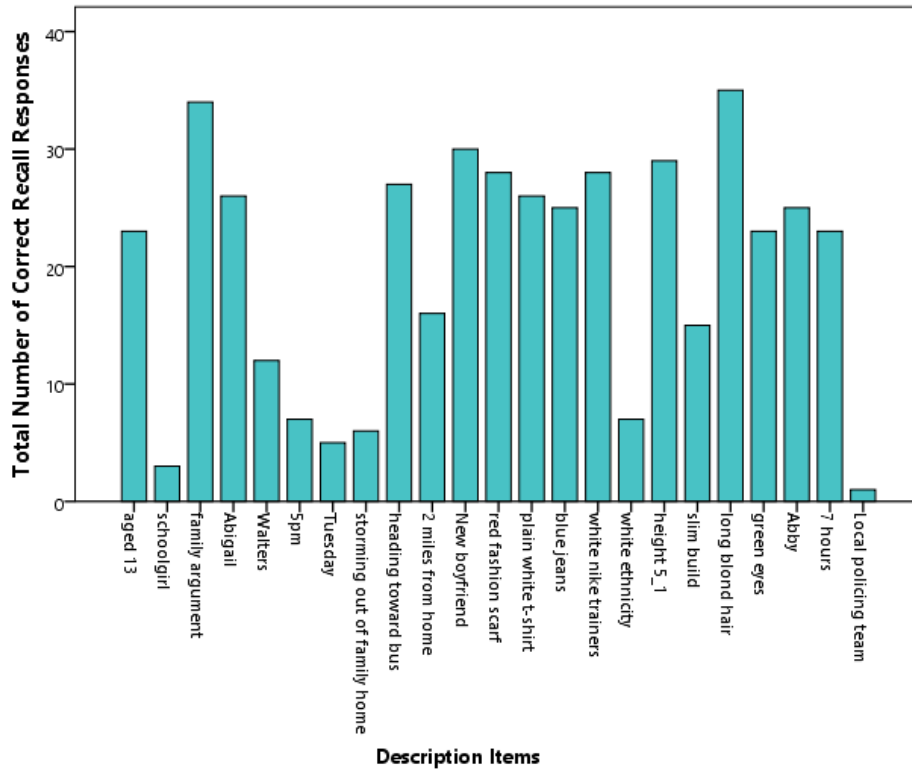


Figure 6.3. Total number of items correctly recalled by participants observing the long argument description.

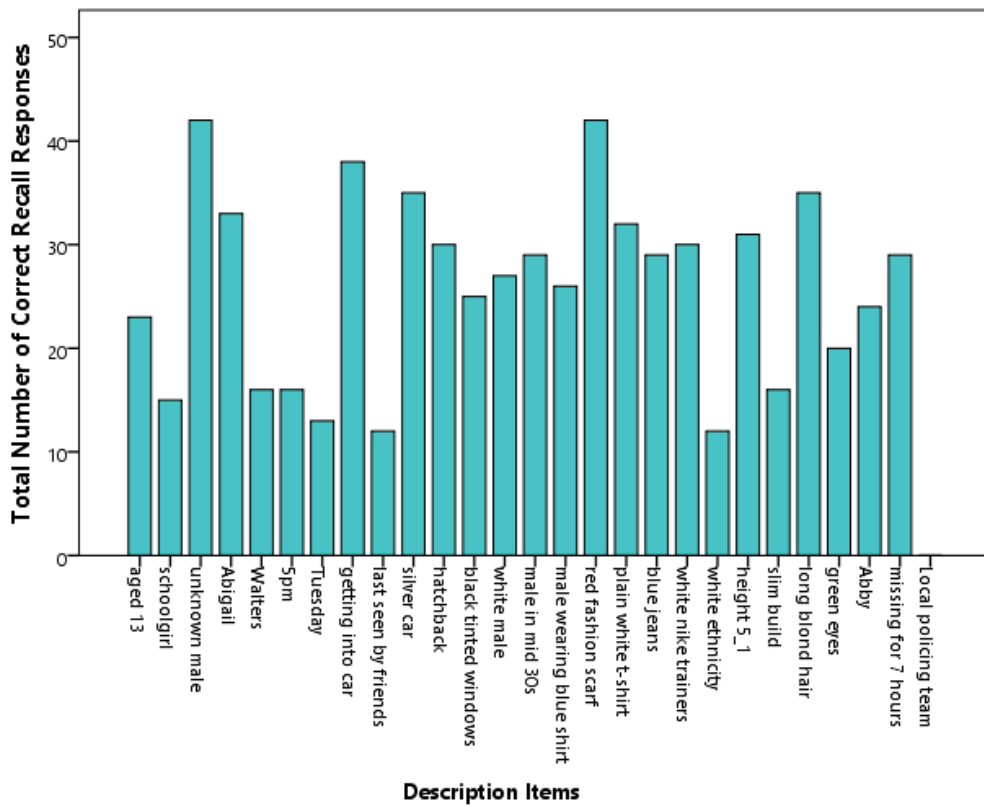


Figure 6.4. Total number of items correctly recalled by participants observing the long abduction description.

6.2.1. Influence of Time

To determine if the length of time spent observing a description is associated with higher levels of recall accuracy, a Spearman's rho correlation was performed. Preliminary analysis of the data via the Kolmogorov-Smirnov test of normality indicated that recall accuracy was normally distributed ($p = 0.200$), although the variable of time spent in seconds observing the description was non-normally distributed ($p = <0.001$). In addition, a scatterplot of the two variables was examined to ascertain whether there was a monotropic or non-monotropic relationship. Thus, the non-parametric Spearman's rho correlation was utilised with the data as normality does not have to be assumed and the scatterplot indicated a monotropic relationship.

The Spearman's rank-order correlation was performed to assess the relationship between time spent observing the short argument description and recall accuracy, finding a moderate, positive monotropic relationship ($r_s = .41, n = 56, p = 0.002$). A secondary Spearman's rank-order correlation was performed to assess the relationship between time spent observing the short abduction description and recall accuracy. The Spearman's rank-order correlation found a moderate, positive monotropic relationship between time spent observing the short abduction description and recall accuracy ($r_s = .59, n = 55, p = <0.001$).

In addition to the two short descriptions, the two long descriptions of the missing child were also examined. Spearman's rank-order correlation was performed to assess the relationship between time spent in seconds observing the long argument description and recall accuracy, finding a weak, positive monotropic relationship ($r_s = .33, n = 55, p = 0.016$). A final Spearman's rank-order correlation was performed to establish if there was a relationship between time spent observing the long abduction description and recall accuracy. The results indicated a moderate, positive monotropic relationship between time spent observing the long abduction description and recall accuracy ($r_s = .50, n = 57, p = <0.001$). Thus, the results indicate that recall accuracy in a missing child's description increases as the length of time in seconds spent observing the missing child description also increases.

6.2.2. Influence of Length and Type of Content

To establish if there was a significant difference between the different lengths and types of missing child descriptions and recall accuracy, a two-way factorial ANOVA was performed. Preliminary examination of the data indicated that all of the variables were normally distributed (ranging from $p = 0.064$ to $p = 0.200$). Moreover, the examination of the Q-Q plots and histograms for each of the experimental conditions further indicated normally distributed data.

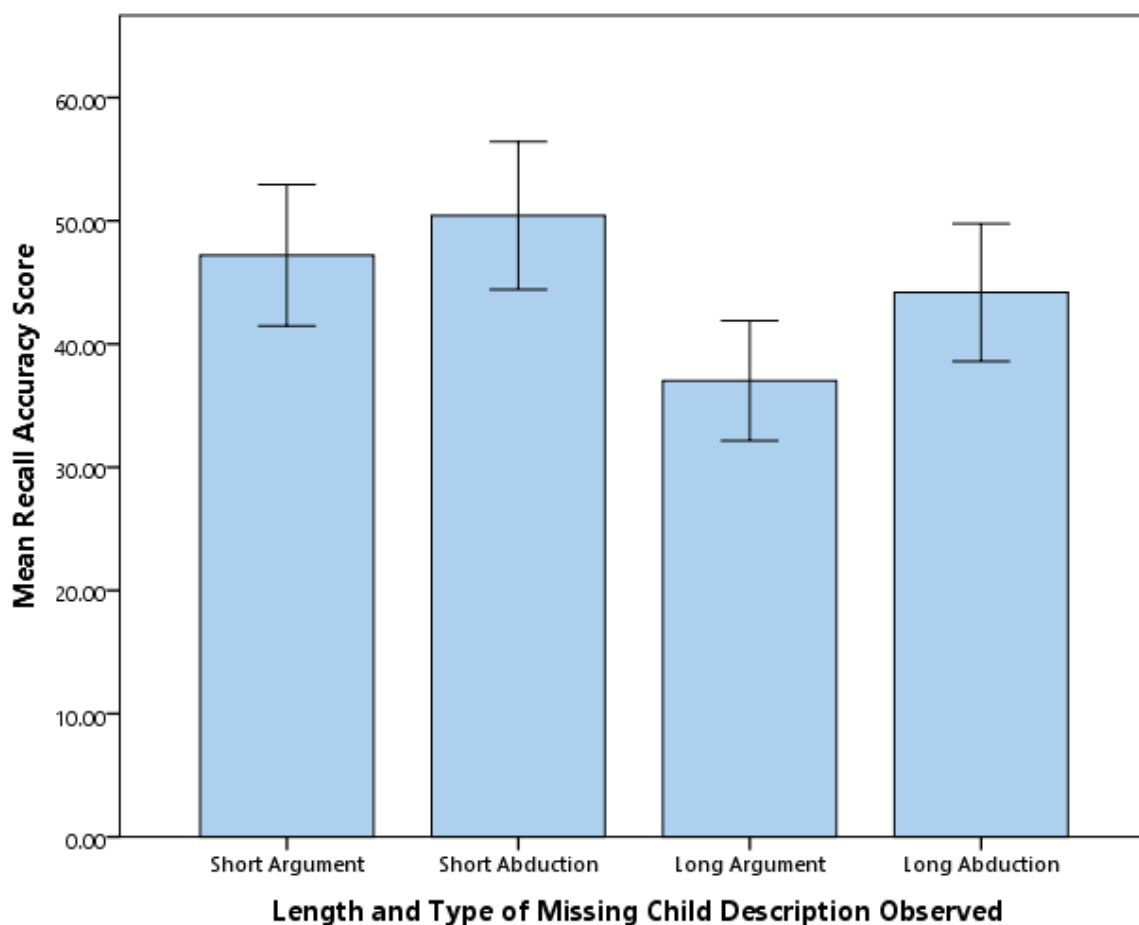


Figure 6.5. Mean recall accuracy scores across the type and length of missing child description observed.

A two-way factorial ANOVA was performed to compare the main effects of the length of missing child description and the type of missing child description and the interaction effects between the length of missing child description and the type of missing child description on recall accuracy. Length of missing child description included two levels (short, long), and type of missing child description also included two levels (argument, abduction). The main effect for length of missing child description indicated a significant effect, $F(1, 219) = 8.42, p = 0.004, \eta_p^2 = 0.037$, with short descriptions having a higher average recall accuracy ($M = 48.74, SD = 21.85$) than long descriptions ($M = 40.80, SD = 19.84$). The main effect for type of missing child description was not significant, $F(1, 219) = 3.55, p = 0.061, \eta_p^2 = 0.016$. Similarly, the two-way factorial ANOVA indicated that there was not a significant interaction effect between the length of the missing child description and the type of the missing child description on recall accuracy, $F(1, 219) = 0.58, p = 0.45, \eta_p^2 = 0.003$.

6.2.3. Influence of Confidence

To determine if the participants' overall level of confidence in their recall accuracy is associated with the confirmed recall accuracy, a Pearson's product-moment correlation was performed. Preliminary analysis of the data was performed to ascertain normality. The Pearson's product-moment correlation indicated a significant and positive association between participants' level of confidence on recall accuracy and the confirmed recall accuracy ($r = .60, n = 223, p = <0.001$). Thus, as the level of confidence in recall accuracy increases ($M = 62.72, SD = 27.13$), the confirmed recall accuracy of the missing child description also increases ($M = 44.72, SD = 21.18$).

In addition, the research also sought to determine if the participants' level of confidence of recall was associated with the confirmed recall accuracy when taking the type and length of description into account. To determine this effect, Pearson's product-moment correlations were utilised as a preliminary analysis of the data identified normally distributed data. The Pearson's product-moment correlations found significant and positive associations between confirmed recall accuracy scores and the level of confidence within the short argument description condition ($r = .71, n = 56, p = <0.001$), short abduction description

condition ($r = .57, n = 55, p = <0.001$), long argument description condition ($r = .43, n = 55, p = 0.001$), and long abduction description condition ($r = .68, n = 57, p = <0.001$). The means, standard deviations and correlations between the four experimental groups and recall accuracy scores are presented in table 6.3.

Table 6.3.

Means, standard deviations and correlations of the four description experimental conditions and recall accuracy scores.

Experimental Condition	Condition		<i>r</i>	Recall Accuracy	
	<i>M</i>	<i>SD</i>		<i>M</i>	<i>SD</i>
Short Argument	60.11	27.91	0.71***	47.21	21.42
Short Abduction	66.93	27.33	0.57**	50.42	22.19
Long Argument	62.40	24.91	0.43***	37.02	18.02
Long Abduction	61.53	28.43	0.68***	44.18	21.08

Note: *** $p = <0.001$, ** $p = <0.01$.

6.3. Initial Recall Error

As outlined within section 5.4.1.2.1., recall error scores were determined by summing the total of the incorrectly attempted description variables that were 'present' within the participants' free-recall task during the initial experiment study and dividing this total by the maximum number of potential incorrect responses. This figure was then multiplied by 100 to derive a recall error percentage score. It is important to note however that the low scores or absence of recall error within an experimental condition does not equate to a minimal error in the recall, just the absence of any incorrect recall items made.

Figures 6.6 to 6.9 illustrates the frequency of items that were incorrectly recalled by the participants during the free-recall task across each of the four experimental tasks. The descriptive analysis indicates that the most incorrectly recalled items for individuals observing the short argument description was aged 13 ($n = 6$), plain white t-shirt ($n = 4$), and red fashion scarf ($n = 3$). Similarly, aged 13 ($n = 6$) and red fashion scarf ($n = 3$) were the most frequently incorrect recalled items in the short abduction description. In relation to the long argument description, height of 5'1" ($n = 5$) and aged 13 ($n = 4$) were the most

incorrectly recalled items, whilst aged 13 ($n = 3$) and green eyes ($n = 3$) were the most incorrectly recalled items for the long abduction description.

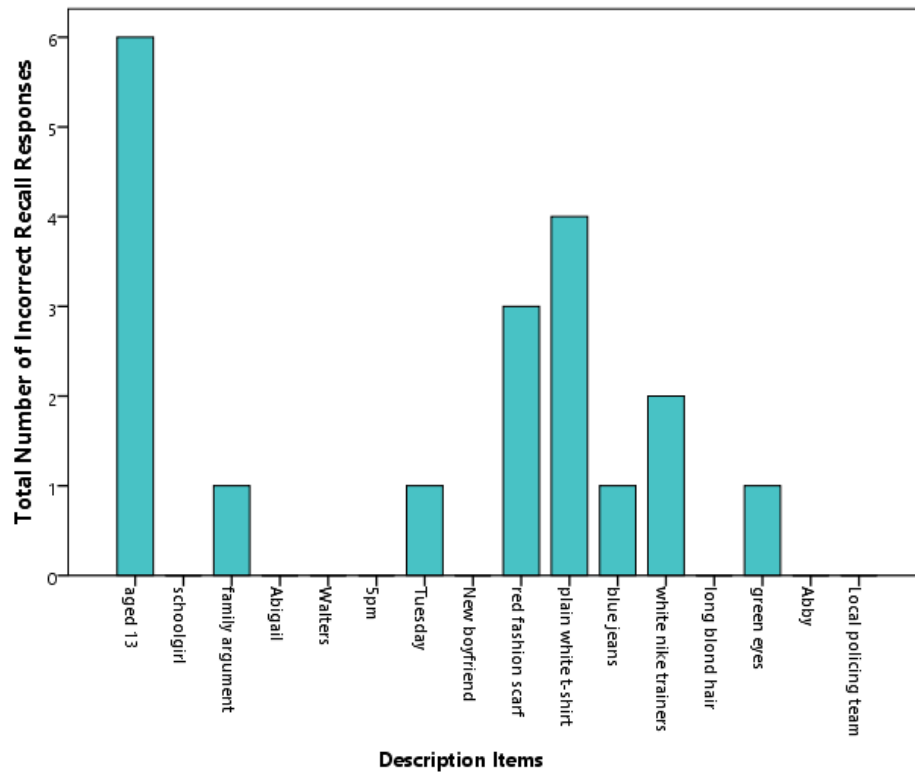


Figure 6.6. Total number of incorrect items recalled within the short argument description.

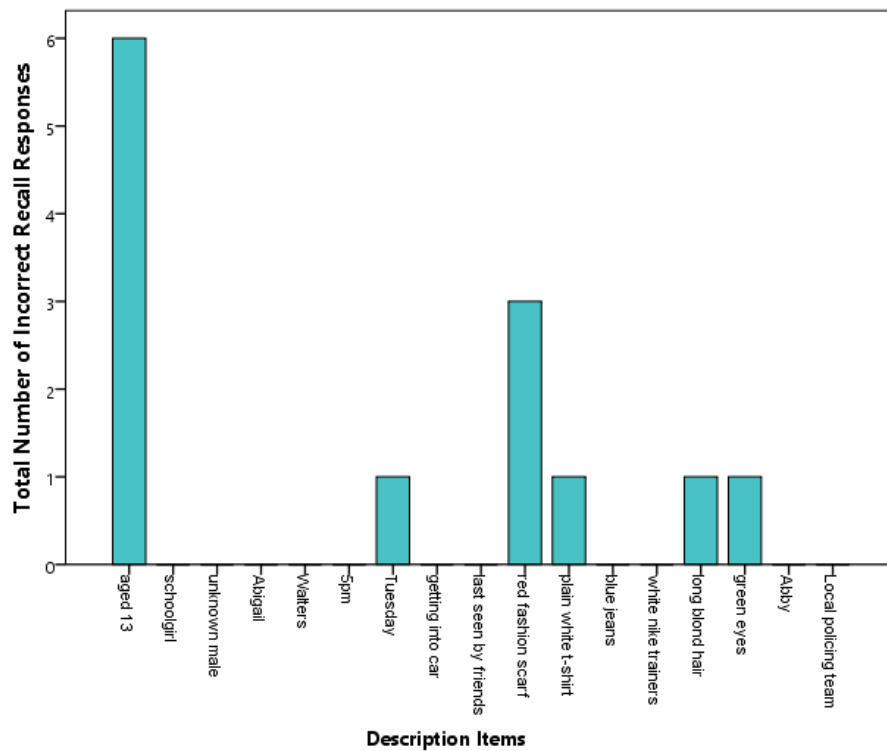


Figure 6.7. Total number of incorrect items recalled within the short abduction description.

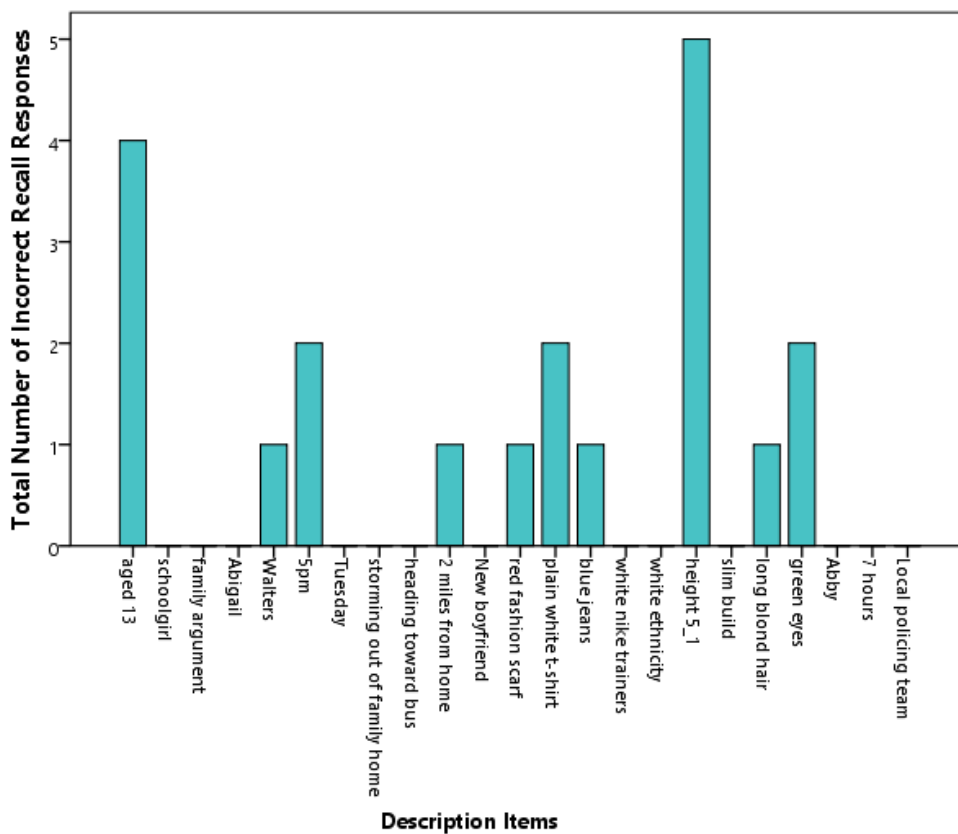


Figure 6.8. Total number of incorrect items recalled within the long argument description.

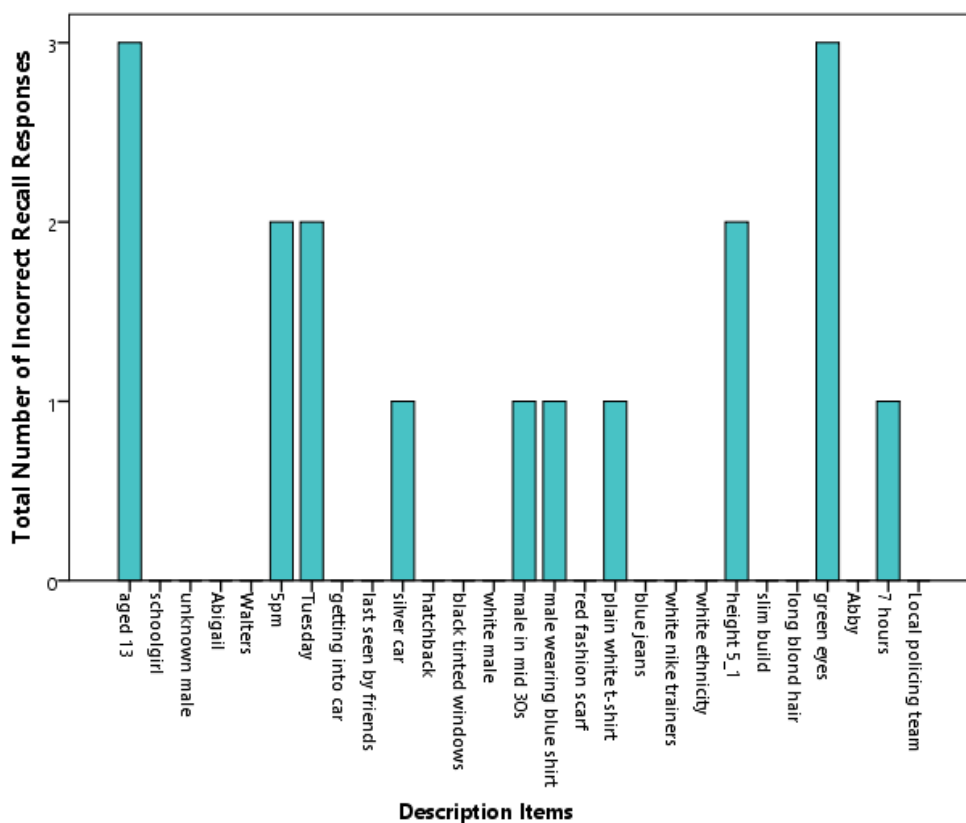


Figure 6.9. Total number of incorrect items recalled within the long abduction description.

6.3.1. Influence of Length of Time

Parallel to recall accuracy, the research also sought to determine if the length of time in seconds spent observing a missing child description is associated with the level of recall errors. Preliminary analysis of the data via the Kolmogorov-Smirnov test of normality and scatterplots indicated that the data were non-normally distributed, thus a Spearman's rho correlation was utilised as normality of the data does not have to be assumed with this analysis.

A Spearman's rank-order correlation was performed to determine the association between recall error scores and the time spent in seconds observing the descriptions of the missing child. The results indicated that there was not a significant association between recall error scores and the short argument description ($r_s = -.085, n = 56, p = 0.532$), short abduction description ($r_s = -.226, n = 55, p = 0.097$), long argument description ($r_s = -.129, n = 55, p = 0.348$), and long abduction description ($r_s = -.031, n = 57, p = 0.818$). Therefore, the results indicate that recall error scores in a missing child's description is independent to the length of time in seconds spent observing the description.

6.3.2. Influence of Length and Type of Content

To determine whether a significant difference between lengths and types of missing child descriptions and recall error scores exist, Kruskal-Wallis tests were performed as the Kolmogorov-Smirnov test of normality and subsequent examination of normal Q-Q plots and histograms indicated non-normally distributed data. Following the Kruskal-Wallis analysis, the approximate effects sizes were manually calculated using the following formula:

$$r = \frac{z}{\sqrt{n}}$$

Within this equation, z relates to the z -scores which were derived from the standardised test statistic computed within the pairwise comparisons analysis, and the n relates to the size of the observations in which z is based (see Field, 2018). The Kruskal-

Wallis analysis indicated that there were no significant differences between recall error scores and length of the missing child description ($H(1) = 0.11, p = 0.738$), and between recall error scores and the type of missing child description ($H(1) = 1.65, p = 0.199$). Therefore, the results suggest that recall error scores are independent of the length of the missing child description and to the type of content within the missing child description.

6.3.3. Influence of Confidence

To ascertain whether recall error scores are associated with participants' level of confidence in recall accuracy, a Spearman's rho correlation was performed. Preliminary analysis of the data via the Kolmogorov-Smirnov test of normality, normal Q-Q plots and histograms indicated that the data were non-normally distributed. The Spearman's rank-order correlation found a non-significant association between recall error score and participants' level of confidence in recall accuracy ($r = -.087, n = 223, p = 0.198$). Therefore, the results indicate that the overall recall error scores were independent of the participants' level of confidence in their recall accuracy.

The research also sought to determine if there were significant associations between recall error scores and participants' level of confidence in recall accuracy when taking the length and type of descriptions into account. To determine these associations, Spearman's rho correlations were utilised due to non-normally distributed data found during the preliminary analysis of the data.

The Spearman's rank-order correlations found that there were no significant associations between recall error scores and participants' level of recall accuracy within the short argument description condition ($r = -.041, n = 56, p = 0.766$), long argument description condition ($r = .047, n = 55, p = 0.734$), or long abduction description condition ($r = -.057, n = 57, p = 0.672$). However, the Spearman's rank-order correlation found a significant and negative association between recall error scores and participants' level of confidence within the short abduction description condition ($r = -.293, n = 55, p = 0.030$). Thus, as the participants' level of confidence in recall accuracy decreases ($M = 1.39, SD = 2.99$), the recall error scores increase ($M = 66.93, SD = 27.33$).

6.4. Follow-up Recall Accuracy

As outlined in section 5.4.1.2.1., the follow-up experiment was provided after three days upon completion of the initial experiment task. One of the follow-up experiment tasks comprised of a free-recall task whereby participants were asked to write down as much information as possible in relation to the original missing child description they had observed. Recall accuracy was determined via an identical method to the initial experiment by summing up the total of correct description variables present within the free-recall task and dividing by the total number of possible correct description variables. This figure was then multiplied by 100 to derive a recall accuracy percentage score.

Of the original 223 participants who completed the initial experiment, a total of 74 (33.18%) participants dropped out and did not complete the follow-up task resulting in a total of 149 participants within the follow-up experiment. Therefore, the remaining participants comprised of 36 (24.16%) within the short argument condition, 32 (21.48%) within the short abduction condition, 40 (26.85%) within the long argument condition, and 41 (27.52%) within the long abduction condition. Figures 6.10 to 6.13 illustrates the frequency of items that were correctly recalled by the participants during the follow-up free-recall task across each of the four experimental tasks.

The descriptive analysis illustrates that the most correctly recalled items for individuals who had observed the short argument description was family argument ($n = 28$), new boyfriend ($n = 22$), and blond hair ($n = 21$). The unknown male ($n = 27$), getting into the car ($n = 24$), and blond hair ($n = 23$) were the most frequently follow-up recalled items in the short abduction description. Regarding the long argument description, family argument ($n = 26$), blond hair ($n = 24$), and blue jeans ($n = 20$) were the most correctly recalled follow-up items, whilst getting into the car ($n = 27$), blond hair ($n = 25$), and unknown male ($n = 23$) were the most correctly recalled follow-up items for the long argument description.

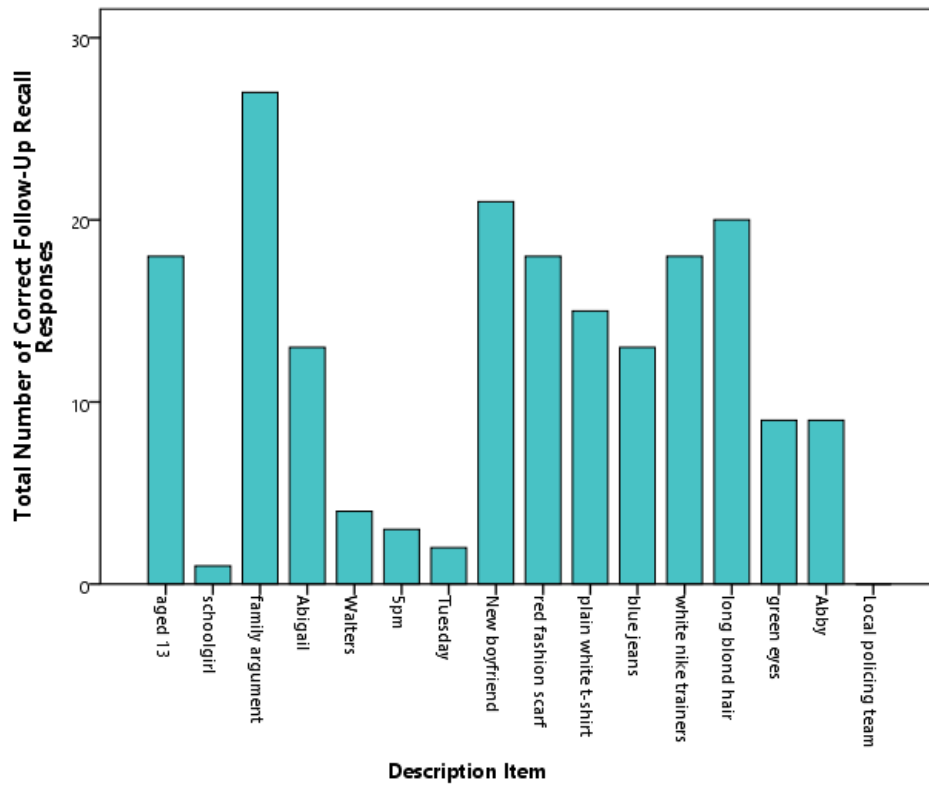


Figure 6.10. Total number of items correctly recalled during the follow-up task by participants observing the short argument description

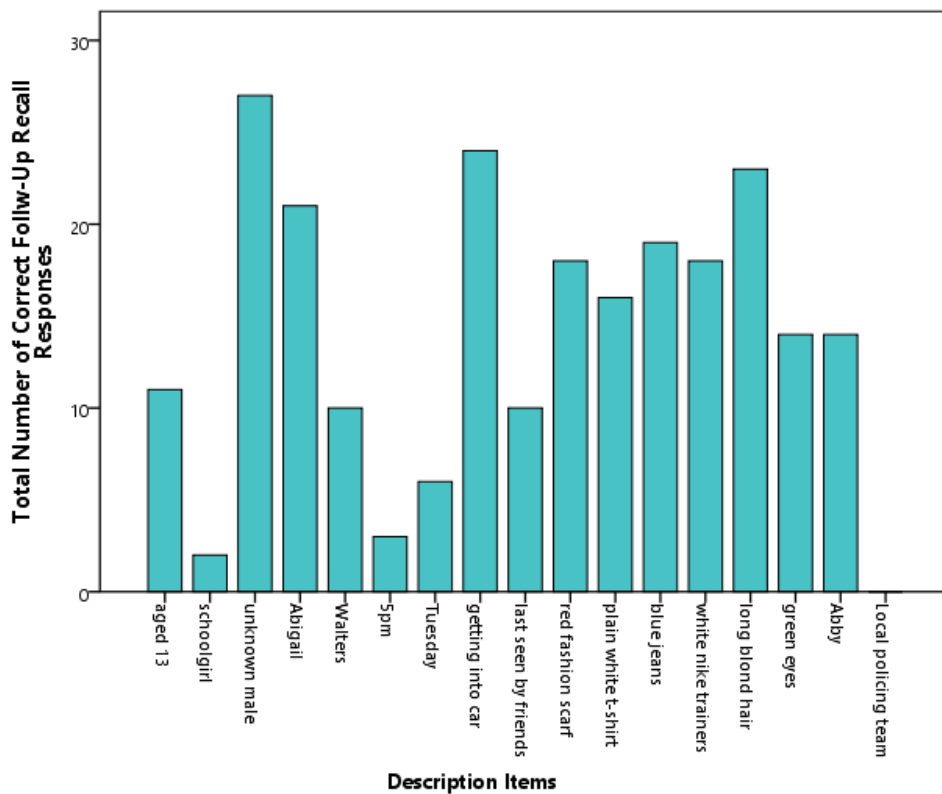


Figure 6.11. Total number of items correctly recalled during the follow-up task by participants observing the short argument description

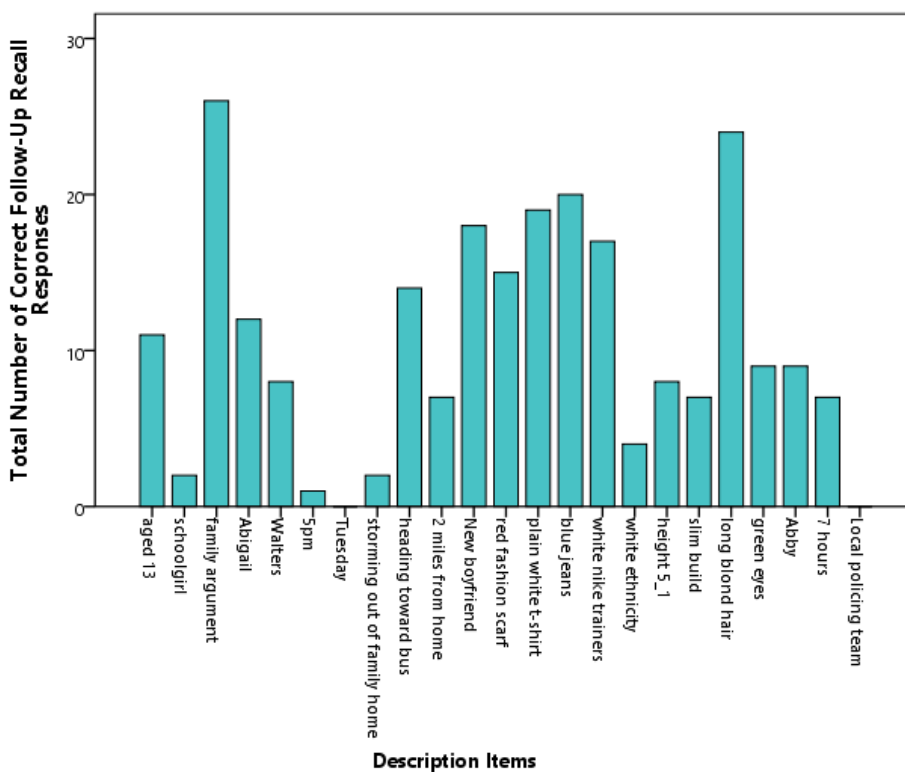


Figure 6.12. Total number of items correctly recalled during the follow-up task by participants observing the short argument description

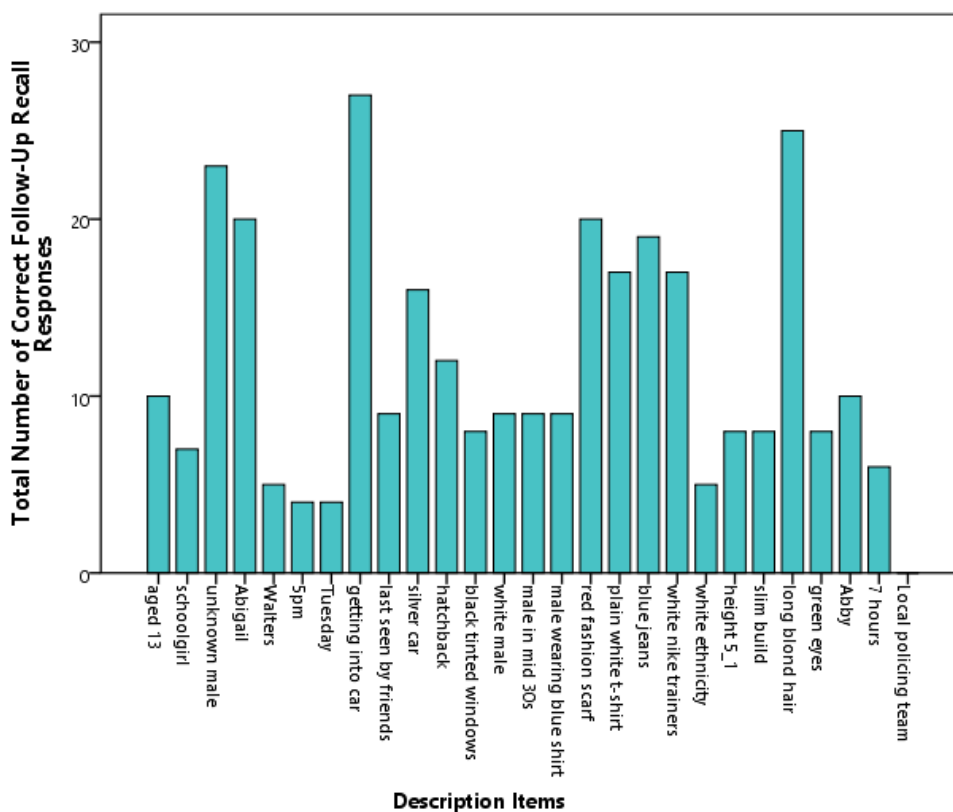


Figure 6.13. Total number of items correctly recalled during the follow-up task by participants observing the short argument description

6.4.1. Influence of Length and Type of Description

To determine whether there were significant differences between the follow-up recall accuracy score and the length and the types of missing child description that was initially observed, a two-way factorial ANOVA was performed. Preliminary analysis of the data via Kolmogorov-Smirnov test of normality indicated that all the variables were normally distributed. In addition, subsequent preliminary analysis of the normal Q-Q plots further indicated normally distributed data.

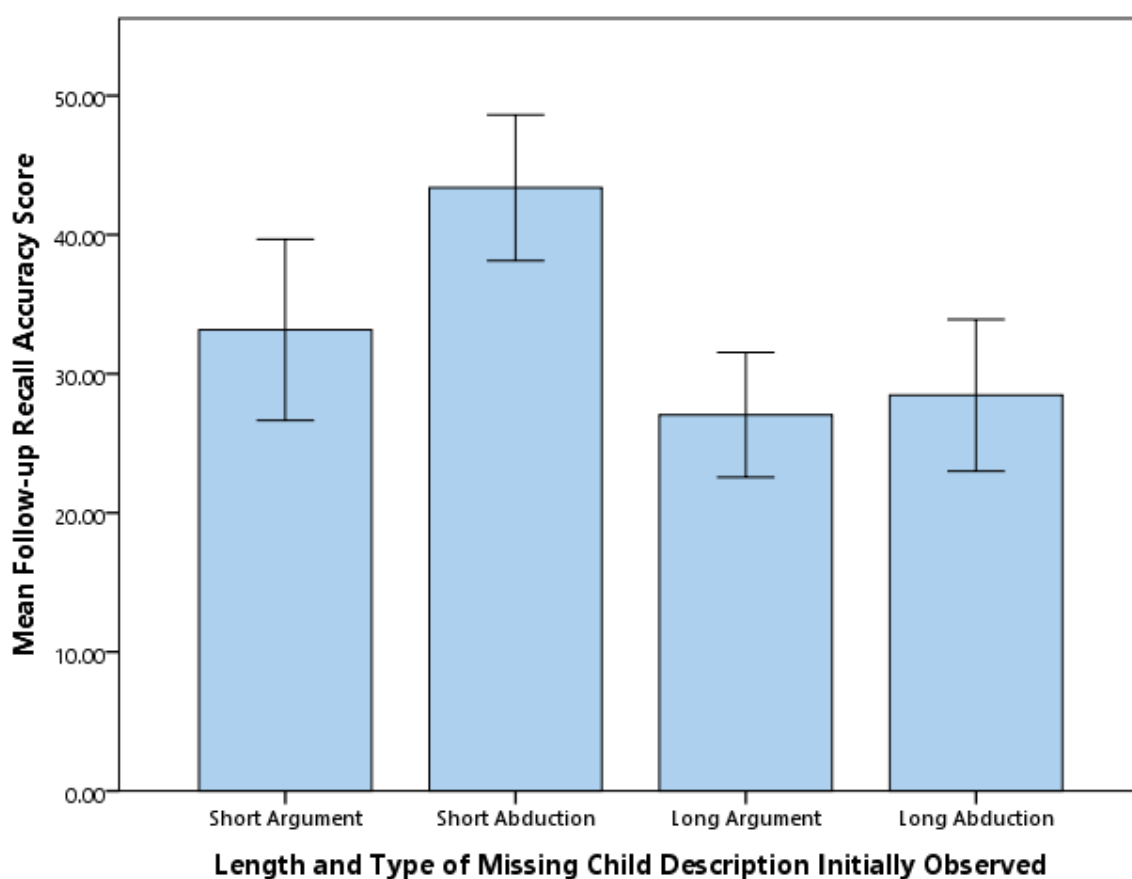


Figure 6.14. Mean follow-up recall accuracy scores across the type and length of missing child description observed.

A two-way factorial ANOVA was performed to compare the main effects of the length of missing child description and the type of content within the missing child description and the interaction effects of the length of missing child description and the type of content

within the missing child description on follow-up recall accuracy. The length of the missing child description included two levels (short, long), and the type of content within the missing child descriptions also included two levels (argument, abduction).

The main effect for length of missing child description indicated a significant effect, $F(1, 145) = 13.15, p = <0.001, \eta_p^2 = 0.083$, with short descriptions having a higher average follow-up recall accuracy score ($M = 38.02, SD = 2.03$) than long descriptions ($M = 28.11, SD = 1.83$). The main effect for type of content within the missing child description indicated a significant effect, $F(1, 145) = 4.71, p = 0.032, \eta_p^2 = 0.031$, with abduction content having a higher average follow-up recall accuracy score ($M = 36.03, SD = 1.96$), than argument content ($M = 30.10, SD = 1.90$). The two-way factorial ANOVA further indicated a non-significant interaction effect between the length of missing child description and the type of content within the missing child description on follow-up recall accuracy scores, $F(1, 145) = 1.93, p = 0.167, \eta_p^2 = 0.013$.

6.4.2. Influence of Confidence

To determine if participants' overall level of confidence in their own recall accuracy is associated with the confirmed recall accuracy within the follow-up study, Spearman's rho correlations were used. Preliminary analysis of the data was performed to ascertain normality that indicated in non-normally distributed data and thus, a non-parametric test was utilised for the data as Spearman's rho correlations are robust enough when the normality of the data is not assumed. The Spearman's rank-order correlation indicated a significant and positive association between participants' overall level of confidence on their own recall accuracy and the confirmed recall accuracy of the follow-up task ($r_s = .52, n = 149, p = <0.001$). The results therefore indicate that as participants' overall level of confidence increases ($M = 52.65, SD = 27.05$), the confirmed recall accuracy of the missing child description within the follow-up task also increases ($M = 32.42, SD = 17.40$).

The research also sought to ascertain if the participants' level of confidence in their recall accuracy was associated with the confirmed recall accuracy within the follow-up task

when taking the length and type of missing child description into consideration. Spearman's rank-order correlations indicated significant and positive associations between confirmed follow-up recall accuracy scores and the level of participant confidence within the short argument description condition ($r_s = .64, n = 36, p = <0.001$), long argument description condition ($r_s = .57, n = 40, p = <0.001$), and the long abduction description condition ($r_s = .58, n = 41, p = <0.001$). In contrast, Spearman's rank-order correlations also indicated a non-significant association between the confirmed follow-up recall accuracy scores and the level of participant confidence within short abduction description condition ($r_s = .26, n = 32, p = 0.146$).

6.4.3. Influence of Initial Recall Accuracy

To determine if there was a significant association between follow-up recall accuracy and initial recall accuracy, a Spearman's rho correlation was performed. Preliminary analysis of the data via Kolmogorov-Smirnov test of normality and subsequent examination of normal Q-Q plots indicated that the variables were non-normally distributed. Therefore, the non-parametric Spearman's rho correlation was utilised as this test is robust enough with the current data and does not assume normality.

A Spearman's rank-order correlation was performed to ascertain the association between initial recall accuracy scores and follow-up recall accuracy scores finding a significant and positive association, $r_s = .68, n = 149, p = <0.001$. The results indicate that as the initial recall accuracy scores increase, the follow-up accuracy scores also increase. It is also important to note that there is a decline in the mean accuracy scores between the initial ($M = 44.72, SD = 21.18$) and follow-up ($M = 32.42, SD = 17.40$). This finding suggests that participants' mean recall accuracy scores decreased after a short three-day delay period.

The research also sought to determine whether the initial recall accuracy scores are associated with follow-up recall accuracy scores when the length and type of missing child description are considered. Preliminary analysis of the data via Kolmogorov-Smirnov test of normality indicated non-normally distributed data. Subsequent analysis of the normal Q-Q

plots further indicated non-normally distributed data. Thus, the non-parametric Spearman's rho correlations were performed.

The Spearman's rank-order correlations indicated that the associations between the initial recall accuracy scores and follow-up accuracy scores were significant and positive within the short argument description condition ($r_s = .70, n = 36, p = <0.001$), short abduction description condition ($r_s = .62, n = 32, p = <0.001$), long argument description condition ($r_s = .67, n = 40, p = <0.001$), and the long abduction description condition ($r_s = .75, n = 41, p = <0.001$). Therefore, the results indicate that there are positive and significant associations between the initial recall accuracy scores and the follow-up recall accuracy scores regardless of which experimental condition the participants are in.

Finally, the research sought to explore the associations between the initial recall accuracy scores and the follow-up recall accuracy scores within the same conditions of the length and type of missing child description. Preliminary analysis of the data via Kolmogorov-Smirnov test of normality once again indicated a non-normally distributed data. The subsequent analysis of the normal Q-Q plots had further indicated a non-normally distributed data. Hence, a series of Wilcoxon signed-rank tests were performed.

For participants who observed the short argument description, recall accuracy scores were significantly higher during the initial recall task ($Mdn = 50.00$) than during the follow-up recall task ($Mdn = 31.25$), $T = 60.50, p = 0.001, r = -0.40$. Similarly, participants who observed the short abduction description, recall accuracy scores were significantly higher during the initial recall task ($Mdn = 52.94$) than during the follow-up recall task ($Mdn = 41.18$), $T = 90, p = 0.002, r = -0.39$. Participants who observed the long argument description were also found to have a significantly higher initial recall accuracy scores ($Mdn = 36.36$) than the follow-up task recall accuracy score ($Mdn = 22.73$), $T = 40, p = <0.001, r = -0.54$. Finally, participants who observed the long abduction description had significantly higher recall accuracy scores during the initial recall task ($Mdn = 44.44$) than for the follow-up recall task ($Mdn = 25.93$), $T = 2.50, p = <0.001, r = -0.61$. Thus, despite the type of content or length of the descriptions being observed, participants were

significantly less likely to have higher recall accuracy scores following a three-day break than they were immediately after observing the description.

6.5. Follow-up Recall Error

As previously outlined within section 5.4.1.2.1., the follow-up recall error scores were determined by summing the total number of incorrectly attempted description variables that were present within the participants' follow-up free recall task and dividing this number by the maximum number of possible incorrect responses. This figure was then multiplied by 100 to derive a recall error score percentage. As previously noted, it is important to note that low scores or the absence of scores on the recall error variable do not equate to a minimal error in the recall, just the absence of any incorrect recall items made by the participants.

Figures 6.15 to 6.18 presents the frequencies of the items that were incorrectly recalled by the participants during the follow-up free-recall task within each of the four experimental tasks. Descriptive analysis illustrates that the most incorrectly recalled items for individuals who had observed the short argument description was plain white t-shirt ($n = 5$), aged 13 ($n = 4$), and green eyes ($n = 4$). Similarly, green eyes ($n = 5$), red fashion scarf ($n = 3$), and aged 13 ($n = 2$) were the most frequently incorrect recalled items during the follow-up task in the short abduction description. In relation to the long argument description, aged 13 ($n = 6$), plain white t-shirt ($n = 5$), and green eyes ($n = 3$) were the most incorrectly follow-up recalled items. Finally, plain white t-shirt ($n = 5$), unknown male aged in mid-30's ($n = 4$) and aged 13 ($n = 3$) were the most incorrectly recalled items for the long abduction description during the follow-up recall task.

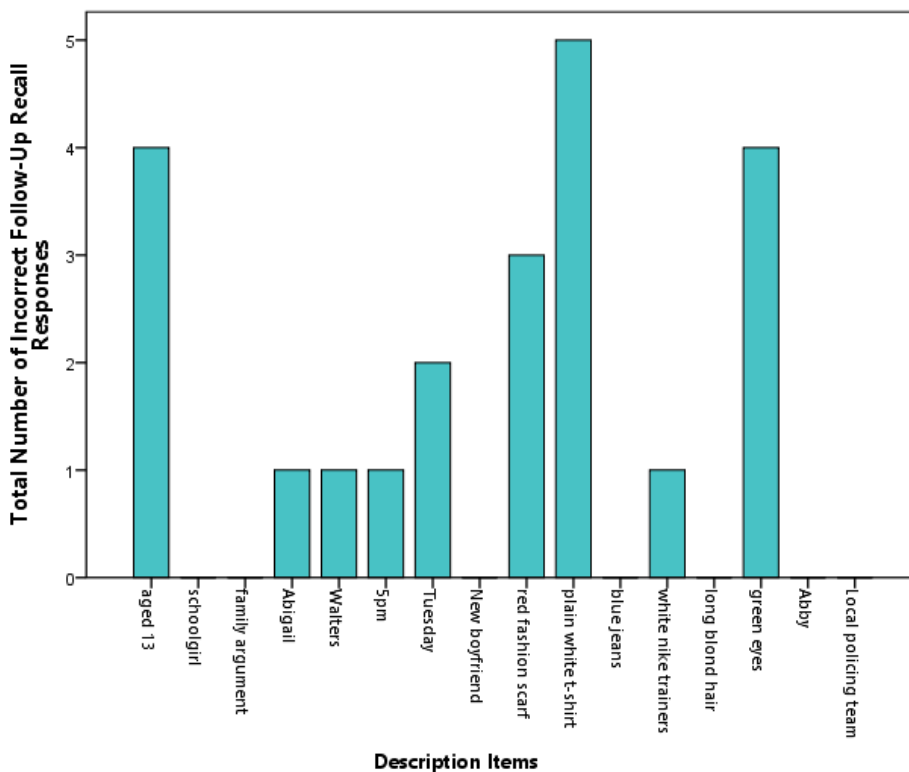


Figure 6.15. Total number of items incorrectly recalled during the follow-up task by participants observing the short argument description.

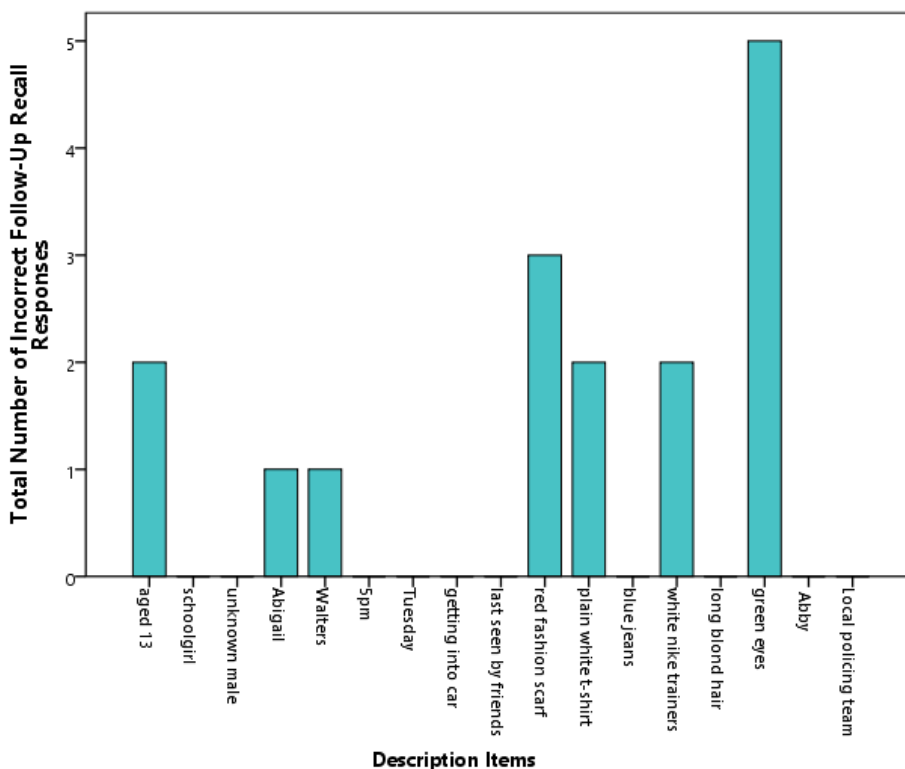


Figure 6.16. Total number of items incorrectly recalled during the follow-up task by participants observing the short abduction description.

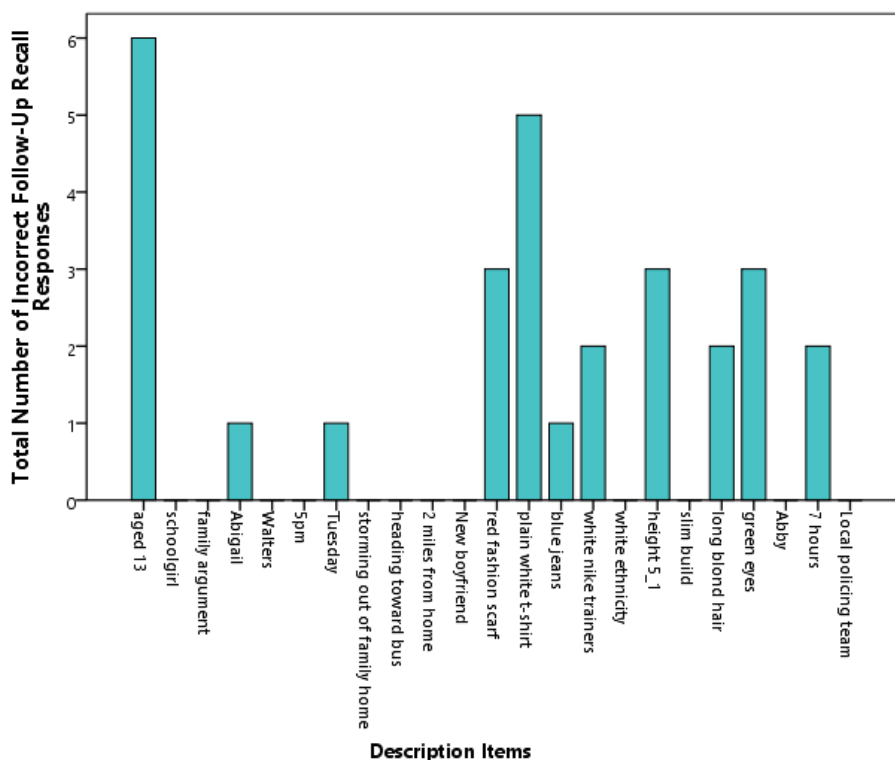


Figure 6.17. Total number of items incorrectly recalled during the follow-up task by participants observing the long argument description.

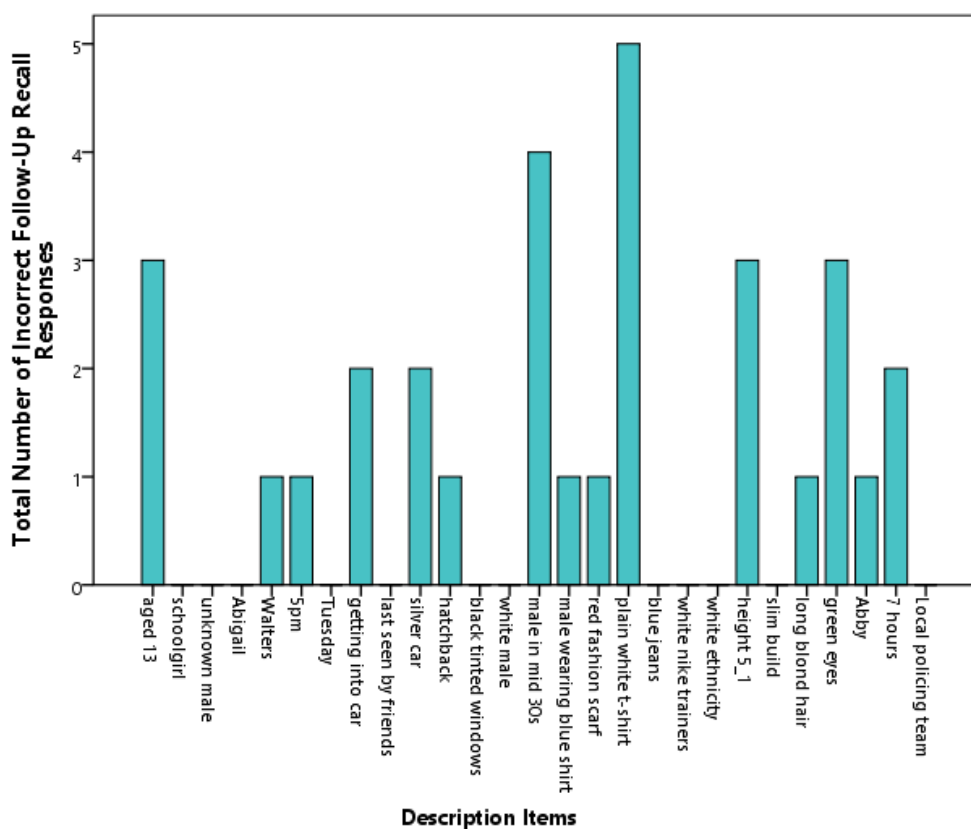


Figure 6.18. Total number of items incorrectly recalled during the follow-up task by participants observing the long abduction description.

6.5.1. Influence of Length and Type of Description

Like recall error, the research sought to establish if the length of time in seconds spent observing a missing child description and the type of content within the missing child description is associated with the level of recall errors during the follow-up experiment. Preliminary analysis of the data via Kolmogorov-Smirnov test of normality and scatterplot examinations indicated that the data were non-normally distributed. Thus, a Kruskal-Wallis test was utilised as the non-parametric test is robust enough to analyse the data accurately and does not assume normality of the data. Following the analysis of the Kruskal-Wallis test, the approximate effect sizes were manually calculated using the following formula:

$$r = \frac{z}{\sqrt{n}}$$

Within the above equation, the z -scores were derived from the standardised test statistics computed within the pairwise comparisons analysis, and the n relates to the size of the observations in which the z -score is based (see Field, 2018). The Kruskal-Wallis analysis indicated that there were no significant differences between follow-up recall error scores and the length of the missing child description, $H(1) = 0.002$, $p = 0.967$. Additional analysis sought to determine if there were a significant difference between the type of content within the missing child description and follow-up recall error in which the Kruskal-Wallis test found no significant difference, $H(1) = 0.492$, $p = 0.483$.

6.5.2. Influence of Confidence

To determine if there is a significant association between follow-up recall error scores and participants' level of confidence within their follow-up recall accuracy, a Spearman's rho correlation was performed. Preliminary analysis of the data and subsequent examination of the normal Q-Q plots indicated that the data were non-normally distributed. Thus, a Spearman's rho correlation was deemed the best fit due to being robust enough to analyse the data effectively and does not assume that the data is normally distributed. The

Spearman's rank-order correlation did not find a significant association between follow-up recall error scores and participants' level of confidence in their follow-up recall accuracy ($r = -.104, n = 149, p = 0.204$).

The research also sought to establish if there were significant associations between follow-up recall error scores and participants' level of confidence in their follow-up recall accuracy when considering the length and type of descriptions observed. Spearman's rho correlations were performed due to a preliminary examination of normality and Q-Q plots indicating non-normally distributed data.

The Spearman's rank-order correlations found that there were no significant associations between follow-up recall error scores and participants' level of confidence in follow-up recall accuracy within the short argument description condition ($r = -.278, n = 36, p = 0.095$), short abduction description condition ($r = -.344, n = 32, p = 0.054$), long argument description condition ($r = .114, n = 40, p = 0.482$), or long abduction description condition ($r = -.047, n = 41, p = 0.772$).

6.5.3. Influence of Initial Recall Error

To establish if there was a significant association between follow-up recall error scores and initial recall error scores, a Spearman's rho correlation was performed as a preliminary analysis of the data via Kolmogorov-Smirnov test of normality and normal Q-Q plots indicated non-normally distributed data. The non-parametric Spearman's rho correlation was thus deemed to be most appropriate to analyse the data as it does not assume normality and is robust enough to accurately examine the data.

A Spearman's rank-order correlation was performed to determine if a significant association occurs between follow-up recall error scores and initial error scores, finding a significant and positive association ($r_s = .33, n = 149, p = <0.001$). The results indicate that higher levels of initial recall error scores are associated with higher levels of follow-up recall error scores. It is also important to note that there was an increase in the mean error scores between the initial ($M = 1.57, SD = 3.13$) and follow-up ($M = 3.19, SD = 4.40$) error

scores that suggest participants' recall error scores increased after a short three-day delay period.

Additional analysis sought to determine whether the follow-up recall error scores are significantly associated with initial error scores when the length and type of missing child descriptions are considered. Preliminary analysis of the data identified non-normally distributed data via the Kolmogorov-Smirnov test of normality and normal Q-Q plots. Hence, a non-parametric test in the form of Spearman's rho correlations was deemed most appropriate to analyse the data.

The Spearman's rank-order correlations found that the associations between the follow-up recall error scores and initial recall error scores were significant and positive within the short argument description condition ($r_s = .53, n = 36, p = 0.001$), and the long argument description condition ($r_s = .49, n = 40, p = 0.001$). In contrast, the Spearman's rank-order correlations found that the associations between the follow-up recall error scores and the initial recall error scores were non-significant within the short abduction description condition ($r_s = .26, n = 32, p = 0.156$), and the long abduction description condition ($r_s = .32, n = 41, p = 0.844$). Therefore, the results indicate that there are positive and significant associations between follow-up recall error scores and initial recall error scores when the missing child description content is related to an argument regardless of the length of the description.

Finally, the research sought to explore the associations between the initial recall error scores and the follow-up recall error scores within the same conditions of the length and type of missing child description. Preliminary analysis of the data via Kolmogorov-Smirnov test of normality had indicated non-normally distributed data. In addition, the subsequent analysis of the normal Q-Q plots had further indicated non-normally distributed data. Therefore, a series of Wilcoxon signed-rank tests were performed.

For the participants who had observed the short argument description, recall error scores were significantly lower during the initial recall task ($Mdn = 0.00$) than during the follow-up recall task ($Mdn = 0.00$), $T = 79, p = 0.012, r = 0.29$. Similarly, participants who observed the short abduction description, recall error scores were significantly lower during

the initial recall task ($Mdn = 0.00$) than during the follow-up recall task ($Mdn = 0.00$), $T = 91$, $p = 0.008$, $r = 0.33$. Participants who observed the long argument description were also found to have a significantly lower initial recall error scores ($Mdn = 0.00$) than the follow-up task recall accuracy score ($Mdn = 0.00$), $T = 88.50$, $p = 0.018$, $r = 0.26$. Finally, participants who observed the long abduction description had significantly lower recall error scores during the initial recall task ($Mdn = 0.00$) than for the follow-up recall task ($Mdn = 0.00$), $T = 171$, $p = 0.048$, $r = 0.22$. Thus, despite the type of content or length of the descriptions being observed, participants were significantly more likely to have higher recall error scores following a three-day break than they were immediately after observing the description.

6.6. Discussion

The present research findings provide a novel insight into recall accuracy of missing children descriptions to fill the current gap in the research literature and to provide a much-needed insight into improving the effectiveness of missing children publicity appeals. The purpose of this study was to evaluate the type of content and the length of content in different descriptions of a missing child to examine the effect on free recall accuracy and recall error immediately after observing the description, and after a three-day time period. The results suggested that recall accuracy increases when the descriptions are shorter and contain a newsworthy content in the form of an abduction. A secondary purpose of the study was to determine whether a participant's level of confidence affects recall accuracy and recall in which the results suggest that higher recall accuracy is influenced by higher levels of participant confidence.

6.7.1. Influence of Time

The first research objective sought to ascertain whether the length of time in seconds spent observing a description of a missing child influences the recall accuracy rate. The results indicated that there was a significant and positive association between the

length of time spent observing a description of a missing a child and recall accuracy scores. However, there were no significant associations between time spent observing the description and recall error scores. This was expected due to the small number of participants who had an error score as a participant who unsure of any details contained within the description of the missing child may have simply chosen to not include or potentially guess the information resulting in the appearance of a low error score. Nevertheless, the findings align with previous work (Fahsing et al., 2004; Memon et al., 2003; Yarmey et al., 2002).

For instance, Horry et al. (2014) examined archival data of eyewitness statements from a large police force in the UK and found that longer exposure to the crimes was associated with higher suspect identification rates. Similarly, Fahsing et al. (2004) analysed data from 250 bank and post office robbery eyewitness interviews from a police force in Norway and compared this data with the crime footage. The results indicated that eyewitnesses who had a longer duration of the incident had better recall accuracy than eyewitnesses who had a shorter duration of the incident (Fahsing et al., 2004).

Further support derives from the field study performed by Yarmey et al. (2002) who aimed to replicate eyewitness memory by interviewing 320 opportunity sampled participants who were approached by a confederate asking for directions for five seconds or for 30 seconds. The results found that recall accuracy was superior for the participants who had observed the confederate for 30 seconds then the participants who had observed the confederate for five seconds (Yarmey et al., 2002). Finally, Memon et al. (2003) examined the eyewitness accuracy of 164 undergraduate student participants after observing a video clip of a real bank robbery crime event for 12 seconds or for 45 seconds, and a 40-minute distraction task. The results indicated that participants who observed the crime footage for 45 seconds had greater recall accuracy than participants who watched the crime footage for 12 seconds (Memon et al., 2003). Thus, increasing the duration of the observation of a description of a missing child significantly increases the subsequent recall accuracy scores.

6.7.2. Influence of Length of Description

The second research objective sought to ascertain whether the length of the description of a missing child influences the recall accuracy rate, finding shorter descriptions of a missing child are associated with higher recall accuracy scores when compared to longer descriptions of a missing child. In addition, the results indicated a non-significant difference in length of description and recall error that can be expected due to the low number of participants who received an error score. Nevertheless, the current research findings are in line with the previous work by Cary and Reder (2003) who examined participant recognition accuracy scores of lists of words that ranged from 16 to 64 words. Once the initial list of words had been observed, participants were presented with a recognition test that required the participants to identify whether the word was present or not present in the initial list of words, finding participants who were presented with shorter lists of words had significantly higher recognition accuracy scores than participants who had longer lists of words.

Although the research by Cary and Reder (2003) focused on individual lists of words as opposed to the length of paragraphs as per the current research, it is the closest match to the current research's examination of recall accuracy from descriptive texts. Nevertheless, it could be argued that the observation of shorter lists of words increases recall accuracy due to the increased availability of encoding processing time per word. As Lampinen et al. (2012) argue, if an individual only has a limited amount of time available or is willing to provide to observing items then the more items that are present results in a decrease in the amount of time available for each individual item. Hence, the individual would have even less time to encode the information if the time is split equally between items when there is an increase in the length of items to be encoded compared to a decrease in the length of items to be encoded.

6.7.3. Influence of Type of Content

The third research objective sought to explore the effect of the type of content from within the description of a missing child with the subsequent recall accuracy and recall error, finding a non-significant association. As the research design is a novel approach and has not been previously researched, the results therefore are unable to be compared with previous work as the majority focus on the list length of descriptions (e.g. Cary & Reder, 2003), or on newsworthiness items of victim and offender portrayal within the media via frequency analyses (Gekoski et al., 2012; Paulsen, 2003; Peelo et al., 2004).

Nonetheless, although the results were not significant initially, the results indicated a higher mean recall accuracy score for the more newsworthy abduction content than for the non-newsworthy argument content. Moreover, the type of content was found to significantly improve recall accuracy following a three-day break with more newsworthy content having higher recall accuracy scores than non-newsworthy content. This may have arisen due to the *von Restorff* effect whereby the occurrence of unusual details during an event frequently increases the likelihood of retrieval (Corsini, 2002). This finding may be further supported by the fact that journalists frequently select news items that may be considered as being unusual or dramatic in order to captivate their audience (Gilchrist, 2010). An increase in sample size may therefore help to further explore this association between newsworthy and non-newsworthy items in relation to missing children appeals and recall accuracy and recall error.

6.7.4. Influence of Confidence

The fourth research objective sought to determine the effect that participants' level of confidence in their own recall accuracy had on the actual recall accuracy, finding a significant and positive association. Higher confidence scores were associated with higher recall accuracy and lower recall error. The work by Memon et al. (2003) therefore supports these findings as their research found that of the 164 participants examined, those with higher confidence in their own accuracy of their line-up decisions had higher accuracy

scores than participants with lower confidence in their own accuracy. Similarly, Brewer and Wells (2006) analysed 1200 participant identifications of a photographic line-up task and found participants with higher confidence ratings were associated with higher correct identifications and fewer incorrect identifications than participants with lower confidence ratings. Hence, higher initial participant level of confidence appears to be associated with higher correct recall accuracies.

6.7.5. Association between Initial and Follow-up Recall

The fifth research objective of the study in relation to recall accuracy was to determine whether the initial accuracy score and error score influenced the follow-up accuracy score and error score after a short three-day duration between observing the description of a missing child and a free-recall task. The results found a significant association for higher initial accuracy scores and higher follow-up accuracy scores but found no associations between initial error scores and follow-up error scores. As discussed, this could be expected as there were a limited number of participants who attained an error score. An increase in sample size may further illustrate the association between initial and follow-up error scores. Nonetheless, additional analysis exploring the effect of recall accuracy and recall error within the experimental condition across the two experimental recall tasks found that the participants were significantly more likely to acquire higher recall accuracy scores and lower recall error scores immediately after observing the description when compared to the accuracy and error scores achieved following a three-day break. These results were regardless of the length or content enclosed within the descriptions.

These results are therefore in line with the findings by Cary and Reder's (2003) second experiment that analysed the recognition accuracy of varying lists of words of nouns after a short five-minute word search distractor task, finding longer lists of words are associated with fewer recognition accuracy than shorter lists of words. These findings therefore align with their first experiment in which shorter lists have higher accuracy in recognition than longer lists (Cary & Reder, 2003). Thus, the initial experiment

demonstrating that shorter lists have higher recall accuracy than longer lists remains the same after a short time duration.

6.8. Limitations and Future Directions

Although the current research study presents a novel insight into the effectiveness of different types of content and length of descriptions of missing children on recall accuracy and recall error, as with any research, there are some limitations which need to be considered when interpreting the reported findings of the study.

First, it can be argued that the sample is not representative of the population as the sample primarily consisted of female individuals (87.40%) with a white ethnic background (68.60%), and who were students (75.30%) at the time of the data collection. However, the participants were recruited across the country and thus lived in different regions which minimise the potential for geographical bias. Thus, future research could include a more diverse sample with a wider age range, ethnic background, and occupation type to further explore the effects background characteristics have on recall accuracy and recall error.

Second, the fictional descriptions that were used within the study were designed to align with real descriptions of missing children presented in the media as well as enabling the descriptions to be compared with each other to ascertain if the length or type of content in the descriptions influence recall accuracy and recall error. Future research could thus use real descriptions to further explore recall accuracy and recall error to ascertain whether the real or fictional content influences recall ability.

Finally, participants were free to participate at any time and in any location that they wished. Hence, there was no control over the participants during this experiment in relation to taking notes or being distracted whilst reading the descriptions. These behaviours may have significantly affected the subsequent recall accuracy and recall error scores for that participant. However, the study wished to ascertain the effectiveness of missing children descriptions in a setting that is true to real events. When an appeal is displayed, participants are highly unlikely to give their full attention to the appeal as their attention

may be divided if observing within their home during a meal time, for instance (Miller et al., 2009). If the participants completed the experiment in a controlled laboratory setting, this may have resulted in an increase in type I errors. Nevertheless, future research could perform the study in a laboratory setting to control these variables and further ascertain the factors that improve recall accuracy and reduce recall error.

6.9. Chapter Summary

This chapter has presented the results and the discussion of the quantitative and qualitative analysis of the experiment exploring the effectiveness of descriptions of missing children. The chapter primarily sought to determine whether the type of content within the description and the length of description affected participants' recall accuracy and recall error. The chapter also sought to ascertain the effect that confidence and length of time spent observing has on recall accuracy and recall error. Finally, the chapter discussed these findings in relation to previous research literature and presented the study limitations and future directions.

Chapter 7: Effect of Photograph Frequency on Recall Accuracy and Recall Error

The purpose of this study was to determine if there are significant differences in recall accuracy and recall error between the number of missing children photographs presented. A secondary purpose was to determine if the participants' own level of confidence in their accuracy is associated with their overall recall accuracy and recall error.

The following chapter presents the analysis and discussion of the data of the photograph experiment as outlined previously in section 5.4.2.1. The chapter will first present the descriptive statistics between the three experimental conditions (one photograph, four photographs, eight photographs) followed by inferential statistics in the form of one-way between groups ANOVA, Kruskal-Wallis test, Spearman's rho correlations, and binary logistic regression analyses. Finally, the chapter will discuss the study results in relation to previous research findings, outline some of the limitations and future directions, before concluding with a chapter summary.

7.1. Descriptive Statistics of Experimental Conditions

As outlined previously in section 5.4.2.1., participants were randomly assigned to one of three experimental conditions: one photograph, four photographs, or eight photographs. Of the final 242 participant responses analysed, 81 (33.50%) were assigned to the 1-photograph condition, 81 (33.50%) were assigned to the 4-photograph condition, and 80 (33.00%) were assigned to the 8-photograph condition. The mean time in seconds spent observing each of the experimental photographs are presented in appendix 1. It is worth noting that the missing child photograph in the 1-photograph condition was displayed for 15 seconds whilst participants in the 4-photograph and 8-photograph conditions were free to spend as much or as little time observing the photograph. This was designed as Lampinen et al.'s (2012) work indicated that participants had spent an average of 13

seconds observing an individual missing child poster and could thus be used as a baseline to compare with the remaining conditions.

7.2. Initial Recall Accuracy

As outlined in section 5.4.2.2.1., recall accuracy was determined by summing the total of correct photograph identifications made of the target photographs during the photograph line-up task. This score was then divided by the maximum number of possible correct identifications and multiplied by 100 to derive a recall accuracy percentage score. Hence, participants in the 1-photograph condition had one target photograph to identify in the line-up to achieve an accuracy score of 100%, whilst the 4-photograph and 8-photograph conditions had to identify four or eight of the target photographs respectively to achieve an accuracy score of 100%.

7.2.1. Influence of Frequency of Photographs

To determine if there were significant differences between a number of photographs observed and recall accuracy scores, a one-way between groups ANOVA was performed. Preliminary analysis of the data via Kolmogorov-Smirnov test of normality indicated that all the data variables were non-normally distributed ($p = <0.001$). Subsequent analysis of the data via normal Q-Q plots indicated that the data did not deviate too far from the line of expected quantiles and in accordance with the central limit theorem (see Field, 2018), the data were deemed large enough for analysis via ANOVA.

Following the one-way between groups ANOVA analysis, omega squared (ω^2) effect sizes were calculated manually using the following equation:

$$\omega^2 = \frac{SS_M - (df_M) MS_R}{SS_T + MS_R}$$

Within this equation, the SS_M is derived from the between-groups effect output, and the SS_T is derived from the total amount of variance within the data. In addition, the df_M relates to the degrees of freedom for the overall effect, and the MS_R is derived from the mean square value from the between-groups output (see Field, 2018). The mean recall accuracy scores across each of the experimental conditions are presented in table 7.1.

Table 7.1.

Mean recall accuracy scores per experimental condition.

Condition	<i>M</i>	<i>SD</i>	Min	Max
1-Photograph	91.36	28.27	0.00	100.00
4-Photograph	65.12	27.58	0.00	100.00
8-Photograph	56.25	18.87	0.00	100.00

The one-way between groups ANOVA indicated that there was a significant and small effect on the number of photographs presented and recall accuracy, $f(2,239) = 42.02$, $p < 0.001$, $\omega^2 = 0.50$. Post-hoc analysis via Turkey HSD revealed that there were significant differences in mean recall accuracy when presented with one photograph ($M = 91.36$, $SD = 28.27$) compared to being presented with four photographs, ($M = 65.12$, $SD = 27.58$), or eight photographs, ($M = 56.25$, $SD = 18.87$). There was no significant difference in mean recall accuracy scores between being presented with four photographs ($M = 65.12$, $SD = 27.58$) and eight photographs ($M = 56.25$, $SD = 18.87$). Thus, higher recall accuracy scores are associated with being presented with just one missing child photograph.

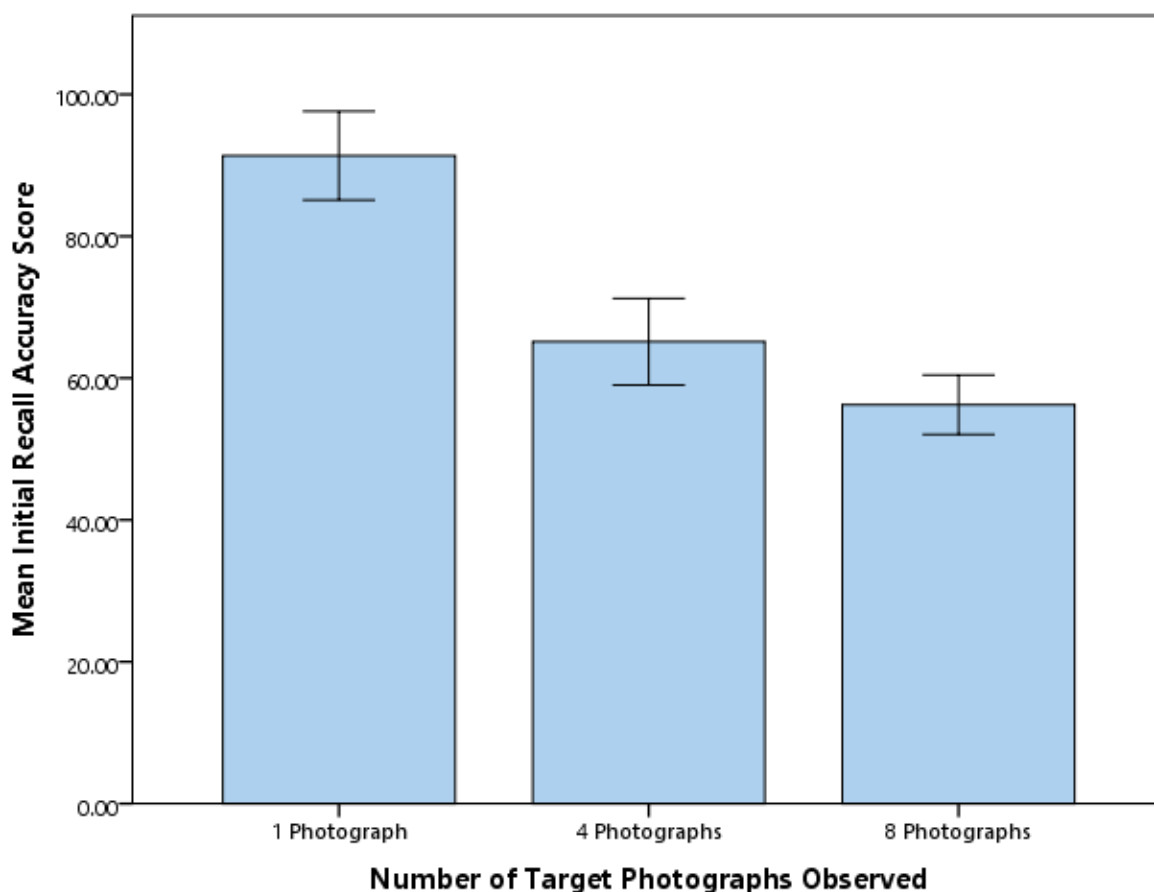


Figure 7.1. Mean initial recall accuracy scores across the number of missing children target photographs observed.

7.2.2. Influence of Confidence

To explore if significant differences were present between the participants' level of confidence in identification accuracy and the overall recall accuracy per experimental condition, a series of Spearman's rho correlations were performed. As the preliminary analysis of the data indicated non-normally distributed data, a non-parametric test was utilised. The first Spearman's rank-order correlation between the overall participants' level of confidence and recall accuracy for target 1 found a non-significant correlation, $r_s = .12$, $n = 242$, $p = 0.068$. The results suggest that confidence in the participants' own level of accuracy is not associated with the overall identification accuracy score.

To explore the association between confidence in own accuracy and overall identification accuracy score for the remaining target photographs, participants who were

placed within the 1-photograph experiment were excluded from this analysis as they were not shown these target photographs. Thus, the following analyses only includes data from those who completed the 4-photograph and the 8-photograph experiments. Tables 7.2a. and 7.2b. presents the mean level of confidence score and the minimum and maximum confidence scores provided by participants across each of the three experimental conditions for each of the target photographs. The table allows an insight into the difference in mean confidence levels for the participants who had observed either one, four, or eight mock photograph appeals with participants observing eight photographs having a marginally higher mean confidence score for each of the target photographs compared to participants observing four photographs despite observing a greater number of images.

The second series of Spearman's rank-order correlations between the overall participants' level of confidence and recall accuracy found a significant and positive correlation for target 2, $r_s = .34$, $n = 161$, $p = <0.001$. Hence, higher participants' level of confidence in recall accuracy of identifying target 2 is associated with higher overall recall accuracy in identifying target 2. In contrast, a secondary Spearman's rank-order correlation identified a significant and negative association between recall accuracy and the participant's level of confidence in recall accuracy for target 4, $r_s = -.49$, $n = 161$, $p = <0.001$. Thus, higher recall accuracy scores are associated with lower participant levels of confidence in own recall accuracy. Finally, a third Spearman's rank-order correlation was performed to ascertain the association between participants' level of confidence in recall accuracy and overall recall accuracy for target 3, finding a non-significant association ($r_s = -.12$, $n = 161$, $p = 0.14$). Therefore, these results indicate that the associations between participants' level of confidence and overall recall accuracy is mixed for targets 2, 3 and 4.

Finally, target photographs 5, 6, 7, and 8 were analysed via Spearman's rho correlations to explore the association between participants' level of confidence in recall accuracy and overall accuracy scores. Participants who were placed within the 1-photograph or 4-photograph experiments were excluded from this analysis as they were not shown these target photographs within their initial missing children photograph observations. Thus,

Table 7.2a.

Mean participants' level of confidence in identification accuracy per condition for correct identifications.

Condition	Target 1				Target 2				Target 3				Target 4			
	<i>m</i>	<i>SD</i>	Min	Max	<i>m</i>	<i>SD</i>	Min	Max	<i>m</i>	<i>SD</i>	Min	Max	<i>m</i>	<i>SD</i>	Min	Max
1-Photograph	81.70	20.29	10.00	100.00	-	-	-	-	-	-	-	-	-	-	-	-
4-Photograph	69.97	27.07	9.00	100.00	84.95	20.72	15.00	100.00	65.20	23.23	40.00	100.00	41.40	22.88	11.00	80.00
8-Photograph	68.53	22.95	19.00	100.00	87.07	21.10	5.00	100.00	73.09	22.56	19.00	100.00	51.75	18.08	19.00	100.00

Note. The symbol '-' denotes condition did not observe this target photograph.

Table 7.2b.

Mean participants' level of confidence in identification accuracy per condition for correct identifications. (continued)

Condition	Target 5				Target 6				Target 7				Target 8			
	<i>m</i>	<i>SD</i>	Min	Max	<i>m</i>	<i>SD</i>	Min	Max	<i>m</i>	<i>SD</i>	Min	Max	<i>m</i>	<i>SD</i>	Min	Max
1-Photograph	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4-Photograph	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
8-Photograph	60.71	23.99	20.00	100.00	74.79	23.89	5.00	100.00	50.00	26.22	10.00	100.00	84.90	21.85	23.00	100.00

Note. The symbol '-' denotes condition did not observe this target photograph

the following analyses only include data from those who completed the 8-photograph experiment.

The Spearman's rank-order correlation between the overall participants' level of confidence and recall accuracy for target 5 found a significant and negative correlation, $r_s = -.22$, $n = 80$, $p = 0.047$. Similarly, a significant and negative association was found between recall accuracy and confidence level for target 7, $r_s = -.31$, $n = 80$, $p = 0.006$. These findings, therefore, indicate that lower participants' level of confidence in recall accuracy is associated with higher overall recall accuracy. In contrast, the Spearman's rank-order correlation between the overall participants' level of confidence and recall accuracy for target 8 found a significant and positive association ($r_s = .37$, $n = 80$, $p = 0.001$) suggesting that higher participant level of confidence is associated with higher recall accuracy. Finally, the Spearman's rank-order correlation identified a non-significant association between recall accuracy and participant's level of confidence in recall accuracy for target 6, $r_s = .13$, $n = 80$, $p = 0.261$. Overall, the association between the level of confidence in own recall accuracy and genuine recall accuracy are mixed. These suggest other factors may contribute to recall accuracy in addition to the level of confidence in recall accuracy.

7.3. Initial Recall Error

As previously outlined in section 5.4.2.2.1., recall error was determined by an incorrect identification made on a child's photograph during the line-up task. Each identification as summed together, divided by the maximum number of potential identification errors, and multiplied by 100 to derive an error score percentage. For instance, participants in the 1-photograph condition were presented with just one target photograph and would thus attain an error score percentage of 0% if they correctly indicate that the remaining 28 photographs in the line-up were not the missing child. Similarly, participants in the 4-photograph and 8-photograph conditions would attain a 0% error score if they correctly indicate that the remaining 25 or 21 children photographs, respectively, were not the missing children presented to them before the line-up task.

7.3.1. Number of Photographs Observed

To ascertain whether there was a significant difference between the number of photographs observed and recall error scores, a one-way between groups ANOVA was performed. The one-way between groups ANOVA was deemed to be the most appropriate statistical test to use as although preliminary analysis of the data indicated non-normally distributed data, subsequent analysis of the Q-Q plots indicated that the data did not deviate too far from the line of expected quantiles. Thus, in accordance with the central limit theorem (see Field, 2018), the data were deemed large enough for the analysis via ANOVA.

As discussed in section 7.2.1., omega squared (ω^2) effect sizes were calculated manually via the following equation:

$$\omega^2 = \frac{SS_M - (df_M) MS_R}{SS_T + MS_R}$$

Within the equation, SS_M is derived from the between-groups effect and SS_T is derived from the total amount of variance. Additionally, df_M relates to the degrees of freedom for the overall effect, whilst MS_R is derived from the mean square value from the within-groups output (see Field, 2018). The mean recall error scores across each of the three experimental conditions are presented in table 7.3.

Table 7.3.

Mean recall error scores per experimental condition.

Condition	<i>M</i>	<i>SD</i>	Min	Max
1-Photograph	3.67	6.50	0.00	39.29
4-Photograph	13.88	12.20	0.00	72.00
8-Photograph	16.73	12.29	0.00	47.62

The one-way between groups ANOVA indicated that there was a significant and small effect on the number of photographs presented and recall error, $f(2,241) = 33.37$, $p = <0.001$, $\omega^2 = 0.46$. Post-hoc analysis via Turkey HSD revealed that there were significant differences in mean recall error scores when presented with one photograph ($M = 3.67$, $SD = 6.50$) compared to being presented with four photographs ($M = 13.88$, $SD = 12.20$), or eight photographs ($M = 16.73$, $SD = 12.29$). There were no significant differences between recall error scores and being presented four photographs ($M = 13.88$, $SD = 12.20$) and eight photographs ($M = 16.73$, $SD = 12.29$). Thus, lower recall error scores are associated with being presented with just one missing child photograph when compared to being presented with four or eight missing children photographs.

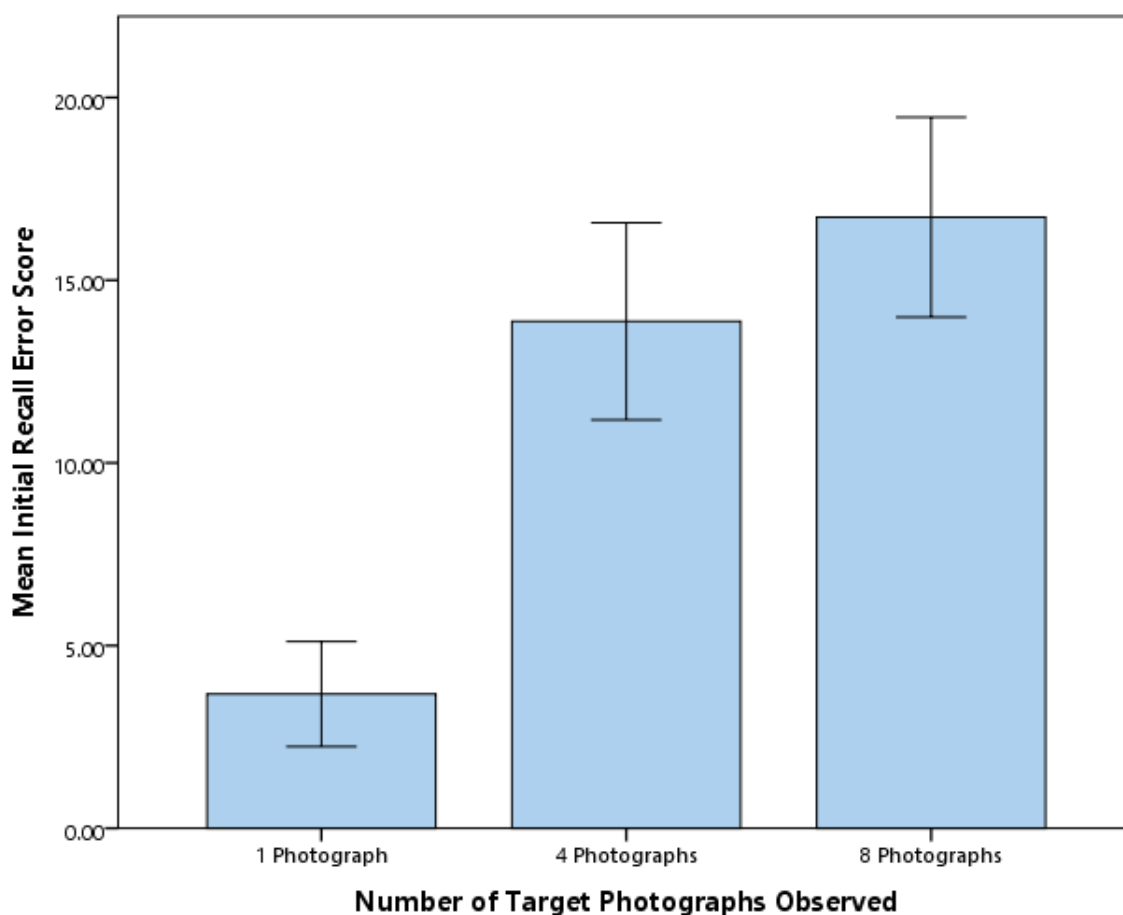


Figure 7.2. Mean initial recall error scores across the number of missing children target photographs observed.

7.3.2. Influence of Confidence

To explore the associations between participants' level of confidence in recall accuracy and overall error scores for the target photographs, a series of Spearman's rho correlations were performed. Spearman's rho correlations were deemed the most appropriate statistical test to utilise with the data due to preliminary analysis of the data indicated non-normally distributed data. A Spearman's rank order correlation was thus performed to ascertain the relationship between participants' level of confidence in identification accuracy and overall recall error scores for target 1 finding a significant and negative association, $r_s = -.28$, $n = 242$, $p = <0.001$. Thus, the results indicate that higher levels of confidence in identification accuracy are associated with lower recall error scores.

To determine whether significant relationships occur throughout the remaining target photographs, additional Spearman's rho correlations were performed. Participants who were placed within the 1-photograph condition were excluded from this analysis as these participants were not shown the target photographs prior to the line-up task. Hence, the following analyses only include data from the participants who completed the 4-photograph and 8-photograph experimental conditions.

The first Spearman's rank order correlation between the participants' level of confidence in identification accuracy and recall error for target 2 found a significant and negative correlation, $r_s = -.17$, $n = 161$, $p = 0.029$. Similarly, significant and negative associations were also found between participants' level of confidence in identification accuracy and overall recall error for target 3 ($r_s = -.29$, $n = 161$, $p = <0.001$), and target 4 ($r_s = -.32$, $n = 161$, $p = <0.001$). Thus, the results indicate that higher scores of participants' level of confidence is associated with lower recall error scores.

Finally, target photographs 5, 6, 7, and 8 were analysed via Spearman's rho correlations to explore the association between participants' level of confidence in identification accuracy and overall recall error scores. Participants who were placed within the 1-photograph or the 4-photograph experimental conditions were excluded from the analyses as these participants were not shown these target photographs. Thus, the

following analyses only include data from participants who had completed the 8-photograph experimental condition.

The Spearman's rank order correlation between participants' level of confidence in identification accuracy and overall recall error for target 5 found a significant and negative association, $r_s = -.27$, $n = 80$, $p = 0.015$. Similarly, significant and negative associations were also found between participants' level of confidence in identification accuracy and recall error for target 7 ($r_s = -.31$, $n = 80$, $p = 0.005$), and target 8 ($r_s = -.26$, $n = 80$, $p = 0.019$). In contrast, the Spearman's rank order correlation identified a non-significant but negative association between participants' level of confidence in identification accuracy and recall error for target 6, $r_s = -.15$, $n = 80$, $p = 0.173$. Therefore, the majority of the results indicate that higher levels of participant confidence in identification accuracy are associated with lower recall error scores.

7.4. Follow-up Recall Accuracy

As outlined previously in section 5.4.1.1.3., participants who completed the initial experiment were provided with the opportunity to take part in the follow-up experiment. Recall accuracy was determined by summing the total correct photograph identifications made by the participants during the follow-up line task of the original target photographs. This score was then divided by the maximum number of correct identifications and divided by 100 to derive an accuracy percentage score.

Of the original 242 participants who completed the initial experiment, a total of 89 (36.78%) dropped out and did not complete the follow-up task resulting in a total of 153 participants. Thus, the remaining participants comprised of 49 (32.02%) within the 1-photograph condition, 50 (32.68%) within the 4-photograph condition, and 54 (35.29%) within the 8-photograph condition.

7.4.1. Number of Photographs Observed

To determine if significant differences exist between the number of photographs presented initially and follow-up recall accuracy scores, a one-way between groups ANOVA was performed. Preliminary analysis of the data via Kolmogorov-Smirnov test of normality indicated that the variables were non-normally distributed although subsequent analysis of the normal Q-Q plots indicate the data does not deviate too far from the line of expected quantiles. Thus, in accordance with the central limit theorem (see Field, 2018), the data were deemed large enough for the use of the ANOVA analysis. As previously mentioned in section 7.2.1., omega squared (ω^2) effect sizes were calculated manually. Mean follow-up recall accuracy scores across each of the three experimental conditions are displayed in table 7.4.

Table 7.4.

Mean follow-up recall accuracy scores per experimental condition.

Condition	<i>M</i>	<i>SD</i>	Min	Max
1-Photograph	83.67	37.34	0.00	100.00
4-Photograph	56.00	30.95	0.00	100.00
8-Photograph	44.91	22.85	0.00	100.00

The one-way between groups ANOVA indicated that there was a significant and small effect on the number of photographs presented initially and follow-up recall accuracy, $f(2,152) = 21.42$, $p = <0.001$, $\omega^2 = 0.46$. Post-hoc analyses via Turkey HSD indicated that there were significant differences in mean follow-up recall accuracy when presented with one photograph ($M = 83.67$, $SD = 37.34$) compared to being resented with four photographs ($M = 56.00$, $SD = 30.95$), or eight photographs ($M = 44.91$, $SD = 22.85$). There were no significant differences found in mean follow-up recall accuracy scores between being presented with four photographs ($M = 56.00$, $SD = 30.95$) and eight photographs ($M = 44.91$, $SD = 22.85$). Therefore, the results indicate that higher follow-up recall accuracy scores are associated with being presented with just one missing child photograph.

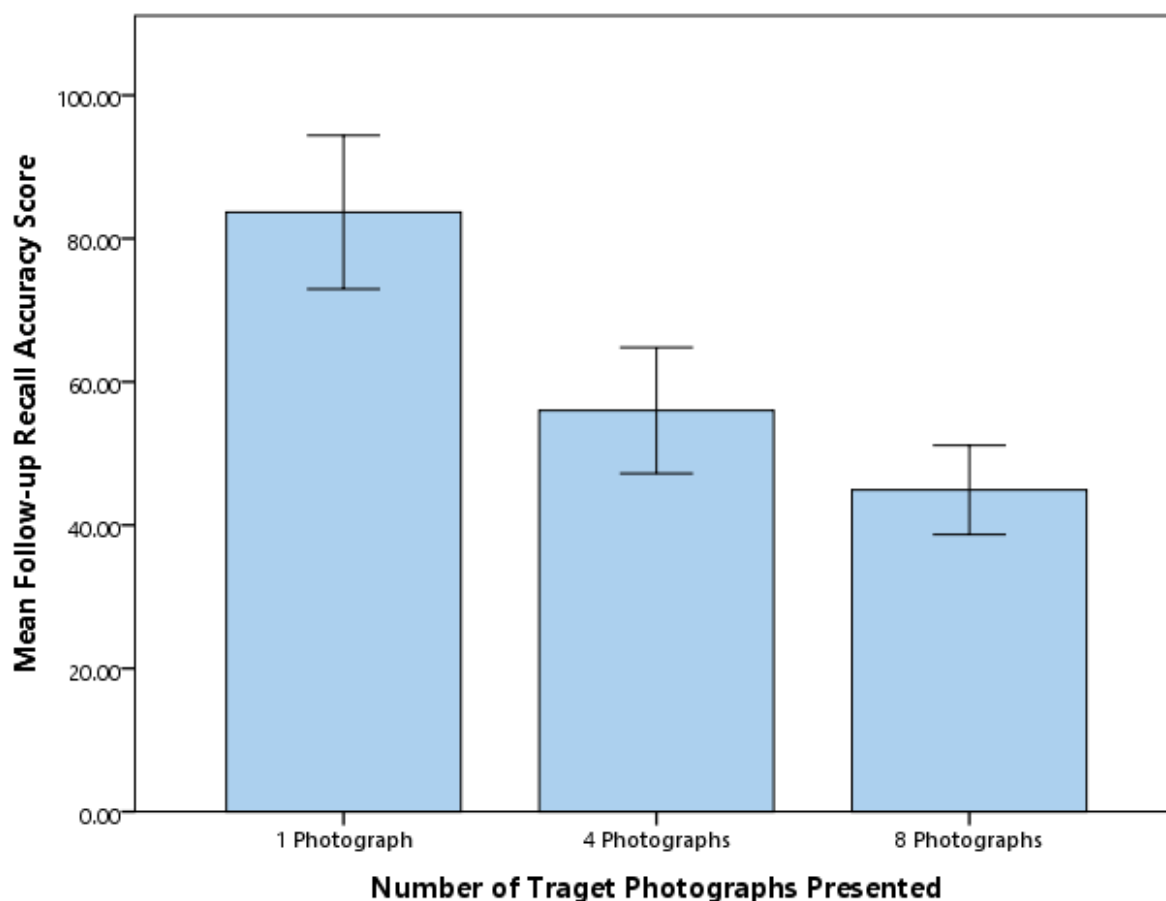


Figure 7.3. Mean follow-up recall accuracy scores across the number of missing children target photographs observed.

7.4.2. Influence of Confidence

To explore if there are significant differences present between the participants' level of confidence in follow-up identification accuracy for target 1 and the overall follow-up recall accuracy per experimental condition, a binary logistic regression was performed. The target 1 photograph was analysed as this is the only photograph that was observed by all participants within all three experimental groups. A direct logistic regression model was performed between the overall follow-up recall accuracy scores and the number of photographs initially observed on the participants' level of follow-up confidence during the line-up task. The full model containing all predictor variables was statistically significant, $\chi^2(3, N = 153) = 16.51, p = 0.001$. The full model explained between 10.20% (Cox and

Snell R square) and 14.30% (Nagelkerke R square) of the variance in follow-up recall accuracy and correctly classified 72.50% of cases.

Experimental condition and confidence in identification accuracy of target photograph one made significant contributions to the model. Follow-up recall accuracy scores were significantly higher for participants who indicated higher confidence levels in correct identification overall (OR = 1.02). Moreover, follow-up accuracy scores were also significantly higher for participants who observed one photograph when compared to participants observing eight photographs (OR = 0.29). There were no significant effects for participants who observed four photographs (OR = 0.44) compared to just one photograph.

To explore the associations between participants' level of confidence in follow-up recall accuracy and overall follow-up recall accuracy scores for the remaining target photographs, a series of Spearman's rho correlations were performed as preliminary analysis of the data indicated non-normally distributed data. Participants who were placed within the 1-photograph experimental condition were removed from the subsequent analyses as they were not shown the remaining target photographs prior to the line-up task. Thus, the following analyses only include data from participants who completed the 4-photograph and 8-photograph experiments. Table 5 demonstrates the mean level of confidence in follow-up identification accuracy scores across each of the three experimental conditions.

The first Spearman's rank order correlation between the participants' level of confidence in identification accuracy and overall follow-up recall accuracy for target 2 found a non-significant correlation, $r_s = .15$, $n = 104$, $p = 0.121$. Similarly, the Spearman's rank order correlations also found non-significant associations between participants' level of confidence and overall follow-up recall accuracy for photograph target 3 ($r_s = -.043$, $n = 104$, $p = 0.666$), and photograph target 4 ($r_s = .038$, $n = 104$, $p = 0.700$). Therefore, the results indicate that the participants' level of confidence in identification accuracy is not associated with the overall recall accuracy.

Finally, photograph targets 5, 6, 7, and 8 were analysed within participants placed in the 8-photograph experimental condition and the 1-photograph and 4-photograph

experimental conditions did not observe these target photographs during the initial missing children task. Thus, the following analysis only includes data from participants within the 8-photograph condition to explore if significant associations arise between participants' level of confidence and overall follow-up recall accuracy for the remaining target photographs.

The Spearman's rank order correlations found non-significant associations between participant's level of confidence in identification accuracy and overall follow-up recall accuracy for photograph target 5 ($r_s = .042$, $n = 54$, $p = 0.761$), target 7 ($r_s = -.147$, $n = 54$, $p = 0.288$), and target 8 ($r_s = .200$, $n = 54$, $p = 0.147$). Therefore, these findings further indicate that participants' level of confidence in identification accuracy is not associated with the overall follow-up recall accuracy scores. In contrast, there was a significant and positive association between participants' level of confidence in identification accuracy and overall follow-up recall accuracy for target 6 ($r_s = .0289$, $n = 54$, $p = 0.034$). Hence, higher participant level of confidence is associated with higher follow-up recall accuracy scores only for target photograph 6.

7.4.3. Influence of Initial Recall Accuracy

To determine whether there was a significant association between the follow-up recall accuracy scores and the initial recall accuracy scores, a Spearman's rho correlation was performed. Preliminary analysis of the data via Kolmogorov-Smirnov and normal Q-Q plots identified non-normally distributed data, thus the non-parametric Spearman's rho correlation was deemed the most appropriate statistical test to use.

Spearman's rank order correlations were performed to ascertain whether there was a significant association between the initial recall accuracy score and the follow-up recall accuracy score per experimental condition. The results identified significant and positive associations within the 1-photograph condition ($r_s = .58$, $n = 49$, $p = <0.001$), 4-photograph condition ($r_s = .56$, $n = 50$, $p = <0.001$), and the 8-photograph condition ($r_s = .60$, $n = 54$, $p = <0.001$). These results therefore indicate that higher initial recall accuracy scores are associated with higher follow-up recall accuracy scores.

Table 7.5a.

Mean participants' level of confidence in identification accuracy per condition for correct follow-up identifications.

Condition	Target 1				Target 2				Target 3				Target 4			
	<i>m</i>	<i>SD</i>	Min	Max	<i>m</i>	<i>SD</i>	Min	Max	<i>m</i>	<i>SD</i>	Min	Max	<i>m</i>	<i>SD</i>	Min	Max
1- Photograph	78.33	22.70	20.00	100.00	-	-	-	-	-	-	-	-	-	-	-	-
4- Photograph	67.90	23.95	20.00	100.00	76.86	21.97	20.00	100.00	60.12	25.14	17.00	100.00	65.88	23.55	20.00	100.00
8- Photograph	62.24	26.41	7.00	100.00	75.74	24.50	12.00	100.00	62.85	26.93	7.00	100.00	55.02	25.71	10.00	100.00

Note. The symbol '-' denotes condition did not observe this target photograph.

Table 7.5b.

Mean participants' level of confidence in identification accuracy per condition for correct follow-up identifications. (continued)

Condition	Target 5				Target 6				Target 7				Target 8			
	<i>m</i>	<i>SD</i>	Min	Max	<i>m</i>	<i>SD</i>	Min	Max	<i>m</i>	<i>SD</i>	Min	Max	<i>m</i>	<i>SD</i>	Min	Max
1- Photograph	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4- Photograph	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
8- Photograph	56.02	26.22	2.00	100.00	58.72	28.39	3.00	100.00	56.26	24.42	6.00	100.00	65.26	28.13	3.00	100.00

Note. The symbol '-' denotes condition did not observe this target photograph

Finally, the research also sought to explore the associations between the initial recall accuracy scores and the follow-up recall accuracy scores within the same conditions of the number of missing child photographs observed. The preliminary analysis of the data via Kolmogorov-Smirnov test of normality indicated a non-normally distributed data. The subsequent analysis of the normal Q-Q plots had further indicated a non-normally distributed data. Hence, a series of Wilcoxon signed-rank tests were performed.

The Wilcoxon signed-rank test indicated a non-significant difference between initial recall accuracy scores and follow-up recall accuracy scores for participants who observed the one missing child photograph, $T = 3.00$, $p = 0.180$, $r = -0.14$. In contrast, there was a significant difference for participants who observed four missing children photographs with higher initial recall accuracy scores ($Mdn = 75.00$) compared to the follow-up recall accuracy scores ($Mdn = 62.50$), $T = 59$, $p = 0.025$, $r = -0.22$. Similarly, a significant difference was found for participants observing eight photographs with higher initial recall accuracy scores ($Mdn = 62.50$) compared to the follow-up recall accuracy scores ($Mdn = 50.00$), $T = 199.50$, $p = <0.001$, $r = -0.38$. Hence, participants were significantly more likely to achieve higher recall accuracy scores immediately after observing the photographs than they were following a three-day break.

7.5. Follow-up Recall Error

As outlined in section 5.4.2.2.1., recall error scores were determined by summing the total incorrect identifications made during the photograph line-up task and divided by the maximum number of false identifications possible. This figure was then multiplied by 100 to derive a recall error percentage score. Thus, participants in the 1-photograph condition had to correctly identify just one target and had a maximum potential error score for 28 photographs. In comparison, participants in the 8-photograph condition had eight photographs to correctly identify and thus had a maximum potential error score for 21 photographs.

7.5.1. Number of Photographs Observed

To determine if there are significant differences between the number of photographs observed and the subsequent follow-up recall error scores, a one-way between groups ANOVA was performed. Although preliminary analysis of the data indicated non-normally distributed data, the subsequent analysis of the normal Q-Q plots indicated that the data did not deviate too far from the line of expected quantiles and the data were deemed large enough in accordance with the central limit theorem (see Field, 2018) for use of the ANOVA test. Moreover, as presented within section 7.4.1. and 7.2.1., omega squared (ω^2) effect sizes were calculated manually. The mean follow-up recall error scores across the three experimental groups are displayed in table 7.6.

Table 7.6.

Mean follow-up recall error scores per experimental condition.

Condition	<i>M</i>	<i>SD</i>	Min	Max
1-Photograph	4.59	6.92	0.00	35.71
4-Photograph	16.40	11.03	0.00	48.00
8-Photograph	24.16	17.25	0.00	66.67

The one-way between groups ANOVA indicated that there is a significant and small effect on the number of photographs presented initially and the subsequent follow-up recall error score, $f(2,152) = 30.96$, $p = <0.001$, $\omega^2 = 0.53$. Post-hoc analysis via Turkey HSD indicated that there were significantly lower mean follow-up recall error scores when presented with just one photograph ($M = 4.59$, $SD = 6.92$) when compared to being presented with four photographs ($M = 16.40$, $SD = 11.03$), or eight photographs ($M = 24.16$, $SD = 17.25$). There was also significantly lower mean follow-up recall error scores when being presented with four photographs ($M = 16.40$, $SD = 11.03$) compared to eight photographs ($M = 24.16$, $SD = 17.25$). Therefore, the results indicate that higher follow-up recall error scores are associated with an increase in the number of missing children photographs presented.

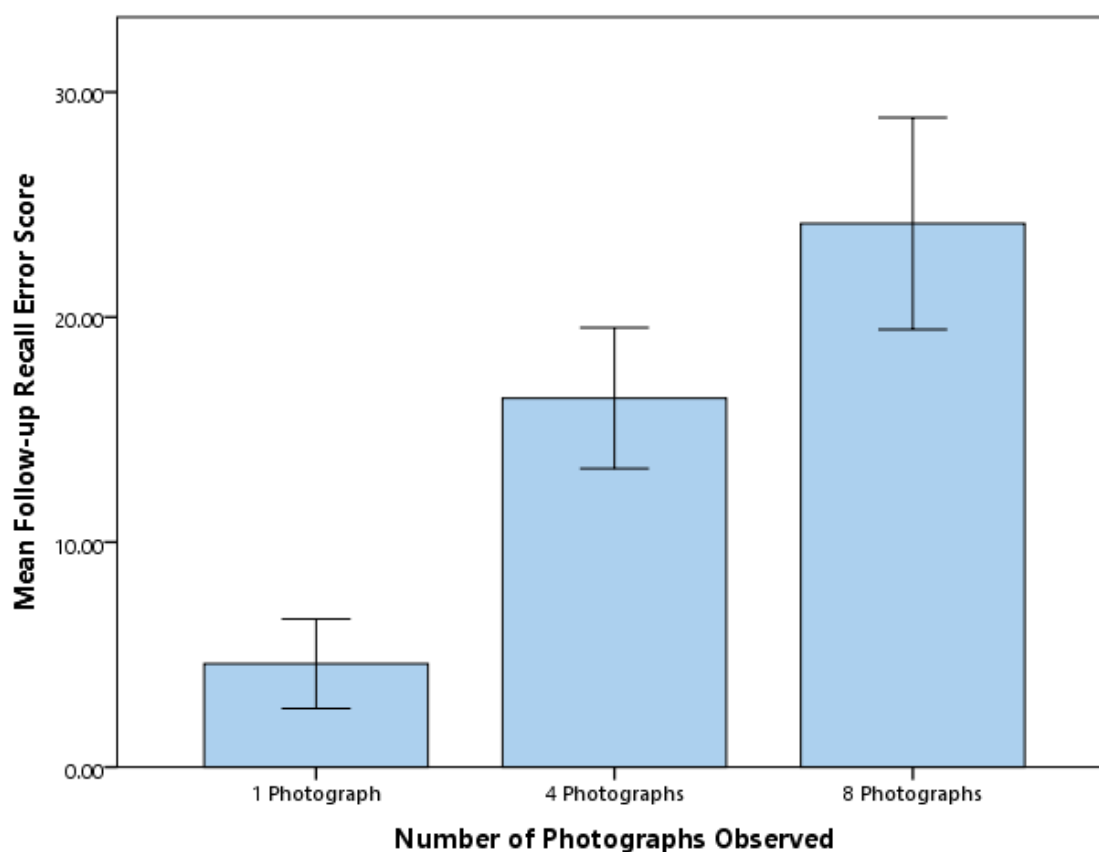


Figure 7.4. Mean follow-up recall error scores across the number of missing children target photographs observed.

7.5.2. Influence of Confidence

To explore whether significant differences are present between the participants' level of confidence in identification accuracy for target 1 and the overall recall error score per experimental condition, a binary logistic regression analysis was performed. The target 1 photograph was analysed as this was the only target photograph presented to all participants within all three experimental groups. A direct logistic regression model was performed between the overall recall error scores and the number of photographs observed on the participants' level of follow-up confidence in identification accuracy during the follow-up line-up task. The full model containing all predictor variables was statistically significant, $\chi^2(3, N = 153) = 16.51, p = 0.001$. The full model explained between 10.20% (Cox and

Snell R square) and 14.30% (Nagelkerke R square) of the variance in follow-up recall error scores and correctly classified 72.5% of cases.

Experimental condition and confidence in identification accuracy of target photograph one made significant contributions to the model. Follow-up recall error scores were significantly higher for participants who indicated a lower level of confidence in identification accuracy (OR = 0.98). Moreover, follow-up error scores were also significantly higher for participants who observed eight photographs (OR = 3.50) when compared to participants who observed just one photograph. There were no significant effects for participants who observed four photographs (OR = 2.26) compared to just one photograph.

To further explore the associations between participants' level of confidence in identification accuracy and the overall recall error scores for the remaining target photographs, a series of Spearman's rho correlations were performed. Preliminary analysis of the data indicated non-normally distributed data and thus, Spearman's rho correlations were deemed to be most appropriate for analysing the data. Participants who were placed within the 1-photograph experimental condition were excluded from the subsequent analysis as these participants did not observe the remaining target photographs. Thus, the following analyses only include the data from participants who completed the 4-photograph and 8-photograph conditions.

The Spearman's rank order correlations between the participants' level of confidence in identification accuracy and the overall recall error score for participants within the 4-photograph condition found no significant differences for target 2 ($r_s = .074$, $n = 50$, $p = 0.608$), target 3 ($r_s = -.234$, $n = 50$, $p = 0.102$), or target 4 ($r_s = -.037$, $n = 50$, $p = 0.801$) photographs. Thus, the results demonstrate that the participants' level of confidence in identification accuracy is not associated with recall error scores.

Finally, target photographs 5, 6, 7, and 8 were analysed with the participants who completed the 8-photograph experimental condition as participants in the 1-photograph and 4-photograph conditions did not observe these target photographs and were thus excluded from the analysis. The Spearman's rank order correlations found no significant associations between the participants' level of confidence in identification accuracy and the overall recall

error score for participants within the 8-photograph condition for target 3 ($r_s = -.179$, $n = 54$, $p = 0.196$), target 4 ($r_s = -.185$, $n = 54$, $p = 0.180$), target 5 ($r_s = -.129$, $n = 54$, $p = 0.352$), target 6 ($r_s = -.068$, $n = 54$, $p = 0.627$), target 7 ($r_s = -.142$, $n = 54$, $p = 0.305$), or target 8 ($r_s = -.087$, $n = 54$, $p = 0.532$) photographs. However, there were significant associations between the participants' level of confidence in identification accuracy and the overall recall error score for target 2 ($r_s = -.446$, $n = 54$, $p = 0.001$). The results therefore indicate that the participants' level of confidence in identification accuracy is not associated with the overall follow-up recall error scores.

7.5.3. Influence of Initial Recall Error

To determine whether significant associations are present between the follow-up recall error scores and the initial recall error scores within each condition, Spearman's rho correlations were performed as preliminary analysis of the data vis Kolmogorov-Smirnov and normal Q-Q plots indicated non-normally distributed data. Therefore, the Spearman's rho correlation test was deemed to be the most appropriate statistical measure to use with the data.

The Spearman's rank order correlations were performed to ascertain whether there is a significant association between the initial recall error score and the follow-up recall error score within each experimental condition. The results identified significant and positive associations within the 1-photograph condition ($r_s = .61$, $n = 49$, $p = <0.001$), 4-photograph condition ($r_s = .48$, $n = 50$, $p = <0.001$), and the 8-photograph condition ($r_s = .49$, $n = 54$, $p = <0.001$). These results thus indicate that higher initial recall error scores are significantly associated with higher follow-up recall error scores.

Finally, the research also sought to explore the associations between the initial recall error scores and the follow-up recall error scores within the same conditions of the of number of missing child photographs observed. The preliminary analysis of the data via Kolmogorov-Smirnov test of normality again indicated a non-normally distributed data. The subsequent analysis of the normal Q-Q plots had further indicated a non-normally distributed data. Therefore, a series of Wilcoxon signed-rank tests were performed.

The Wilcoxon signed-rank test indicated a non-significant difference between initial recall error scores and follow-up recall error scores for participants who observed the one missing child photograph, $T = 208.50$, $p = 0.201$, $r = 0.13$. Similarly, there was also a non-significant difference between initial recall error scores and follow-up recall error scores for participants who observed four missing children photographs, $T = 625$, $p = 0.219$, $r = 0.12$. In contrast, a significant difference was found for participants observing eight photographs with lower initial recall error scores ($Mdn = 14.29$) compared to the follow-up recall error scores ($Mdn = 23.81$), $T = 790$, $p = 0.006$, $r = 0.26$. Hence, participants were significantly more likely to achieve lower recall error scores immediately after observing the photographs than they were following a three-day break.

7.6. Discussion

The research findings present a novel insight into the recall accuracy and recall error of missing children photographs to fill the current gap in knowledge and provide a much-needed understanding into improving missing children appeals. The purpose of the study was to explore the effect of the number of missing children photographs presented on subsequent recall accuracy immediately after being presented with the photographs and following a short three-day delay. The results indicated that recall accuracy significantly increases and recall error significantly decreases when there are fewer missing photographs presented. A secondary purpose of the study was to determine whether the participants' level of confidence in identification accuracy affects the subsequent recall accuracy and recall error scores, finding the level of participants' confidence in identification accuracy is not associated with the subsequent recall accuracy. However, confidence is associated with recall error scores whereby higher levels of confidence in identification accuracy are associated with lower recall error scores.

7.6.1. Influence of Frequency

The first research objective of the study sought to establish whether the number of photographs presented influences the recall accuracy finding a significant association whereby participants who are presented with just one photograph have significantly greater recall accuracy and lower recall error than individuals who are presented with four or eight photographs. The work by Lampinen and Moore (2016) supports this finding via their research which examined the data from 465 undergraduate student participants. The participants were randomly assigned to observe three missing persons videos across three days, or just one missing persons video on the last day of a three-day psychological experiment event (Lampinen & Moore, 2016). The participants were then told that an individual from within the missing persons video observed would be around the university campus in the next few days and were asked to report the individual to the researchers (Lampinen & Moore, 2016). The results demonstrated that the individuals who observed just one missing persons video had significantly greater correct sightings than individuals who observed three missing persons videos (Lampinen & Moore, 2016). Thus, being presented with less missing persons images are associated with greater recall accuracy and identification.

7.6.2. Influence of Confidence

The second research objective sought to establish whether the participants' overall level of confidence in recall identification accuracy and error was associated with the subsequent recall accuracy and error scores, finding mixed results. Higher confidence levels were associated with lower recall error scores. However, the results also indicated that the participants' level of confidence within the 1-photograph experiment was not associated with recall accuracy, although some of the individual photographs were significantly correlated with recall accuracy for participants within the 4-photograph and 8-photograph experiments. Nonetheless, the majority of the findings suggests that confidence in recall identification is not associated with the overall recall accuracy scores. This finding thus

contrasts the work by Brewer and Wells (2006) who analysed identifications of a photographic line-up by 1200 participants, finding individuals with higher confidence had greater overall recall accuracy and lower recall inaccuracies compared to participants who had a lower level of confidence. Likewise, Memon et al. (2003) found that individuals with higher levels of confidence in line-up identification accuracy had significantly higher overall accuracy scores than individuals with lower confidence.

However, these findings may differ from the current research findings due to the type of line-up identification that was involved. For instance, the current study requested participants to observe photographs of missing children and then indicate whether the child presented in a sequential photographic line-up was or was not a child within the previous missing children appeals. In contrast, both Memon et al.'s (2003) and Brewer and Wells' (2006) studies included a simultaneous line-up whereby all line-up images were presented to the participants at the same time. Research has indicated how sequential line-ups require greater memorial information to be utilised by the individual when trying to identify an individual from the line-up compared to a simultaneous line-up (Dobolyi & Dodson, 2013). Similarly, participants are typically more confident in their identification accuracy during sequential line-ups than in simultaneous line-ups (Dobolyi & Dodson, 2013). Nonetheless, many eyewitness researchers regard confidence as a non-practical and relatively weak indicator of identification accuracy (Kassin et al., 2001).

7.6.3. Association between Initial and Follow-up Recall

The third research objective aimed to determine whether the initial recall accuracy score was associated with the follow-up recall accuracy score, finding a significant and positive association. In addition, the results indicated that higher initial recall error scores were also associated with higher follow-up recall error scores. These findings are thus in line with Cary and Reder (2003) who analysed participants' recognition accuracy of lists of words before and after a distractor task finding higher initial recall accuracy scores are associated with higher subsequent recall accuracy scores. Although this finding utilised descriptive words as opposed to photographs, the research nonetheless demonstrates the

effect that having a higher initial accuracy score influences the likelihood of acquiring a higher recall accuracy score upon a short time duration. However, additional research is required to further explore this effect between initial and subsequent recall accuracy score associations.

7.7. Limitations and Future Directions

The current research study findings present a novel insight into the effectiveness of missing children photograph appeals that demonstrate how the number of photographs presented and the length of time spent observing the photographs can influence the recall accuracy and recall error for the identification of missing children. However, as with the majority of research, there are a small number of limitations that need to be considered when interpreting these research findings.

The first limitation of the study relates to the representativeness of the sample for the population. The study sample consisted of primarily female individuals (84.70%) with a white ethnic background (59.90%) and who was a student (80.60%). Hence, a wider representational sample would have been beneficial to further explore the differences in recall accuracy and recall error of identifications of missing children. Nevertheless, the sample lived across different regions throughout the UK which minimises the potential geographical bias and helps to improve the representativeness toward the entire population as a child may go missing in any location throughout the UK in which the public are requested to help locate them safely.

A second limitation that needs to be noted is the type of photographs used in the fictional appeals. To try to minimise any potential biases, the photographs were chosen based upon the children being different ages, were freely available, and were copyright-free. As such, the images of the children presented to participants may not have been as realistic as originally designed. Future research can therefore improve this by presenting participants with more realistic photographs, possibly from confederates. This may illustrate

stronger or alternative findings for the effect of the photographs on the recall accuracy and recall error.

Finally, the distraction task utilised in the research may have contributed to some of the findings. The distraction task was a simple word-memory task presented for two minutes and thus may not have fully prevented participants from rehearsing the images to memory as participants may not have fully engaged with the memory task. The distractor task could therefore be improved by challenging the participants to complete a more cognitively challenging task such as a sudoku or crossword puzzle. The task could also have been presented for a time duration longer than two minutes to fully minimise the likelihood of image rehearsal as this would affect the accuracy scores for individual.

7.8. Chapter Summary

This chapter has presented the results and the discussion of the quantitative analysis of the data to explore the effectiveness of missing children photographs on recall accuracy and recall error. The chapter sought to explore whether the frequency of photographs presented to participants influences their recall accuracy and recall error. In addition, the chapter also sought to illustrate the effect that confidence in recall accuracy and the length of time spent observing missing photograph appeals may influence recall accuracy and recall error. Finally, the chapter also presented the research limitations and future directions for research.

Chapter 8: Effect of Type of Format Design on Recall Accuracy and Recall Error

The purpose of this study was to determine if there are any significant differences in recall accuracy and recall error between the type of format used for a missing child appeal. The secondary purpose of the study was to determine if the participants' level of confidence in recall accuracy is associated with the overall recall accuracy and recall error scores. The following chapter presents the analysis and discussion of the data for the type of format experiment as outlined previously. The chapter will begin by presenting the descriptive statistics between the two experimental conditions (Twitter, Child Rescue Alert) prior to inferential statistics in the form of Mann Whitney U tests and Spearman's rho correlations. Finally, the results will be discussed in relation to the previous literature followed by the limitations of the study, and future directions, prior to concluding with a chapter summary.

8.1. Descriptive Statistics of Experimental Conditions

As outlined previously in section 5.4.2.1., participants were randomly assigned to one of two experimental conditions: Twitter appeal or Child Rescue Alert. Of the final 182 participant responses analysed, 90 (49.50%) were assigned within the Child Rescue Alert condition and 92 (50.50%) were assigned within the Twitter appeal.

8.1.1. Time

To determine if there were any significant associations between the two experimental conditions and the time spent observing each of the appeals, a Mann Whitney U test was performed. Preliminary analysis of the data was performed via the Kolmogorov-Smirnov test of normality that indicated non-normally distributed data ($p = <0.001$) as did the subsequent analysis of the histograms and normal Q-Q plots. Thus, the non-parametric Mann Whitney U test was deemed the most appropriate statistical test to utilise with the

data. Following the analysis, approximate effect sizes were calculated manually using the following equation:

$$r = \frac{z}{\sqrt{n}}$$

Within the above equation, the z relates to the z -score derived from the Mann Whitney U test statistics produced via SPSS, whilst the n simply relates to the number of participants within the study (see Field, 2018). The mean time in seconds that was spent observing each of the appeals are presented in table 8.1.

Table 8.1.

Mean time in seconds spent observing the missing child appeal per experimental condition.

Experimental Condition	m	SD	Min	Max
Twitter Appeal	15.29	14.74	1.05	105.83
Child Rescue Alert	25.32	19.08	2.48	137.84

The time in seconds spent observing the missing child's appeal was significantly affected by the type of format used, $U = 2171.00$, $z = -5.54$, $p = <0.001$, $r = -0.41$.

Participants spent a longer time duration observing the Child Rescue Alert appeal ($Mdn = 21.05$, Mean Rank = 113.38) compared to participants who observed the Twitter appeal ($Mdn = 11.54$, Mean Rank = 70.10).

8.1.2. Confidence

To explore whether is a significant difference between participant's level of confidence in accuracy and observing the Child Rescue Alert or the Twitter appeal, a Mann Whitney U test was performed. The Mann Whitney U test was deemed the most appropriate statistical test to use with the data as preliminary analysis of the data via histograms, normal Q-Q plots and the Kolmogorov-Smirnov test of normality which had indicated non-normally distributed data. Following the analysis, the approximate effect sizes were calculated manually using the same equation as demonstrated above in section 8.1.1.

The Mann Whitney U test indicated that there was not a significant difference between the two experimental conditions and participants' level of confidence in accuracy, $U = 3618.00$, $z = -1.47$, $p = 0.14$, $r = -0.11$. The results indicated that participants observing the Child Rescue Alert had marginally higher confidence ($Mdn = 69.50$, Mean Rank = 97.30) than participants who observed the Twitter appeal ($Mdn = 60.50$, Mean Rank = 85.83). The mean confidence scores across both experimental conditions are presented in table 8.2.

Table 8.2.

Mean level of confidence in recall accuracy across the two experimental conditions.

Experimental Condition	<i>m</i>	<i>SD</i>	Min	Max
Twitter Appeal	57.71	26.81	5.00	100.00
Child Rescue Alert	63.69	25.05	9.00	100.00

8.2. Initial Recall Accuracy

As previously outlined in section 5.4.3.2.1., recall accuracy was determined by summing the total of correct description and photograph variables that were 'present' within the participants' free recall task at the end of the initial experiment, and dividing this total by the maximum number of potential correct responses. Thus, participants in the Child Rescue Alert condition had a potential total of 21 variables to recall, whilst the participants observing the Twitter appeal had a total of 13 variables to recall. This final figure was then multiplied by 100 to derive a recall accuracy percentage score. Figures 8.1 and 8.2 illustrates the frequency of items that were correctly recalled by the participants during the free-recall task within each of the two experimental tasks.

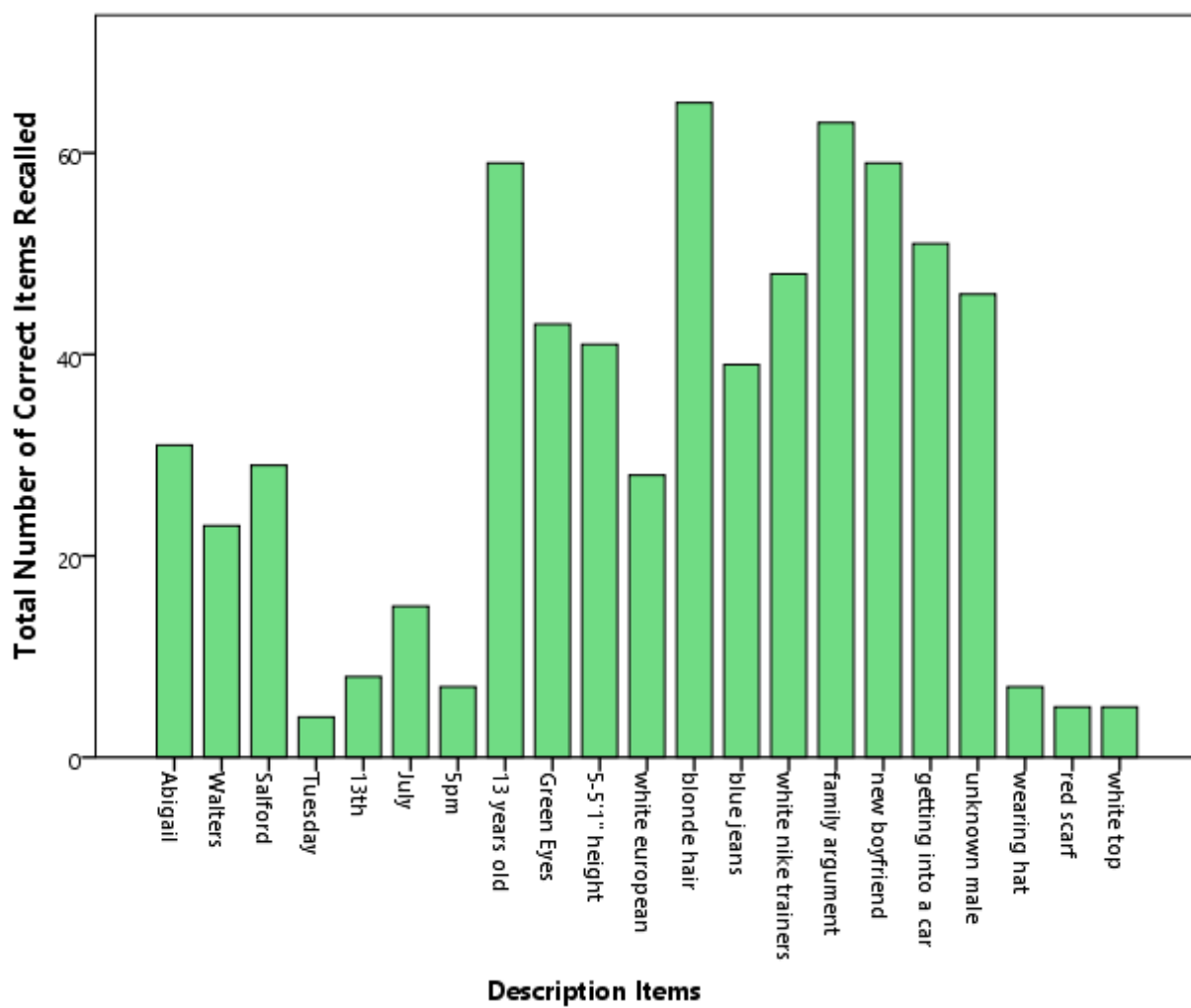


Figure 8.1. Total number of correct items recalled by participants who observed the Child Rescue Alert format design.

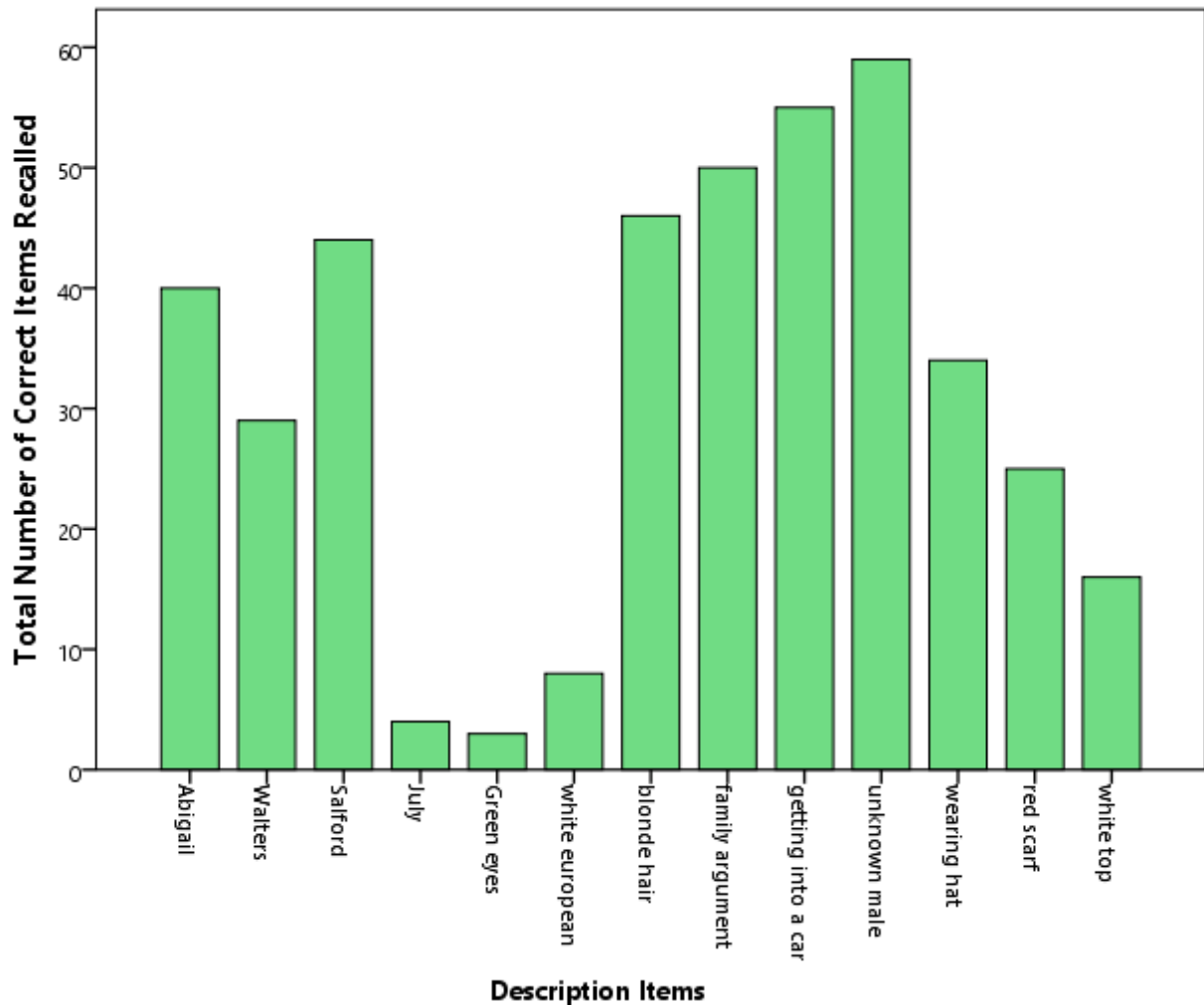


Figure 8.2. Total number of correct items recalled by participants who observed the Twitter format design.

8.2.1. Influence of Time

To determine whether the length of time spent observing the missing child appeal is associated with higher levels of recall accuracy, Spearman's rho correlations were performed. Preliminary analysis of the data via Kolmogorov-Smirnov indicated non-normally distributed data for the Child Rescue Alert condition ($p = <0.001$) and the Twitter appeal condition ($p = <0.001$). Moreover, subsequent analysis via histograms and normal Q-Q plots further indicated non-normally distributed data and thus, Spearman's rho correlation was deemed to be the most appropriate statistical test to utilise with the data.

A Spearman's rho correlation was performed to explore the relationship between the time spent observing the Child Rescue Alert appeal and recall accuracy finding a large and

positive monotropic relationship, $r_s = .68$, $n = 90$, $p = <0.001$. A secondary Spearman's rho correlation was also performed to ascertain if there is a relationship between the time spent observing the Twitter appeal and the subsequent recall accuracy score, finding a moderate and positive monotropic relationship, $r_s = .45$, $n = 92$, $p = <0.001$. These results therefore indicate that recall accuracy increases as the time in seconds spent by the participants observing the missing child appeal also increases.

8.2.2. Influence of Type of Format

To establish whether there are significant differences between the type of the missing child appeal's format observed and recall accuracy, a Mann Whitney U test was performed. Preliminary analysis of the data via Kolmogorov-Smirnov test of normality indicated that the data was not normally distributed (ranging from $p = <0.00$ to $p = 0.006$). In addition, the subsequent analysis of the histograms and normal Q-Q plots further indicated non-normally distributed data. Therefore, the Mann Whitney U test was the most appropriate statistical test to use with the data as the test does not assume normality. Succeeding the data analysis, approximate effect sizes were calculated manually using the following equation as explained in section 9.1.1:

$$r = \frac{z}{\sqrt{n}}$$

A Mann Whitney U test was performed to ascertain if there were any significant differences between the type of missing child appeal format observed and overall recall accuracy. The Mann Whitney U test indicated that there was not a significant difference between observing the Child Rescue Alert appeal or observing the Twitter appeal and the overall recall accuracy, $U = 3865.00$, $z = -0.78$, $p = 0.44$, $r = -0.06$. The results further indicated that the participants who had observed the Child Rescue Alert appeal had marginally higher recall accuracy ($Mdn = 33.33$, Mean Rank = 94.56) that participants who

had observed the Twitter appeal ($Mdn = 69.50$, Mean Rank = 88.51). The mean accuracy scores across both experimental groups are presented below in table 8.3.

Table 8.3.

Mean recall accuracy scores across the two experimental conditions.

Experimental Condition	m	SD	Min	Max
Twitter Appeal	34.53	18.69	0.00	76.92
Child Rescue Alert	35.76	17.68	4.76	80.95

In addition to the overall recall accuracy between the experimental conditions, the research also sought to explore whether the photograph or the textual information presented within the format affects recall accuracy. A Mann Whitney U test was performed to determine whether there were any differences between observing the Child Rescue Alert or the Twitter appeal on recall accuracy of the photograph. The Mann Whitney U test found a significant difference ($U = 3380.00$, $z = -2.20$, $p = 0.03$, $r = -0.16$) with the participants who had observed the Child Rescue Alert appeal having higher recall accuracy ($Mdn = 33.33$, Mean Rank = 99.94) than participants who had observed the Twitter appeal ($Mdn = 16.67$, Mean Rank = 83.24).

A secondary Mann Whitney U test was performed to determine whether there were any significant differences between observing the Child Rescue Alert or the Twitter appeal on recall accuracy of the textual information. The Mann Whitney U test found a non-significant difference ($U = 4439.00$, $z = 0.84$, $p = 0.40$, $r = 0.06$). Participants who had observed the Child Rescue Alert appeal had marginally lower recall accuracy ($Mdn = 38.89$, Mean Rank = 88.18) than participants who had observed the Twitter appeal ($Mdn = 42.86$, Mean Rank = 94.75). This finding therefore demonstrates that the type of design of the appeal dissemination does not affect the public's recall ability of the information enclosed. If a significant difference was found, this would raise significant questions and concerns as it would have suggested that children who are reported missing through one means of dissemination may not have as greater potential for being located by the public than being disseminated through an alternative means.

8.2.3. Influence of Confidence

To establish whether the participant's level of confidence in recall accuracy is associated with the overall recall accuracy scores, a Spearman's rho correlation was performed as preliminary analysis of the data indicated non-normally distributed data. The Spearman's rho correlation indicated a significant and positive association ($r = .63$, $n = 182$, $p = <0.001$) that suggests the participants' level of confidence in recall accuracy ($M = 60.66$, $SD = 26.06$) is positively associated with the overall recall accuracy ($M = 35.14$, $SD = 18.15$).

Additional analysis also sought to determine whether participants' level of confidence in recall accuracy is associated with the overall recall accuracy score when the type of format observed is considered. To determine this effect, Spearman's rho correlations were performed due to non-normally distributed data. The first Spearman's rho correlation found a significant and positive association ($r = .64$, $n = 90$, $p = <0.001$) between participants' level of confidence ($M = 63.69$, $SD = 25.05$) and the overall recall accuracy scores ($M = 35.77$, $SD = 17.68$) within the Child Rescue Alert format type. Similarly, the second Spearman's rho correlation also identified a significant and positive association ($r = .61$, $n = 92$, $p = <0.001$) between the participants' level of confidence ($M = 57.71$, $SD = 26.81$) and overall recall accuracy ($M = 34.53$, $SD = 18.69$) within the Twitter format type.

The results therefore suggest that the participants' level of confidence in their own recall accuracy is associated with the overall recall accuracy scores regardless of the type of format they had observed. Moreover, the participants observing the Child Rescue Alert appeal had marginally higher levels of confidence and recall accuracy than participants who observed the Twitter appeal.

8.3. Initial Recall Error

As previously outlined in section 5.4.3.2.1., recall error scores were determined by summing the total number of incorrect attempted description variables within the

participants' free recall task and dividing this score by the maximum number of potential error variables. Thus, participants who observed the Child Rescue Alert had a maximum of 21 potential error variables whilst the participants who observed the Twitter appeal had a maximum of 13 potential error variables. This figure was then multiplied by 100 to derive a recall error percentage score. It is important to note that low error scores or the absence of an error score does not necessarily indicate that there were no errors present, just the absence of any error variables recalled. Figures 8.3 and 8.4 illustrates the frequency of items that were incorrectly recalled by the participants during the free-recall task within each of the two experimental tasks.

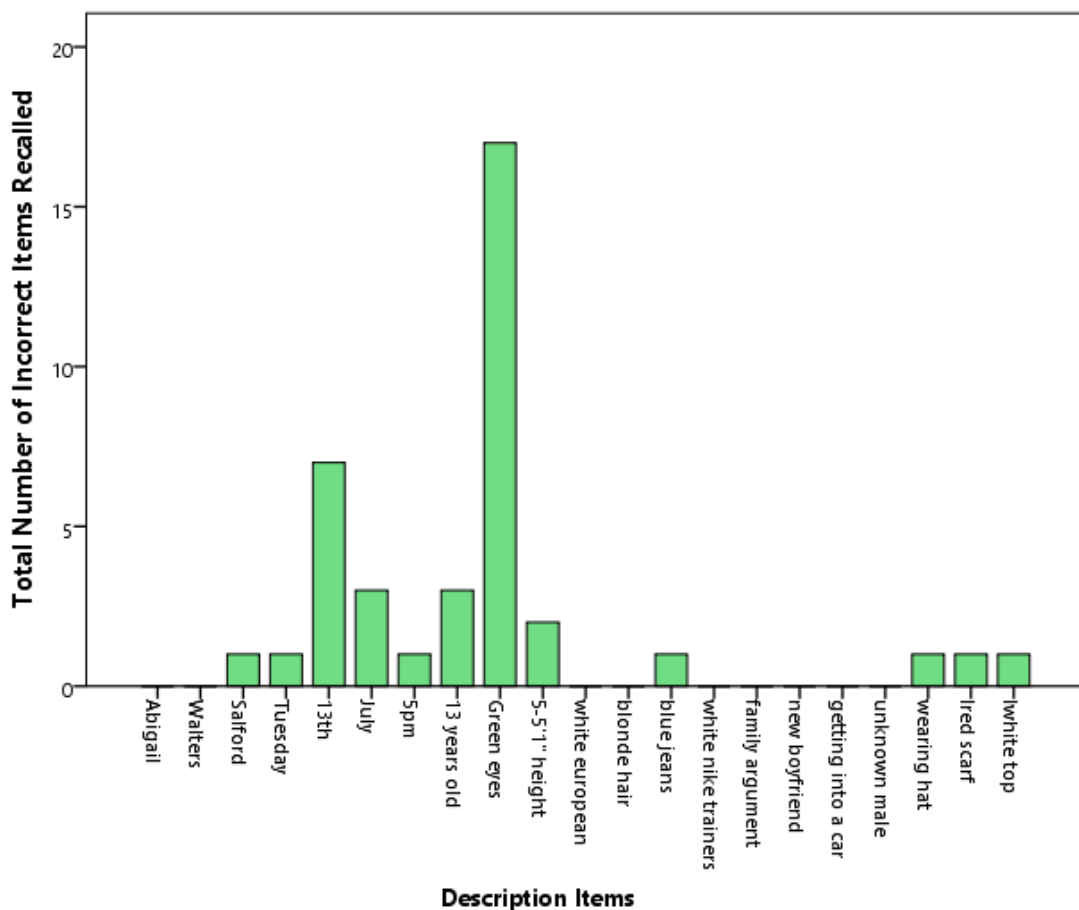


Figure 8.3. Total number of incorrect items recalled by participants who observed the Child Rescue Alert format design.

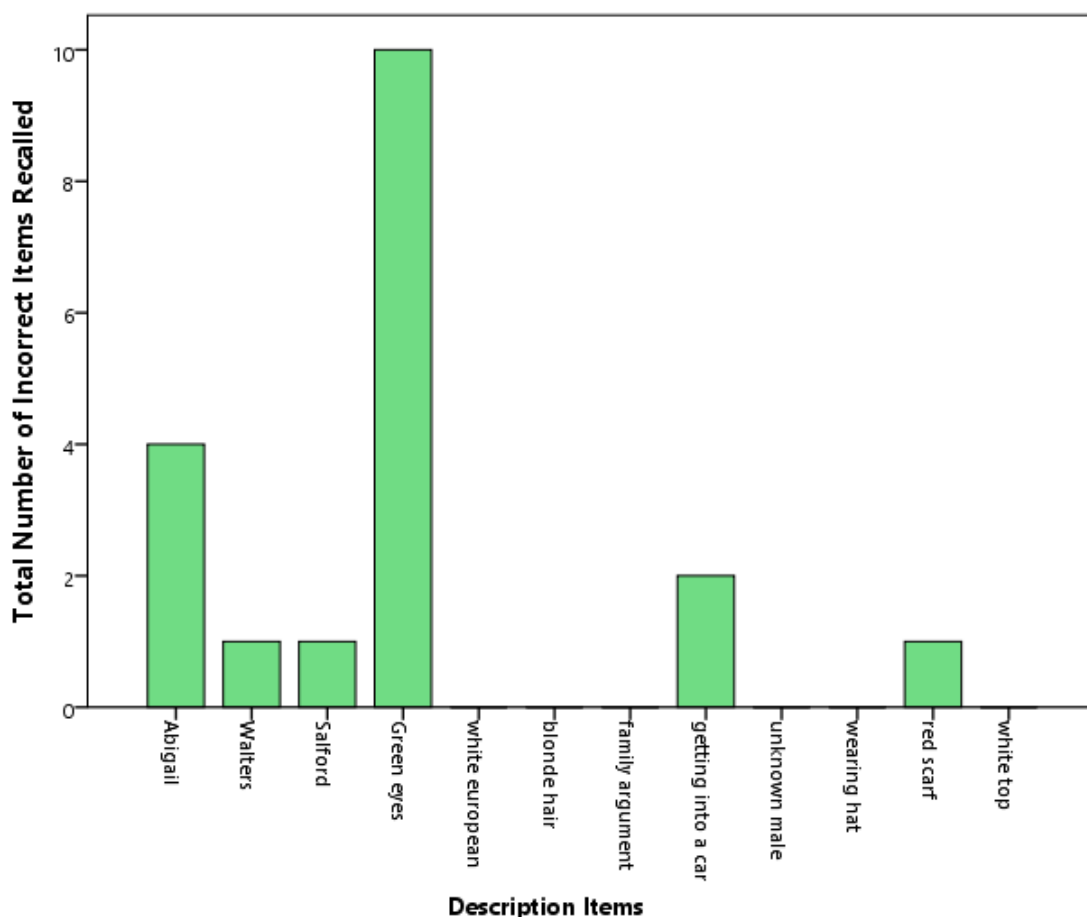


Figure 8.4. Total number of incorrect items recalled by participants who observed the Twitter format design.

8.3.1. Influence of Time

Similar to recall accuracy, the research sought to determine if the length of time spent by the participants observing the missing child appeal was associated with the overall recall error score. Preliminary analysis of the data via scatterplots indicated that the data was not normally distributed and thus, Spearman's rho correlations were considered to be the most appropriate measure as normality is not assumed.

A Spearman's rho correlation was performed to determine whether the time spent in seconds observing the Child Rescue Alert appeal was associated with recall error, finding a non-significant and positive association ($r_s = 0.52$, $n = 90$, $p = 0.63$). A secondary Spearman's correlation was also performed to ascertain whether a significant association is

present between the time spent by participants observing the Twitter appeal and the overall recall error scores, finding a non-significant and negative association ($r_s = -0.03$, $n = 92$, $p = 0.76$). Thus, the results indicate that that overall recall error scores are not associated with the time spent in seconds observing a missing child appeal.

8.3.2. Influence of Type of Format

To explore whether a significant difference occurs between the type of format observed and recall error exists, a Mann Whitney U test was performed. Preliminary analysis of the data via histograms and Kolmogorov-Smirnov test of normality indicated non-distributed data. Subsequent analysis of the normal Q-Q plots further indicated non-normally distributed data therefore the Mann Whitney U test was considered to be the most appropriate statistical analysis measure to use. Upon completion of the analysis, approximate effect sizes were calculated manually via the following equation that is outlined in section 8.2.2.:

$$r = \frac{z}{\sqrt{n}}$$

A Mann Whitney U test was performed to ascertain whether significant differences arise between recall error scores and the type of the format for the missing child appeal, finding a significant difference, $U = 3510.00$, $z = -2.22$, $p = 0.03$, $r = -0.16$. Participants who had observed the Child Rescue Alert appeal had higher recall error scores ($Mdn = 0.00$, Mean Rank = 98.50) than participants who had observed the Twitter appeal ($Mdn = 0.00$, Mean Rank = 84.65). The mean recall error scores are presented in table 8.4.

Table 8.4.

Mean recall error scores across the two experimental conditions.

Experimental Condition	<i>m</i>	<i>SD</i>	Min	Max
Twitter Appeal	1.59	3.52	0.00	15.38
Child Rescue Alert	2.06	2.68	0.00	9.52

In addition to the overall recall error between the experimental conditions, the research also sought to explore whether the photograph or the textual information presented within the format affects recall error. A Mann Whitney U test was performed to determine whether there were any differences between observing the Child Rescue Alert or the Twitter appeal on recall error of the photograph. The Mann Whitney U test found a non-significant difference ($U = 3755.00$, $z = -1.68$, $p = 0.09$, $r = -0.12$) with the participants who had observed the Child Rescue Alert appeal having marginally higher recall error ($Mdn = 0.00$, Mean Rank = 95.77) than participants who had observed the Twitter appeal ($Mdn = 0.00$, Mean Rank = 87.32).

A secondary Mann Whitney U test was performed to determine whether there were any significant differences between observing the Child Rescue Alert or the Twitter appeal on recall error of the textual information. The Mann Whitney U test found a significant difference ($U = 3072.00$, $z = -4.09$, $p = <0.001$, $r = -0.30$). Participants who had observed the Child Rescue Alert appeal had higher recall error ($Mdn = 0.00$, Mean Rank = 103.37) than participants who had observed the Twitter appeal ($Mdn = 0.00$, Mean Rank = 79.89).

8.3.3. Influence of Confidence

Spearman's rho correlations were performed to ascertain whether there were any significant associations between recall error scores and the level of participants' confidence in their own recall accuracy. Spearman's rho correlation was considered to be the most appropriate statistical test to use with the data as preliminary analysis of the data via normal Q-Q plots and the Kolmogorov-Smirnov test of normality indicated non-normally distributed data. The Spearman's rho correlation found a non-significant and negative association between the participants' level of confidence and the overall recall error scores, $r = -0.03$, $n = 182$, $p = 0.738$.

In addition, the research also sought to determine whether the participants' level of confidence in recall accuracy was associated with recall error when the type of format observed was considered. The Spearman's rho correlation found non-significant associations between participants' level of confidence and recall error scores when observing the Child

Rescue Alert ($r = 0.02$, $n = 90$, $p = 0.866$), or when observing the Twitter appeal ($r = -0.12$, $n = 92$, $p = 0.268$). Hence, the level of participants' confidence in their own recall accuracy is not associated with the overall recall error score.

8.4. Follow-up Recall Accuracy

As outlined in section 5.4.3.1.3., the follow-up experiment was provided to the participants after three days upon completion of the initial experiment. The follow-up experiment comprised of a single and identical recall task to the initial experiment whereby participants were requested to supply as much information as they could remember in relation to the missing child appeal that they had observed three days earlier. Recall accuracy was determined by summing up the number of correct variable definitions made by participants and then dividing this figure by the maximum number of potential accuracy variables. For instance, the participants within the Child Rescue Alert condition had a maximum of 21 variables to recall whilst participants in the Twitter condition had a total of 13 variables to recall. This figure was then multiplied by 100 to derive a follow-up recall accuracy percentage score.

Of the original 182 participants who completed the initial experiment, a total of 71 (39.01%) participants dropped out and did not complete the follow-up experiment. Therefore, the follow-up sample consists of 111 participants which is comprised of 56 (50.50%) within the Child Rescue Alert condition and 55 (49.50%) within the Twitter alert condition. Figures 8.5 and 8.6 illustrates the frequency of the items that were correctly recalled by the participants during the follow-up free-recall task across each of the two experimental tasks.

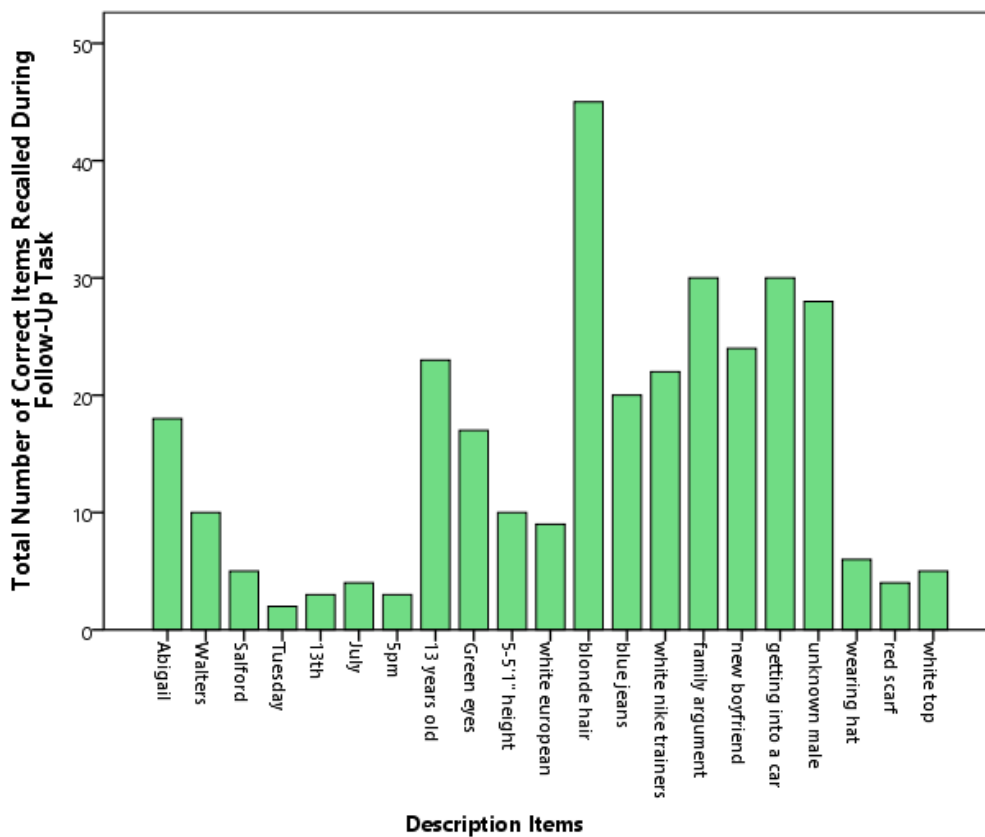


Figure 8.5. Total number of correct follow-up items recalled by participants who observed the Child Rescue Alert format design.

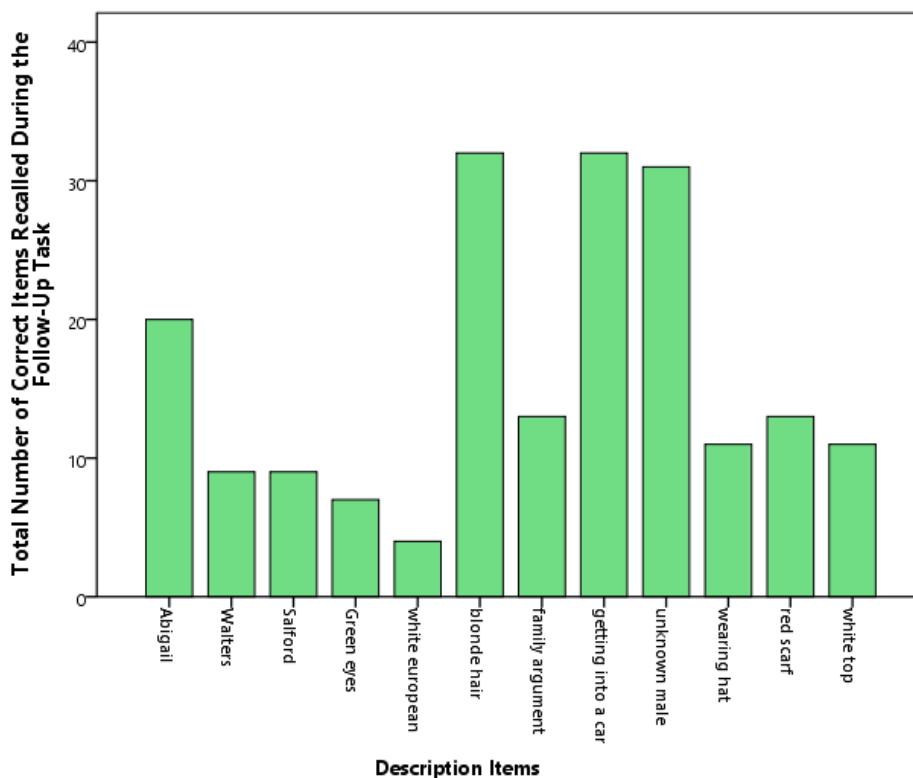


Figure 8.6. Total number of correct follow-up items recalled by participants who observed the Twitter format design.

8.4.1. Influence of Type of Format

To determine whether there was a significant difference between the type of format of the missing child appeal originally observed and the follow-up recall accuracy score, a Mann Whitney U test was performed. Preliminary analysis of the data via Kolmogorov-Smirnov test of normality indicated normally distributed data for the Child Rescue Alert condition ($p = 0.20$) but indicated non-normally distributed data for the Twitter condition ($p = 0.01$). Moreover, subsequent analysis of histograms and normal Q-Q plots further indicated non-normally distributed data for the Twitter condition. Thus, the Mann Whitney U test was deemed to be the most appropriate statistical test to use with the data as the test does not require normality of the data.

A Mann Whitney U test was performed to determine if there was a significant difference between the type of missing child appeal format observed and the follow-up recall accuracy score. The results indicated that there was not a significant difference ($U = 1541.00$, $z = 0.01$, $p = 0.99$, $r = 0.09$) with participants who observed the Child Rescue Alert having a similar follow-up recall accuracy score ($Mdn = 26.19$, Mean Rank = 55.98) to participants who observed the Twitter appeal ($Mdn = 23.08$, Mean Rank = 56.02).

In addition to the overall follow-up recall accuracy between the experimental conditions, the research also sought to explore whether the photograph or the textual information presented within the format affects follow-up recall accuracy. A Mann Whitney U test was performed to determine whether there were any differences between observing the Child Rescue Alert or the Twitter appeal on follow-up recall accuracy of the photograph. The Mann Whitney U test found a non-significant difference ($U = 1385$, $z = -0.95$, $p = 0.34$, $r = -0.09$) with the participants who had observed the Child Rescue Alert appeal having marginally higher follow-up recall accuracy ($Mdn = 16.67$, Mean Rank = 58.77) than participants who had observed the Twitter appeal ($Mdn = 16.67$, Mean Rank = 53.18).

A secondary Mann Whitney U test was performed to determine whether there were any significant differences between observing the Child Rescue Alert or the Twitter appeal on follow-up recall accuracy of the textual information. The Mann Whitney U test found a

significant difference ($U = 867.50$, $z = -3.99$, $p = <0.001$, $r = -0.38$). Participants who had observed the Child Rescue Alert appeal had higher follow-up recall accuracy ($Mdn = 27.78$, Mean Rank = 68.01) than participants who had observed the Twitter appeal ($Mdn = 16.67$, Mean Rank = 43.77).

8.4.2. Influence of Confidence

To explore whether the participants' follow-up level of confidence in their own recall accuracy was associated with the overall follow-up recall accuracy score, Spearman's rho correlations were performed. Spearman's rho correlation was considered to be the most effective and appropriate statistical test for the analysis as preliminary analysis of the data via scatter graphs indicated non-normally distributed data. A Spearman's rho correlation was thus performed to determine whether the participants' follow-up level of confidence in recall accuracy was associated with the overall follow-up recall accuracy score. The results indicated a significant and positive association, $r_s = .58$, $n = 111$, $p = <0.001$, which suggests higher levels of confidence in recall accuracy ($M = 48.38$, $SD = 27.84$) is associated with higher overall recall accuracy ($M = 27.02$, $SD = 15.38$).

In addition, the research also sought to determine whether there were significant associations between the participants' level of confidence in recall accuracy and the overall recall accuracy score when the type of format observed was also considered. A Spearman's rho correlation was performed to explore the associations between the participants' level of confidence in recall accuracy and the overall follow-up recall accuracy score finding significant and positive associations between the Child Rescue Alert condition ($r_s = .55$, $n = 56$, $p = <0.001$) and the Twitter appeal condition ($r_s = .59$, $n = 55$, $p = <0.001$). Therefore, the results suggest that higher levels of confidence in recall accuracy are associated with higher follow-up recall accuracy scores.

8.4.3. Influence of Initial Recall Accuracy

To explore whether there is an association between the initial recall accuracy score and the follow-up recall accuracy score, Spearman's rho correlations were performed. Preliminary analysis of the data had indicated non-normally distributed data and thus, the Spearman's rho correlation was considered to be the most appropriate statistical measure as this test does not assume data normality. Therefore, a Spearman's rho correlation was performed to determine whether there is a significant association between the initial recall accuracy score and the follow-up recall accuracy score, finding a significant and positive association, $r_s = .67$, $n = 111$, $p = <0.001$. This finding thus indicates that higher initial recall accuracy scores are associated with higher follow-up recall accuracy scores.

The research further sought to explore the association between the initial recall accuracy score with the follow-up recall accuracy score when the type of format of the missing child appeal is also considered. Spearman's rho correlations were performed to ascertain the association between the initial recall accuracy score and the follow-up recall accuracy score finding significant and positive associations within the Child Rescue Alert condition ($r_s = .76$, $n = 56$, $p = <0.001$) and the Twitter appeal condition ($r_s = .61$, $n = 55$, $p = <0.001$). Thus, higher initial recall accuracy scores are significantly associated with higher follow-up recall accuracy scores regardless of the type of format of the missing child appeal that was observed.

Finally, the research also sought to explore the associations between the initial recall accuracy scores and the follow-up recall accuracy scores within the same experimental conditions of the type of format observed. Preliminary analysis of the data via Kolmogorov-Smirnov test of normality had indicated that the data were non-normally distributed. Subsequent analysis of the normal Q-Q plots had further indicated a non-normally distributed data. Thus, a series of Wilcoxon signed-rank tests were performed.

For participants who observed the Child Rescue alert format design, recall accuracy scores were significantly higher during the initial recall task ($Mdn = 33.33$) than during the follow-up recall task ($Mdn = 26.19$), $T = 65.00$, $p = <0.001$, $r = -0.49$. Similarly, for participants who observed the Twitter appeal design, recall accuracy scores were

significantly higher during the initial recall task ($Mdn = 30.77$) than during the follow-up recall task ($Mdn = 23.08$), $T = 214$, $p = <0.001$, $r = -0.36$. Thus, despite the type of format design being observed, participants were significantly less likely to have higher recall accuracy scores following a three-day break than they were immediately after observing the description.

8.5. Follow-up Recall Error

As outlined previously in section 5.4.3.2.1., the follow-up recall error score was determined by summing up the total number of incorrect attempted descriptor variables that was present within the participants' follow-up free recall task, and then dividing this total by the maximum potential number of incorrect variables. Thus, participants within the Child Rescue Alert had a maximum potential total of 21 incorrect variables whilst the participants within the Twitter appeal condition had a maximum potential total of 13 incorrect variables. This figure was then multiplied by 100 to derive a follow-up recall error percentage score. However, it is important to note that low error scores or the absence of an error score does not necessarily mean that there was not an associated recall error, only the absence of a score for an incorrect variable described. In other words, a participant who is unsure may simply not mention the variable such as the child's age which results in an error score of 0% for that variable. In contrast, a participant may simply guess the age and if incorrect, would result in a percentage score of 100% for that variable. Figures 8.7 and 8.8 presents the frequency of the items that were incorrectly recalled by the participants during the follow-up free-recall task across each of the two experimental tasks.

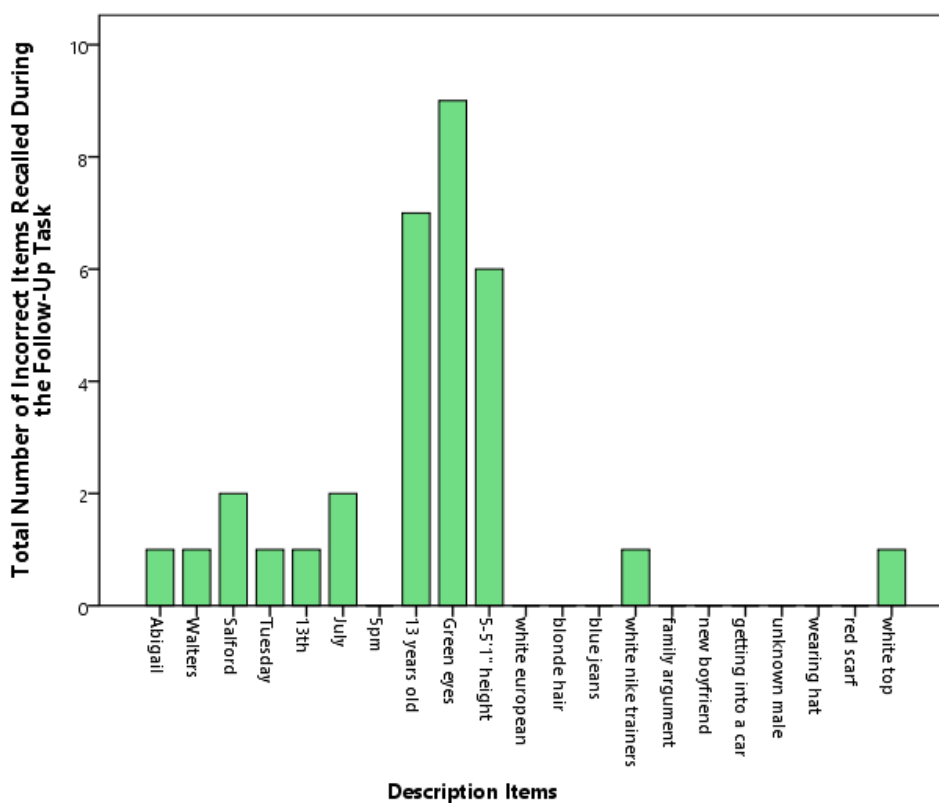


Figure 8.7. Total number of incorrect follow-up items recalled by participants who observed the Child Rescue Alert format design

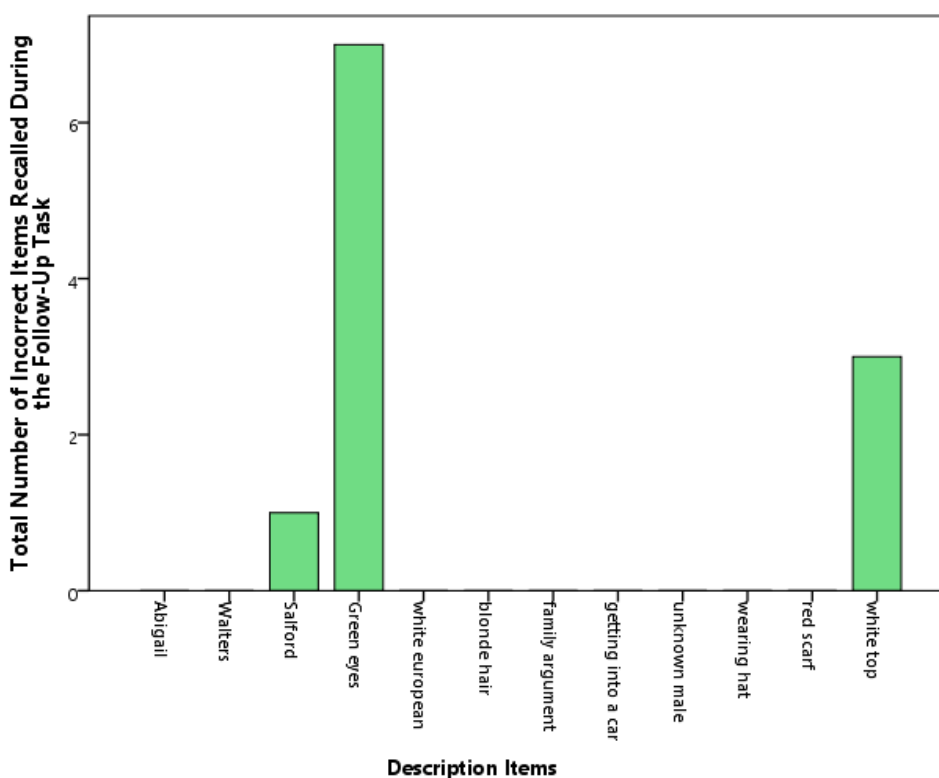


Figure 8.8. Total number of incorrect follow-up items recalled by participants who observed the Twitter format design.

8.5.1. Influence of Type of Format

Similar to recall error, the research sought to explore if the type of format of the missing child appeal influences the follow-up recall error score. Preliminary analysis of the data via histograms, normal Q-Q plots and the Kolmogorov-Smirnov test of normality indicated that the data was not normally distributed. Thus, the Mann Whitney U test was considered to be the most appropriate statistical test for this analysis as the measure does not assume data normality. Moreover, as explained in section 8.2.2., the following equation was used to determine approximate effect sizes:

$$r = \frac{z}{\sqrt{n}}$$

A Mann Whitney U test was performed to explore the differences between the type of format of the missing child appeal and the subsequent follow-up recall error scores. The results found a significant difference ($U = 1136.00$, $z = -2.88$, $p = 0.004$, $r = -0.27$) with participants who observed the Child Rescue Alert having higher follow-up recall error scores ($Mdn = 0.00$, Mean Rank = 63.21) than participants who observed the Twitter appeal ($Mdn = 0.00$, Mean Rank = 48.65).

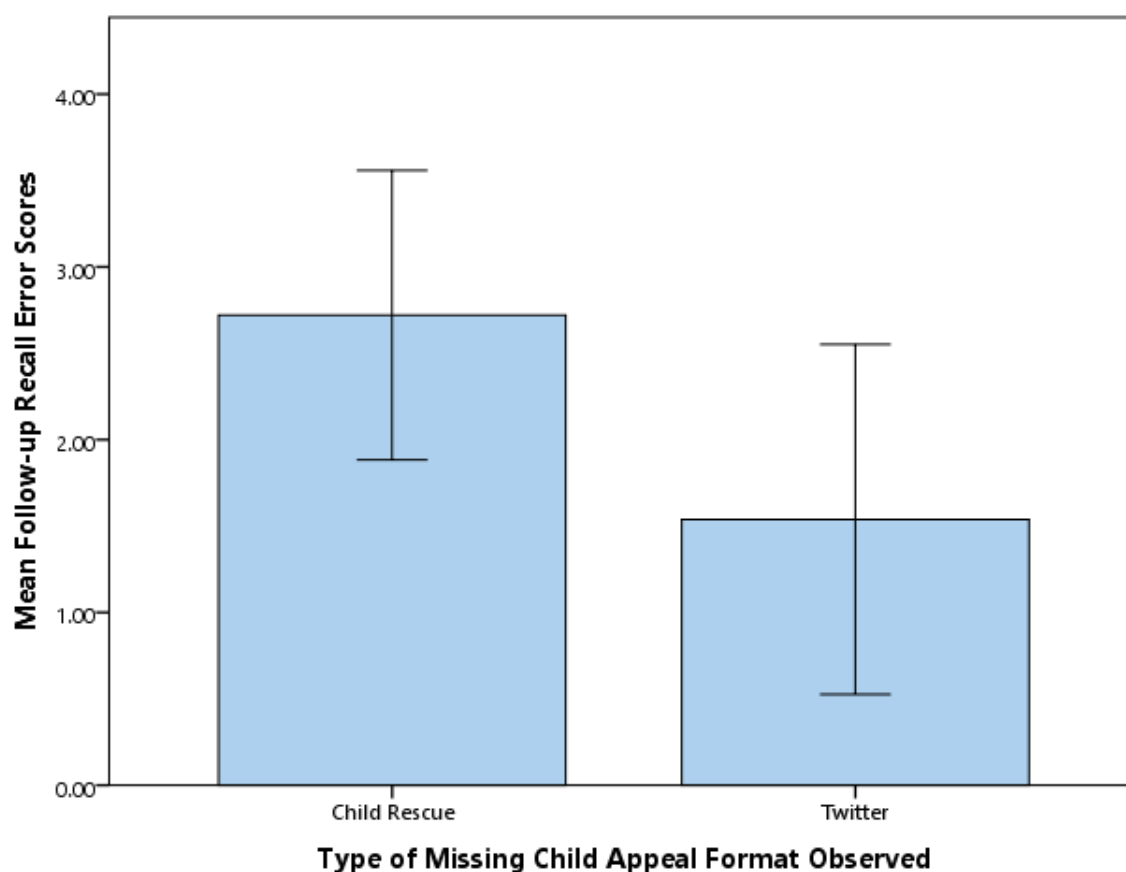


Figure 8.9. Mean follow-up recall error scores across the type of format of the missing child appeal observed.

In addition to the overall follow-up recall error between the experimental conditions, the research also sought to explore whether the photograph or the textual information presented within the format affects follow-up recall error. A Mann Whitney U test was performed to determine whether there were any differences between observing the Child Rescue Alert or the Twitter appeal on follow-up recall error of the photograph. The Mann Whitney U test found a non-significant difference ($U = 1499$, $z = -0.38$, $p = 0.71$, $r = -0.04$) with the participants who had observed the Child Rescue Alert appeal having marginally higher follow-up recall error ($Mdn = 0.00$, Mean Rank = 56.73) than participants who had observed the Twitter appeal ($Mdn = 0.00$, Mean Rank = 55.25).

A secondary Mann Whitney U test was performed to determine whether there were any significant differences between observing the Child Rescue Alert or the Twitter appeal on follow-up recall error of the textual information. The Mann Whitney U test found a

significant difference ($U = 836.00$, $z = -5.22$, $p = <0.001$, $r = -0.50$). Participants who had observed the Child Rescue Alert appeal had higher follow-up recall error ($Mdn = 0.00$, Mean Rank = 66.57) than participants who had observed the Twitter appeal ($Mdn = 0.00$, Mean Rank = 42.77).

8.5.2. Influence of Confidence

To determine whether there is a significant association between the participants' follow-up level of confidence in recall accuracy and the subsequent follow-up recall error scores, a Spearman's rho correlation was performed. Preliminary analysis of the scatterplots indicated that the data were non-normally distributed and thus, Spearman's rho correlations was deemed to be the most appropriate statistical test to use with the data as normality is not assumed. The Spearman's rho correlation found a non-significant association between participants' level of confidence in recall accuracy and the overall follow-up recall error scores, $r_s = 0.07$, $n = 111$, $p = 0.44$.

The research also sought to establish if there were significant associations between follow-up recall error scores and the participants' level of confidence in recall accuracy when the type of format observed was considered. Thus, Spearman's rho correlations were performed to ascertain the association between the participants' follow-up level of confidence in recall accuracy and the subsequent recall error scores, finding a non-significant relationship within participants who observed the Child Rescue Alert ($r_s = 0.16$, $n = 56$, $p = 0.23$) or within the participants who observed the Twitter appeal ($r_s = -0.06$, $n = 55$, $p = 0.66$). Hence, participants' level of confidence in recall accuracy is not associated with the overall follow-up recall error scores.

8.5.3. Influence of Initial Recall Error

To determine whether there was an association between the initial recall error scores and the follow-up recall error scores, Spearman's rho correlations were performed as preliminary analysis of the data indicated non-normally distributed data. The Spearman's

rho correlation was therefore the most appropriate statistical test to utilise with the data as the test does not assume data normality.

A Spearman's rho correlation was performed to explore the association between the initial recall error score and the follow-up recall error score finding a significant association, $r_s = .44$, $n = 111$, $p = <0.001$. In addition, the research also sought to determine if there were any significant associations between the initial recall error scores and the follow-up recall error scores when the type of format of the missing child appeal observed was also considered. The Spearman's rho correlation found a significant and positive association between the initial recall error score and follow-up recall error score for participants who observed the Child Rescue Alert ($r_s = .32$, $n = 56$, $p = 0.016$) and the Twitter appeal ($r_s = .498$, $n = 55$, $p = <0.001$). Thus, higher initial recall error scores are associated with higher follow-up recall error scores.

Finally, the research had also sought to determine the associations between the initial recall error scores and the follow-up recall error scores within the same experimental conditions for the type of format participants had observed. The preliminary analysis of the data via Kolmogorov-Smirnov test of normality had again indicated that the data were non-normally distributed. Subsequent analysis of the normal Q-Q plots had further indicated a non-normally distributed data. Hence, a series of Wilcoxon signed-rank tests were performed.

The Wilcoxon signed-ranks test indicated a non-significant difference between the recall error scores for the participants who had observed the Child Rescue alert format, $T = 185$, $p = 0.269$, $r = 0.10$. Similarly, participants who observed the Twitter appeal design were also found to have no significant differences between the recall error scores during the initial recall task and the follow-up recall task, $T = 25$, $p = 0.739$, $r = 0.03$.

8.6. Discussion

The study findings present a novel insight into the effectiveness of missing children publicity appeals on recall accuracy and recall error to fill the current gap in the research

literature. Moreover, the research findings provide a significant insight into a much-needed area of exploring how effective missing children appeals are and how they could be improved. The purpose of this study was to explore how the type of format of a missing child appeal influences the accuracy of recall information directly after observing the appeal, and after a short three-day time duration. The results have suggested that overall recall accuracy does not significantly differ between the Child Rescue Alert format type and the Twitter appeal format type.

There are, however, significant and marginal differences between the effectiveness of the type of information recalled accurately between the two format types. For instance, recall accuracy is significantly higher for information derived from the photograph within the Child Rescue Alert format compared to the Twitter appeal format, whilst the textual information results in significantly higher recall error in the Child Rescue Alert compared to the Twitter appeal. A secondary purpose of the study was to explore whether the participants' level of confidence influences the overall recall accuracy and recall error, finding higher confidence levels are associated with higher recall accuracy but does not influence recall error.

8.7.1. Influence of Time

The first research objective sought to explore whether the length of the time spent observing the missing child appeal influenced the recall accuracy and recall error score. The results found a significant and positive association whereby higher recall accuracy is associated with participants who observed the appeal for a longer time duration. There were no significant associations between length of time and recall error. Therefore, these findings support the previous work by Yarmey et al.'s (2002) eyewitness memory replication within a field study setting. Yarmey et al. (2002) requested a confederate to approach members of the public and ask for directions for either five seconds or for 30 seconds. Once the confederate had left, all 320 participants were then approached and were asked to recall the confederate's appearance (Yarmey et al., 2002). Participants who had observed the

confederate for 30 seconds had far superior recall accuracy than participants who had observed the confederate for only five seconds (Yarmey et al., 2002).

Similarly, Memon et al. (2003) analysed 164 eyewitness statements from undergraduate student participants upon observing a video clip of a real case bank robbery. Participants had observed the clip for either 12 seconds or 45 seconds followed by a 40-minute distraction exercise (Memon et al., 2003). The participants who had observed the crime footage for 45 seconds had significantly greater recall accuracy of the offender than the participants who had observed the crime footage for 12 seconds (Memon et al., 2003).

The current research findings further support the work by Horry et al. (2014) who analysed archival eyewitness statements from a large police force in the UK and had found that the individuals who had witnessed the crime for a longer duration had greater identification accuracy than individuals who were exposed to the crime for a shorter duration. Moreover, Fahsing et al. (2004) analysed 250 eyewitness statements from bank and post office robberies from a police force in Norway and compared these statements to the crime footage that was available. The study found that the eyewitnesses who had witnessed the crime for a greater duration had significantly better recall accuracy than the eyewitnesses who had only observed the crime for a short duration (Fahsing et al., 2004). Thus, observing a target appeal for a longer duration is associated with higher overall recall accuracy.

8.7.2. Influence of Type of Format

The second research objective sought to explore whether the type of missing child appeal format influenced recall accuracy, finding a non-significant difference. Similarly, the results further indicated a non-significant difference between the type of format presented and the textual information displayed within the appeal. In contrast, participants who had observed the Child Rescue Alert appeal were found to have significantly higher error scores than participants who observed the Twitter appeal. In addition, the textual information presented within the appeals also affected recall error with participants who observed the

Child Rescue Alert also having higher recall error than participants who observed the Twitter appeal.

These findings may fall in line with the work by Cary and Reder (2003) who presented participants with a list of words that ranged from 16 words to 64 words and examined their recognition accuracy scores. Once the participants had observed the lists of words, they were presented with recognition test that required participants to indicate if the word displayed was present or not present in the list of words they had just observed (Cary & Reder, 2003). Participants who had been presented with shorter lists of words had significantly better recognition accuracy scores than participants who had been presented with longer lists of words (Cary & Reder, 2003). Thus, this may help to explain the non-significant finding of the current study for accuracy as both the Child Rescue Alert and the Twitter appeal had minimal textual information. If one of the appeals had more textual information, a significant difference may have arisen.

In contrast, there was a significant difference found between the type of format presented and the photograph that was included within the appeal. The Child Rescue Alert and the Twitter appeal had included the same photograph of the fictional missing child, however the results indicated that participants in the Child Rescue Alert condition had higher recall accuracy for the photograph information than the participants who were presented with the Twitter appeal. This finding is highly significant as the photograph in the Twitter appeal took up most of the appeal content whilst the photograph within the Child Rescue Alert only covered half of the appeal. Thus, one would perhaps consider the size of the photograph to influence the likelihood of higher recognition and memory encoding. This finding therefore presents a novel insight in which future research could address to explore why this may be the case. The results therefore imply that higher recall accuracy of a missing child can be gained via a photograph of the child as a Child Rescue Alert format design than a Twitter appeal format design.

8.7.3. Influence of Confidence

The third research objective sought to explore whether the participants' level of confidence in recall accuracy affects the overall recall accuracy, finding a significant and positive association. No significant associations were found between recall error scores and confidence levels. These findings therefore support the work of Brewer and Wells (2006) who found from 1200 participants, those with higher levels of confidence in their identification accuracy from a photographic line-up task had higher recall accuracy than participants with lower levels of confidence. Similarly, Memon et al. (2003) examined 164 participant identifications and found that participants with higher levels of confidence in their identification accuracy had higher overall recall accuracy scores than participants who had lower levels of confidence.

8.7.4. Association between Initial and Follow-up Recall

The fourth research objective of the current study sought to explore whether the initial recall accuracy and initial recall error scores influences the follow-up recall accuracy and recall error scores after a three-day duration. The results indicated that participants with higher initial recall accuracy scores also had higher follow-up recall accuracy scores than participants who had lower initial recall accuracy scores. Similarly, individuals who had a higher recall error score initially also had higher follow-up recall error scores. Moreover, additional analysis indicated that despite the type of format design participants had observed, they were significantly less likely to have higher recall accuracy scores following a three-day break than they were immediately after observing the description. There were no significant differences for recall error scores.

Therefore, these findings support Cary and Reder (2003) who examined participants' recall accuracy from varying sized lists of words prior to, and after, a distraction task. The results found that participants who had a higher recall accuracy score prior to the distraction task also had a higher recall accuracy score following the distraction task, when compared to participants who had lower initial recall accuracy scores. Hence, if participants

have higher recall accuracy scores prior to a short duration, they are significantly more likely to have higher recall accuracy scores after the short duration when compared to individuals who had a lower initial recall accuracy score.

8.8. Limitations and Future Directions

The research findings of the study provide a novel insight into the effectiveness of missing children publicity appeals via Child Rescue Alert and Twitter. The research demonstrates how the length of time observing the appeal, the amount of textual or photographic information present within the appeal, confidence, and initial recall scores can influence the subsequent recall accuracy and recall error for information enclosed within the appeal. Nevertheless, there are some limitations that must be addressed and considered when interpreting the research findings.

First, the representativeness of the sample can be argued as not being fully representative of the population as the sample had consisted primarily of individuals who were female (83.00%) with a white ethnic background (61.00%) and typically a student (68.10%). Thus, future research could benefit from repeating the research study with a much wider and diverse sample to further explore differences in recall accuracy and recall error between different genders, ages, ethnicities, and employment statuses. Nevertheless, the sample did comprise of individuals who were from different geographical locations throughout the UK which minimises the potential for geographical bias.

Second, the distraction task may have contributed to some of the findings as the time duration from observing the missing child appeal to the free recall task was two minutes. The distraction task is designed to prevent rehearsal of information from the information enclosed within the appeals. Moreover, as this task included a simple word memory task, the distraction task may not have fully prevented participants from rehearsing the information. The distraction task could thus be improved by lengthening the time from two minutes and including a more cognitive-challenging task such as a crossword or sudoku puzzle. Nevertheless, the follow-up experiment did include a three-day rehearsal-

prevention of information as participants did not re-observe the appeals and were engaged in everyday life tasks and events.

Finally, limitations may arise due to the location in which the participants had completed the study. All participants were able to participate in the online study in their own location and in their own time. Hence, the study was unable to control for external distractions and preventing participants from notetaking if they wished. These factors would have influenced the recall accuracy and recall error scores. However, as the research wished to replicate realistic events, this was not deemed to be significant. In an individual's everyday life, they are highly unlikely to give 100% attention and concentration to an appeal presented via the news or social media as they will be likely to be completing other tasks at the same time such as eating a family meal (Miller et al., 2009). In contrast, if the experiment was performed in a controlled laboratory setting with external factors strictly controlled, type I errors may have arisen. Thus, it is argued that the results of the study would mimic the results within an individual's everyday life.

8.9. Chapter Summary

This chapter has presented the results and discussion of the exploration of the effectiveness of the type of missing children appeal format design in relation to previous research literature. Moreover, the chapter also illustrated the effect that confidence in recall accuracy and the length of time spent observing missing children appeals may have on influencing the recall accuracy and recall error of members of the public. Finally, the chapter presented the research study's limitations and directions for future research.

Chapter 9: Contacting the Police

The present thesis has thus far presented a novel experimental paradigm that explores factors associated with the effectiveness of missing children publicity appeals via the public's accuracy or inaccuracy of acquired and recalled information. In addition to this, the current thesis also aimed to explore the underlying motivations for contacting or not contacting the police by members of the public who believe they may have identified a missing child. The following chapter therefore presents the qualitative analysis and discussion of results for the reasons why members of the public would or would not contact the police to report a potentially missing child. The chapter will begin by presenting the context to the study followed by descriptive statistics of individuals who would and would not contact the police. The chapter will then present a discussion of the qualitative findings in relation to the current literature before concluding with the study limitations, future research directions, and a chapter summary.

9.1. Context

The exploration of the underlying motivations for contacting or not contacting the police were investigated within each of the three research studies. For studies one and three, participants were presented with an open-ended question that asked: "if the [description or missing child appeal] presented to you was real and you believed that you may have recognised the missing child, would you believe that you would contact the police to confirm your sighting of the missing child?". Participants that indicated that they would contact the police were then asked: "why do you believe that you would call the police and what information would you provide?" via an open-ended response. Alternatively, if the participant indicated that they would not contact the police, they were asked: "why do you believe that this is the case?".

In addition, participants within study two were presented with a randomised and sequential photograph line-up. For each individual photograph, the participants were asked

whether the child in the photograph was previously in the missing child photograph appeals presented to them during the initial experiment. The participants were also asked to rate their level of confidence on a scale of 0% to 100%. If a participant indicated that they believe the child in the photograph was the same child within the missing children appeals, they were asked if they “would contact the police to inform them of this child if you came across them?”. Participants could respond via a yes/no option that directed them to the next relevant question. If a participant indicated that they would contact the police, they were asked: “what sort of information would you provide to the police?”, whilst those who indicated that they would not contact the police were asked: “what are some of the reasons behind why you have selected you would not contact the police when you believe that this child may have been in a missing child appeal?”.

9.2. Descriptive Statistics

Across the three experimental studies, a total of 413 participants (366 females; $M_{age} = 24.68$, $SD = 10.51$) had taken part in the study. There was a total of 149 participants (36.07%) from study one, 153 participants (37.05%) from study two, and 111 participants (26.88%) from study three. Descriptive analysis of the data from studies one and three found that 201 (77.31% of 260) participants had indicated that they would have contacted the police after observing the description or mock appeal whilst 59 (22.69% of 260) had indicated that they would not have contacted the police. Due to the design of the second study however, participants were able to indicate whether they would or would not contact the police for each individual image. Therefore, participants in study two had additional opportunities to indicate whether they would or would not contact the police. Table 9.1. presents the number of participants from study two that indicated that they would contact the police per photograph presented in the line-up. The table illustrates the effect of foil images and misidentification. For example, 36.73% of participants observing just one photograph indicated that they would have contacted the police to report the child presented in number 17 which would have been a misidentification as this child presented in

the image was not the missing child originally presented in the mock appeal. This further demonstrates the difficulty and the low accuracy typically found by members of the public when trying to correctly identify an individual from a line-up.

Table 9.1.

Descriptive statistics for participant responses in study two to contacting the police broken down into individual photographs and experimental condition.

Photograph	1-Photograph Condition		4-Photograph Condition		8-Photograph Condition	
	<i>N</i>	%	<i>N</i>	%	<i>N</i>	%
1 ^{a, b, c}	39	79.59	29	58.00	25	46.30
2 ^{b, c}	2	4.08	32	64.00	39	72.22
3 ^{b, c}	1	2.04	7	14.00	23	42.59
4 ^{b, c}	2	4.08	9	18.00	13	24.07
5 ^c	2	4.08	10	20.00	9	16.67
6 ^c	0	0.00	29	58.00	30	55.56
7 ^c	1	2.04	3	6.00	10	18.52
8 ^c	0	0.00	2	4.00	28	51.85
9	1	2.04	6	12.00	17	31.48
10	2	4.08	5	10.00	13	24.07
11	1	2.04	7	14.00	8	14.81
12	0	0.00	11	22.00	15	27.78
13	1	2.04	1	2.00	8	14.81
14	0	0.00	5	10.00	7	12.96
15	1	2.04	9	18.00	14	25.93
16	0	0.00	2	4.00	15	27.73
17	18	36.73	10	20.00	8	14.81
18	1	2.04	9	18.00	13	24.07
19	0	0.00	4	8.00	5	9.26
20	1	2.04	7	14.00	8	14.81
21	3	6.12	4	8.00	6	11.11
22	2	4.08	3	6.00	4	7.41
23	1	2.04	3	6.00	5	9.26
24	6	12.24	3	6.00	13	24.07
25	0	0.00	1	2.00	9	16.67
26	1	2.04	4	8.00	10	18.52
27	1	2.04	5	10.00	6	11.11
28	1	2.04	13	26.00	22	40.74
29	3	6.12	2	4.00	8	14.81

Note. ^a: target photograph for 1-photograph condition; ^b: target photographs for 4-photograph condition; ^c: target photographs for 8-photograph condition. Remaining photographs are non-foils.

9.3. Factors Positively Influencing Contacting the Police

Across all three experimental studies, the results identified four themes that positively influenced the likelihood of contacting the police: the importance of locating a

missing child, personal feelings of guilt, the strength of recall accuracy, and similar situations.

9.3.1. Theme 1: Importance of Locating Missing Child ($n = 119$)

One of the overarching themes participants indicated would influence their decision to contact the police was due to the importance of locating the missing child with a total of 119 mentions. This theme encompasses factors that are associated with the perceived vulnerability of the child, the distress of the family left behind, willingness to help, risk of harm, and the belief that it is the right thing to do as a member of the society to report their sightings to the police whether this is correct or incorrect information.

Participants were found to mention that the perceived vulnerability of the child would influence their decision to contact the police. Factors associated with the missing girl's young age and that she was travelling on her own had generated a strong sense of fear for her wellbeing from the participants. For instance, some of the participants stated that they would contact the police as:

"she is young and therefore vulnerable" (Participant 1.120)

"she is a missing young girl who could potentially be in danger" (Participant 1.215)

"[she is]...more vulnerable to bad people" (Participant 3.125)

"she may come into serious harm, anything could happen to her" (Participant 1.42)

"children are more vulnerable" (Participant 3.44)

"it is dangerous for children to be alone" (Participant 1.36)

"must contact the police to stop anymore danger the child might face" (Participant 3.86)

and *"phoning the police could save the girl from any danger" (Participant 1.17).*

Other participants had stated that not only was it important to remove the child from potential harm, but to allow the child to be with her family again. Participants had frequently indicated that it is not only the child who may be suffering but the child's family as well and would intervene directly if necessary. For instance, many participants were found to say that:

"the child needs to return home and be safe" (Participant 3.109)

*"the child may be in danger... keep her safe and return her to her mother".
(Participant 3.116)*

"missing child needs to be reunited with their family" (Participant 1.120)

*"if the child [is] in danger I would remove them from danger before
contacting the police" (Participant 2.111)*

*"her family are worried... [and so] ...it is important for her to be found"
(Participant 1.77).*

*and "I would approach the girl and ask if she is lost and needs help going
home and help to put her into contact with her parents directly" (Participant
2.130).*

Participants also believed that the behaviour displayed by the child once located and the child's physical appearance would also influence the likelihood of contacting the police. The participants had mentioned if they believe the child is a victim of abuse or has suffered serious injuries whilst missing, they would be more likely to contact the police. For instance, participants had mentioned that they would contact the police if the missing child:

"looked like he had been beaten" (Participant 2.5)

"[showed] signs of physical abuse" (Participant 2.76)

"there was anything unusual about what I saw" (Participant 2.146).

"[appeared to be in] any immediate danger" (Participants 2.21 & 2.34)

and "was in grave danger" (Participant 2.22).

Many participants had further mentioned generic motives relating to the overall importance of reporting missing children to the police. Participants were found to mention that it is:

"incredibly important that she is found" (Participant 1.113)
 as *"it is necessary for her to be with her parents" (Participant 1.145)*
 so that she *"can return home" (Participant 1.32).*

Thus, by contacting the police, it will help:

"her relatives [who are] in a lot of distress over her absence" (Participant 1.59).

In addition to the perceived vulnerability, there were a number of participants who had indicated that the reason they would contact the police is simply because they *"would want to help" (Participant 3.104)*. This altruistic nature arose regardless of whether the individual was confident or not confident in their recall accuracy. For instance, participants had indicated that:

"even if I am wrong it may still help" (Participant 3.137)
"although I am not 100% confident, there is a chance I could be right so I would take the chance and try and help" (Participant 3.126)
"any information provided could help" (Participant 3.5).
"it is the right thing to do" (Participants 1.50, 1.85, 1.172, 1.175, 1.183, 1.202, 2.14, and 3.100).
"it is better to call the police and be wrong than to not call the police and the child remains in danger" (Participant 1.9).

Participants had frequently stated that they felt obliged to contacting the police regardless of whether they were certain or uncertain of their identification and recall accuracy. For instance, participants had stated that they would contact the police because they felt:

"obliged to tell the police" (Participant 3.138)

"would feel I have to [call the police]" (Participant 3.134)

"simply my duty" (Participant 3.153).

"could help the police anyway" (Participant 1.91)

"any possible sightings are important" (Participant 1.69).

"they could follow it up as there is a chance I was right" (participant 1.85)

which may lead to the police being able to *"track her down and get her home"*
(Participant 1.12).

Hence, the overwhelming feeling by many of the participants was that *"society has a responsibility to protect the vulnerable"* (Participant 3.44).

9.3.2. Theme 2: Strength of Recall Accuracy (n = 27)

The second theme identified from participants who indicated that they would contact the police is due to their belief in having a high level of accuracy in their recall with a total of 27 mentions. Participants had frequently mentioned their high level of certainty in being able to recall information on, and identify, the missing child. For instance, Participants stated that they would contact the police as they were:

"highly certain that I have seen the girl" (Participant 1.184)

"can remember most of the characteristics of the child" (participant 1.126)

were *"certain this is the missing child"* (Participant 2.130)

they *"can picture the girl quite clearly"* (Participant 3.103)

and that they *"believe that [their] knowledge would have been correct"*
(Participant 1.140).

Similarly, other participants had referred to their belief in having a high level of confidence in their recollection of the missing child. For instance, participants were often found to state that they were:

"confident that the description would match the one that the police provided"
(Participant 1.26)

could *"recall what she looks like"* (Participant 1.67)

were *"fairly confident in [their] recall of the identity of the young girl"*
(Participant 1.89).

"I have confidence in my ability to remember the facts that were presented"
(Participant 3.117)

and *"I have a good memory"* (Participant 3.62).

The participants' high level of confidence appears to stem primarily from the recollection of distinctive features which helped them to become more familiar with the missing child. Many of the participants had commented on distinctive features from some of the children presented during the photograph appeal which influenced their motivation to contacting the police. For instance, many of the participants had mentioned that:

"her nose piercing was something that stood out most to me which meant when presented with the picture I could definitely remember seeing her previously" (Participant 2.81)

"[I] recognised her on the basis of her nose piercing" (Participant 2.116).

"[I] recognise the smile and eyes" (Participant 2.68)

"easily identifiable to me due to [their] hair" (Participant 2.146)

and that *"he is wearing the same leather jacket as he was wearing in the photo"* (Participant 2.102).

In contrast, the ability to recognise distinctive features was also found to increase the likelihood for misidentification. Some of the participants had mentioned that they would contact the police simply due to the belief that the children share similar characteristics. This is despite the 'reported' child being different to the 'missing' child presented. For instance, participants were found to state that they would contact the police as:

the *"hair colour is the same"* (Participant 2.117)

"this child appears to look like a child who has been declared as missing"
(Participant 2.14)

and that they *"feel like I recognise him enough"* (Participant 2.26).

Regardless of the accuracy of their identification and recollection of information, most of the participants had mentioned that they would contact the police simply due to being highly confident that they are correct. In addition, contacting the police would also help the police to follow up on potential new leads. Participants stated that they are:

"confident in my accuracy of the recall of the child" (Participant 3.27)
could "remember the picture of her pretty well" (Participant 3.167)
and "the appeal had enough details to identify the child if sighted so I'd contact the police" (Participant 3.124).

This information is therefore *"more than what the police have started with"* (Participant 1.105)

allowing the police to *"do a follow up on [the] lead if they have no leads themselves"* (Participant 1.124)

9.3.3. Theme 3: Personal Feelings of Guilt (n = 15)

The third overarching theme associated with the motivations of participants contacting the police was due to personal feelings of guilt if they did not report the missing child with a total of 15 mentions. Many participants believed that they would feel terrible if they think that they may have located the missing child but did not report the child to the police and discovered the child had eventually suffered some form of harm. For instance, participants had stated that:

"if she was found dead I would feel guilty for not raising my suspicion [to the police]" (Participant 1.53)

they *"would feel an extreme amount of guilt if she wasn't found or if anything bad happened to her"* (Participant 1.30).

Other participants had mentioned their belief of feeling guilty if they did not report the missing child to the police even if the child did not experience any harm. Participants believed that they were required to contact the police and report the missing child sighting

so that the child can be returned to her family safety. For instance, participants mentioned that:

"if I saw the missing child and didn't report it... I could be the reason why she was not found" (Participant 1.45)

"if I hadn't phoned the police and it was the missing child I had seen, that would be hard to live with" (Participant 1.22).

"feel guilty if there was a chance for me to help the child get back to her family and I didn't take it" (Participant 3.133)

and "I would feel guilty if I said nothing as the information I had could help find her" (Participant 3.134).

Participants had also discussed generic negative emotional experiences they believe they would face if they did not contact the police when they feel they may have located the missing child. Participants gave examples such as:

"[I] couldn't forgive myself" (Participant 1.21)

"[I would] feel bad if I did not take the opportunity to try [and] help a family get their child back" (Participant 1.186)

"if I didn't contact the police I would always think 'what if it was actually the child'? I wouldn't be able to stop worrying". (Participant 3.41)

Hence, the perceived feelings of guilt in not reporting a potentially missing child, regardless of whether the child is or is not missing, appears to be a strong motivator for increasing the likelihood of contacting the police. The overwhelming feeling that if *"it [did] turn out to be her and I did nothing I would feel terrible"* (Participant 1.117) appears to significantly motivate an individual into contacting the police.

9.3.4. Theme 4: Similar Situations (n = 10)

Finally, a small number of participants indicated that one of the reasons which would motivate them to contact the police was if they were in a similar situation with a total of 10

mentions. Participants who considered the missing child in relation to someone else in their own life that they may know themselves proved to be a strong motivator for contacting the police. For instance, participants were found to state that they:

"would hope that if [they] was missing or someone I know was missing that someone would contact the police with details" (Participant 1.139)

they "would want someone to ring the police if they had seen someone I knew who was missing" (participant 1.190)

and "I would want anyone to do the same for me" (Participant 3.43)

Similarly, participants who had young children of their own were also likely to state that they would contact the police to report the missing child. Participants had stated that:

"[I would contact the police] without pause as I have children and would hope that if they were missing and someone believed they had seen them that they would contact the police so I would know she was OK" (Participant 1.54).

"as a parent I'd hope someone would help my child out" (participant 1.14)

"if my child was missing I'd expect someone else to do the same" (Participant 3.28)

"if that was my 13-year-old child I would want people to respond" (Participant 1.53)

and "as a mother I would hope that if my child was missing any sightings however brief would be reported" (Participant 3.101)

Finally, one participant stated that they would contact the police due to experiencing a missing child directly. The participant's younger sister had gone missing in the past which was a hugely negative experience for them. This experience motivates the participant to consider contacting the police to report a missing child to the police regardless of whether they were correct or incorrect. The participants states:

"when I was younger my little sister went missing. Although it wasn't for long, she was found within hours, it was the worst experience. The absolute

worst... [I would therefore] help out in any way for another missing child regardless of how little [information they have as anything] is better than nothing". (Participant 3.129)

Hence, the thought of another individual who is known to them, or another child who was their own child, being missing had increased the motivation of these participants into contacting the police. This motivation occurred regardless of whether the participant believed that they were correct or incorrect in their accuracy as they would hope that someone else would do the same for their child in that situation.

9.4. Factors Negatively Influencing Contacting the Police

In addition to the above themes, the results also identified two themes that negatively influenced the likelihood of contacting the police: uncertainty of recall accuracy and wasting police time and resources.

9.4.1. Theme 1: Uncertainty of Recall Accuracy ($n = 143$)

One of the most frequently cited motivation for not contacting the police in relation to a missing child derives the participants' uncertainty in the confidence of the accuracy of their information with a total of 143 mentions. In contrast to the above motivational factor for contacting the police, many participants felt that they would not contact the police due to their low level of confidence. For instance, many participants had mentioned that they are:

"not entirely sure this is the child" (Participants 2.4, 2.102, 2.106, 2.113, 2.114, 2.146, and 2.159).

"wouldn't be confident enough" (Participants 1.3, 1.8, 1.46, 1.49, 1.80 and 1.81)

"not sure enough" (Participant 3.1)

"don't feel confident enough to say it is the missing child" (Participant 2.81)

"[the] details are a bit vague" (Participant 3.127)

and *"my uncertainty would stop me contacting them [the police]" (Participant 3.136)*

Other participants had frequently discussed difficulties relating to their memory which they believe would influence their decision to not contact the police. Many of the participants were had stated that they:

"don't remember anything" (Participant 1.148)

"cannot be 100% [certain] so I wouldn't want to provide false information" (Participant 2.85)

"not certain enough that its them" (Participant 2.71)

"[I have] a bad memory" (Participant 1.102)

Similarly, some of the participants had also discussed factors relating to their exact level of memory in deciding whether to contact the police. Participants had stated that without a higher level of knowledge and confidence, they would not contact the police. For example, participants state that they are:

"not very confident it was [the missing child]. If it was more than 50% [confidence] I would [contact the police]" (Participant 2.68)

"[I would contact the police only if] I was over 70% sure" (Participant 2.218) or was "not at least 70% sure" (Participant 2.208).

Participants had also believed that the appearance of the missing child would also influence their likelihood of not contacting the police. Many of the participants had commented on the missing child's clothing and appearance and stated that if this was different in person compared to the appeal, they would not feel confident in being able to recognise them. For instance, participants state that the missing child is:

"likely [to] look a bit different" (Participant 1.107)

it is a *"very generic look so I could be wrong" (Participant 3.59)*

"if she was now wearing jeans... and had a different hairstyle... I would be more uncertain of whether it was her" (Participant 1.11).

Other participants also commented on the potential change in appearance and clothing of the missing child or discussed how the characteristics provided were very generic to other non-missing children. For example, participants had mentioned that:

"lots of girls share this appearance" (Participant 1.8)

"it's a fairly common description and nothing appearance-wise separates her from others her age" (Participant 3.174)

there are "lots of young girls wearing scarfs, jeans and Nike trainers with blond hair" (Participant 1.82).

and "many of the missing children had hats on so I may be using my schemas and associating missing children with hats" (Participant 2.60)

The belief that the missing children share generic characteristics with non-missing children further made other participants fear misidentification whereby they may inadvertently contact the police in relation to a missing child who isn't actually missing. For instance, participants had mentioned that they:

"wouldn't be sure if it is the correct child" (Participant 3.169)

"don't have 100% faith in the [recall] accuracy that I [have] sighted the correct child" (Participant 3.63)

"would worry about mistaking the missing child to someone else's daughter" (Participant 3.112),

and that "the sighting of the missing child may be a mistake" (Participant 3.35).

"child I had seen could be any child" (Participant 1.46)

Likewise, some of the other participants had also mentioned that:

"unless they were wearing the hat I probably wouldn't recognise them"
(Participant 2.146)

the child *"looks a bit younger here than [the] original"* (Participant 2.179).

"this appears to be a younger version of the girl pictured as missing therefore I would not contact the police given that I assume the picture of the missing girl was more recent". (Participant 2.204)

Hence, the participants believe that the change in appearance of the missing child within the appeal and their own confidence in their level of accuracy would likely reduce their motivation to contact the police.

9.4.2. Theme 2: Wasting Police Time and Resources ($n = 31$)

The second theme identified from the participant responses was related to the belief that contacting the police would be wasting their time and resources with a total of 31 mentions. Many of the participants felt that if they had reported an incorrect child to the police and the police follow-up on this lead, this would inadvertently waste the police's time. For instance, participants stated they:

"don't want to mislead the police by accident" (Participant 2.113)

"I don't want to be wrong" (Participant 2.146)

"I would not want to create an issue for no reason" (Participant 2.204)

and would be *"wasting police time"* (Participants 1.3, 1.11, 1.46, 1.49, 1.55, 1.82, and 1.119)

A small number of participants had discussed their worry that if they did report a child to the police, the police would not believe them anyway. The participants state that the reason for not contacting the police would be due to:

"the police wouldn't believe me... [and therefore] ...I would be wasting police time if I had gotten it wrong" (Participant 1.3)

"not want to report false information" (Participant 1.55)

And they *"wouldn't want to alarm the police if I was wrong"* (Participant 1.82).

Finally, some of the participants had discussed factors associated with the belief that they would be wasting the police's time if they reported a missing child when the missing child they believed it was has now already been found. The participants mention that they would waste police time as:

"she might have already been found" (Participant 1.128)

"[I'd] waste police time by [making the police] search" (Participant 2.218)

"make the case harder for the police to find the missing child" (Participant 2.228)

"[I would] feel silly if the child is not in fact missing" (Participant 2.232)

And *"...scared in case I waste police time and resources"* (Participant 2.79).

9.5. Discussion

The research findings present a novel insight into the underlying motives behind whether a member of the public would contact the police to report a missing child or would not contact the police. The research aimed to establish some of the motives behind contacting the police with information of a missing child and not contacting the police by utilising a short qualitative design. The qualitative analysis identified four motivational themes for contacting the police: the importance of locating a missing child, personal feelings of guilt, the strength of recall accuracy, and similar situations; and two motivational themes behind not contacting the police: uncertainty of recall accuracy and wasting police time and resources. Although there is a lack of research exploring these underlying motives for contacting or not contacting the police in relation to a missing child (Miller et al., 2009; Shalev-Greene, Clarke, Pakes & Holmes, 2019), there are a small number of similar research findings that align with study's findings.

9.5.1. Contacting the Police

The first motivational theme for contacting the police, importance of locating the child, supports the literature review by Miller et al. (2009). Miller et al. (2009) performed a literature review of the psychological research and theoretical considerations for improving AMBER alerts and argued that members of the public may be more willing to contact the police when they perceive the missing child to be in grave danger, such as an abducted child. Thus, this argument supports the current research finding that one of the main motivational themes for contacting the police was due to the importance of locating the child. The importance of locating the missing child theme found participants would be more willing to contact the police when they perceive the missing child to be vulnerable and in danger.

Moreover, the motivational theme also incorporates the belief that contacting the police is the right thing to do as a member of society and thus further supports the findings by Goudriaan et al. (2004). The International Crime Victims Survey was analysed by Goudriaan et al. (2004) who found that the primary reason behind contacting the police to report crimes was due to the belief that it should be reported (40.10%). Thus, by emphasising the dangers associated with a missing child and increasing the belief that all information should be reported to police may see an increase in individuals reporting a potential missing child to the police.

The second motivational theme found was due to the development of individual feelings of guilt if they did not report the missing child to the police. However, the research literature is scarce and thus presents a novel finding. The finding of this motivational theme is of significant importance for understanding why some individuals contact the police and other individuals may not contact the police despite being presented with the same information. By increasing the levels of perceived feelings of guilt for not reporting a child to the police, there may be an increase in individuals contacting the police and providing information on a potential missing child. However, a significant deal of deal is required to explore this finding further.

The third theme, confidence in recall accuracy was also a primary reason behind contacting the police. As the research literature is non-existent on the topic of reporting missing children to the police and is near non-existent for other helping behaviours for reporting crimes to the police (Miller et al., 2009), the current findings fail to support or differ from previous findings. Nevertheless, the novel motivational theme for contacting the police is of significant importance to further understand why some individuals may contact the police and other individuals may not contact the police when faced with the same event. Higher levels of personal confidence in accuracy of knowledge to the event may thus significantly increase the likelihood of contacting the police. However, a great deal of research is required to explore this further.

The final motivational theme behind contacting the police was due to the participant considering what would happen if they, or someone they knew, were in the same situation. This finding is somewhat supported by the works of Lampinen et al. (2009) who surveyed supermarket customers leaving the store how important they believe locating a missing child was as part of a wider research investigation. Lampinen et al. (2009) found that participants who had young children of their own were significantly more likely to report that locating a missing child is of extreme importance compared to participants who did not have any children. However, this finding is only circumstantial as the researchers did not identify the likelihood of contacting the police or the likelihood of engaging in searching for the missing child.

9.5.2. Not Contacting the Police

In relation to factors associated with not contacting the police, the current findings demonstrated themes associated with being uncertain and the belief that if they do contact the police, they would be wasting police time. The theme of being uncertain does not align with previous research as the literature surrounding the underlying motives for contacting the police are near non-existent (Miller et al., 2009). Much of the literature surrounding the understanding for contacting the police derives from understanding victims of crime reporting crimes to the police and not from a third individual reporting a missing child to the

police. This finding thus presents a novel insight into why some individuals would not contact the police in relation to a missing child. One could assume however that if individuals who have a high level of confidence in their recall accuracy would contact the police (Goudriaan et al., 2004; Miller et al., 2009), then individuals who have low levels of confidence would be less likely to contact the police. significantly more research is required to further expand and understand our knowledge of why individuals would not contact the police despite potentially identifying a missing child.

The final underlying motive behind not contacting the police in relation to a missing child was due to the belief that the individual reporting the child would be wasting the police's time and resources. This finding thus supports Felson et al. (2002) who analysed data derived from a National Crime Victimization Survey and found that one of the main reasons behind not reporting a crime to the police was due to the belief that they may be wasting police time as the police may feel the information reported is irrelevant. Although this finding is related to the reporting of numerous forms of crime and not related to reporting a missing person, it still demonstrates how the ill-placed perceptions that may be present within members of the public hinder the likelihood of reporting potentially vital information. Therefore, by correcting and improving these misperceptions held by the public it may help to increase the likelihood of reporting missing children to the police which could provide an extremely important lead to the police in locating the missing child quickly and safely.

9.6. Limitations and Future Directions

The research study illustrated some of the underlying motivations behind contacting or not contacting the police in relation to missing children. However, as this task was designed solely as a short complimentary and exploratory analysis to the three previous studies, the information provided by the participants was minimal with many providing just a few words on their motivation for contacting or not contacting the police. Hence, future research could build upon this further by exploring the motives behind contacting the police

or not contacting the police as a stand-alone study via qualitative semi-structured interviews or focus groups. This would help to improve the analysis of the responses and allow the researcher to delve further by asking additional questions to understand the reasons why some individuals would contact the police and others may not contact the police. Future appeals could thus try to improve the factors associated with contacting the police and reduce the factors found to reduce the likelihood of contacting the police.

A secondary limitation derives from the representative nature of the sample. The clear majority of the sample were female with 77% of the sample indicating that they would contact the police. This finding may be a significant over-estimation with the participants believing they must indicate that they would contact the police despite the anonymity. Whilst difficult to pursue, future research could explore this through the means of a presenting participants with a mock appeal and have that individual enclosed on the appeal walk by the participant. The researchers could then identify whether the individual would report the missing person to the authorities and why this is the case. However, this approach would include numerous extraneous variables and would be difficult to accomplish.

9.7. Chapter Summary

This chapter has illustrated the underlying motives held by members of the public for reporting or not reporting missing children to the police. The complimentary study discovered four primary underlying themes that increased the likelihood of individuals contacting the police. These themes include the importance of locating a missing child, developing personal feelings of guilt, the strength of recall accuracy, and similar situations. In addition, the research study also discovered two underlying themes that reduced the likelihood of contacting the police which includes having uncertainty in own recall accuracy and the belief that contacting the police would waste the police's time and resources. Finally, the chapter presented limitations to the study and directions for future research to explore factors associated with contacting or not contacting the police.

Chapter 10: General Discussion

The present thesis has presented a novel experimental paradigm that allows the effectiveness of missing children publicity appeals to be observed. The thesis utilised an experimental paradigm that simulated the missing children appeals to explore how the descriptions, photographs and type of format design used affects individual recall accuracy and recall error. Across the three experimental studies, participants had observed different descriptions, photographs and format designs and analysed their ability to recall the information immediately after observation and then again after a three-day break. The three-day break allows the experiments to reflect true-life events via the exploration of the effect of missing children appeals on recall ability after participants had engaged in their everyday tasks and had not been able to rehearse the information presented. The current thesis has utilised a range of novel methodologies to explore the effects of how different descriptions, photographs, designs of appeal and a delay in recall influences the rate of accurately identifying and recalling information relating to a missing child. The current thesis has also presented some of the underlying motives behind contacting and not contacting the police which presents another novel approach to exploring the effectiveness of missing children appeals.

The comparison of the number of details correctly and incorrectly recalled with the original information presented allows the studies to determine the factors associated with the missing children appeals that could help to improve recall accuracy and help to reduce the potential for recall error. Thus, the research paradigm enabled an artificial setting to resemble to real-life events in two ways. First, the paradigm simulated the presentation of a missing child appeal to explore factors associated with memory recall abilities such as the amount of time given to the appeal by the participant, the frequency of appeals observed, and the type of content enclosed in the appeal. Second, the inclusion of a three-day break for recall repetition allows the experiments to explore the effect of memory trace decay following re-engagement in everyday activities post-observation and helps to further identify the factors that strongly improve recall accuracy.

The procedures utilised by the three experimental studies share a similarity to the works by Cary and Reder (2003) and Lampinen et al. (2012). For instance, Cary and Reder (2003) presented a list of words to participants that ranged in length from 16 to 64 words and were asked to recall the information after a short distraction task. Likewise, Lampinen et al. (2012) presented university students with either 4 photograph appeals, or 12 photograph appeals of missing children followed by a team-sorting distractor task. However, the current procedures used in this thesis differ from these works in three main ways. First, the description experimental study presents full descriptive information associated with a missing child as opposed to single words which help to identify whether certain words or phrases are recalled more often than others. Second, the photograph experimental study presents participants with one, four, or eight photographs followed by a distraction task and line-up identification task. This procedure allows the research to explore the effect of time provided to each appeal by the participants as the number of appeals increases as opposed to presenting the appeals for a set time. Finally, the research studies analysed the recall ability between immediately observing the appeals and then again after a three-day break which helps to explore the effect that time duration has on memory decay and the ability to maintain recall accuracy.

Overall, the current experimental studies performed within this thesis improved the ability to explore the effectiveness of missing children appeals by examining the effect of a multitude of factors associated with missing children appeals such as descriptions, type of format and photographs on recall abilities as opposed to the analysis of a single factor such as observing photographs (Lampinen et al., 2012) or words (Cary and Reder, 2003). Additionally, the current experimental studies further explored recall ability following a short three-day break to ascertain whether certain factors associated with missing children appeals help to strongly improve recall accuracy after a duration of time following an observation of an appeal. The main findings of the three experimental studies will be summarised subsequently and will be discussed alongside their practical and theoretical implications.

10.1. Summary of Research Findings

The overall aim of the present thesis was to explore the effectiveness of missing children publicity appeals on recall accuracy and recall error. The secondary aim of the present thesis was to explore the underlying motives behind contacting the police and not contacting the police in relation to information deriving from an observed appeal. All three experimental studies presented in this thesis were able to demonstrate factors that can help to improve recall accuracy and that can help to minimise recall error. In addition, the three experimental studies were also able to identify some of the underlying motives that increase the likelihood of contacting the police in relation to a missing child as well as the underlying motivations behind not contacting the police despite observing the same information. The main research findings are summarised below in relation to the research questions and will be discussed in more detail subsequently.

Across the three research studies, it was found that increasing the amount of time spent observing the appeals of missing children can significantly increase the subsequent recall accuracy. Likewise, reducing the amount of time provided to observing missing children appeals can significantly increase the subsequent recall error. Similar to the length of time, the research findings were also able to demonstrate that the length of information enclosed within a missing children appeal can also significantly affect recall ability. Individuals who observe appeals that contain shorter lengths of information are significantly more likely to have greater recall accuracy and lower recall error than individuals who observe appeals that enclose longer lengths of information. However, the type of content enclosed within the missing children appeals were not found to affect recall accuracy or recall error. Nevertheless, textual information was found to be marginally higher in the Twitter appeal design whilst photographic information enclosed with the Child Rescue Alert design was found to be associated with significantly greater recall accuracy. The Child Rescue Alert design, however, was also found to have significantly greater recall error.

In relation to frequency, the experimental studies found that recall accuracy significantly increases when there is only one appeal of a missing child required to be observed. If the number of missing children appeals required to be observed in a short

period of time increases however, the recall accuracy was found to significantly decline whilst recall error was found to significantly increase. Moreover, the level of individual confidence in recall ability was also found to be associated with recall ability as higher levels of individual confidence were found to be significantly associated with higher recall accuracy. Similarly, lower levels of individual confidence were found to be associated with significantly higher recall error. The results further demonstrated that initial recall ability scores are associated with follow-up recall ability scores after a short three-day break. Individuals who had higher initial recall accuracy scores were found to have significantly higher recall accuracy score after the three-day break despite the overall mean accuracy reducing between all experimental conditions. Individuals with higher recall error scores were also found to have significantly higher recall errors after the three-day break.

Finally, the research also sought to explore the motivations behind contacting the police, finding four primary motivational themes, and the motivations behind not contacting the police, finding two primary motivational themes. Individuals who have high levels of confidence in their own recall ability, had a strong perceived belief of future feelings of guilt, who believed that they or someone they know may be in a similar situation, and considered the importance of locating the missing child due to their vulnerability were significantly more likely to contact the police. In contrast, individuals who had low levels of confidence in their recall ability and believed that they would be wasting the time and resources of the police were significantly less likely to contact the police despite observing the same information.

10.2. Research Findings Discussion

Exploring the effectiveness of missing children appeals is near non-existent with only a handful of studies exploring an aspect of this (Lampinen, et al., 2012; Lampinen & Moore, 2016; Lampinen & Sweeney, 2014; Shalev-Greene and Reddin, 2015; Sweeney & Lampinen, 2012). Thus, the current thesis sought to fill this gap in the literature by exploring the effectiveness of descriptions, photographs and type of format design used for

missing children appeals using a novel experimental paradigm. The research findings presented in this thesis and summarised above will be discussed in more detail with comparisons between the findings and previous literature studies associated with missing persons of utilising similar methodologies. Overall, the current findings appear to fall in line with the previous research literature findings, although this thesis presents additional and novel findings.

10.2.1. Does the Length of Time Affect Recall?

Across all three experimental studies, the length of time spent observing an appeal was found to significantly influence recall accuracy and recall error. Individuals who had observed the appeals for a greater length of time had significantly better recall accuracy than individuals who had only observed the appeals for a shorter length of time. However, recall error was not associated with the length of time spent observing the appeal but this could be due to the way the recall error scores were calculated as many of the participants within the three study samples had a very low error score. Nevertheless, the findings help to identify a factor that would increase recall accuracy for missing children appeals.

Lampinen et al. (2012) argue that if an individual only has a limited amount of time available or is willing to devote to missing children appeals, an increase in the amount of information required to be encoded would thus reduce the ability to recognise the missing child and recall important information associated with the appeal as even less time is devoted to each appeal. Similarly, an individual is also less likely to devote much of their attention to a missing child appeal if they are cognitively busy (Miller et al., 2009). These factors will minimise the potential for the information enclosed within the appeals to be encoded into memory and would thus significantly lower the ability to recognise the missing child during everyday activities and lower the ability to accurately recall important information related to the appeal.

In addition to attention of appeals for encoding information, there is also a need for the attention of appeals to correctly identify the face of a missing child. Facial recognition is one of the most widely used cues for social identity (Gier et al., 2017; Mian & Mondloch,

2012), however research has consistently indicated that people are genuinely poor at recognising faces of unfamiliar people (Davis & Valentine, 2009; Megreya & Burton, 2006, 2008) compared to familiar people (Burton et al., 1999). This is the same whether the individual has or has not been specially trained to recognise faces (Gier et al., 2017; Lampinen & Moore, 2016; White et al., 2014). Additional difficulties arise when the missing child physically differs in appearance from the original image presented within the appeal. Despite the majority of missing persons being located within 48 hours (NCA, 2017), there are a small number of individuals who will remain missing for a greater duration, potentially years. Thus, these long-term missing persons would typically change in appearance due to ageing that further minimises the potential for members of the public to correctly identify them (Lampinen et al., 2012).

Consequently, the thesis findings demonstrate the importance for missing children appeals to be presented to members of the public for a greater duration of time. If the appeals can be displayed for a greater duration, there is an increased possibility for that information to be encoded into memory which will in turn significantly increase the chance for successful recognition of the missing child during everyday activities and successful recollection of information associated with the appeal. Hence, there may be an increase in positive identification leads provided to the police to help them locate the missing child quickly and prior to experiencing harm. In contrast, if the missing children appeals are presented for a short duration, the experimental studies demonstrate that this could lead to a significant reduction in recall accuracy and would thus increase the possibility for recall errors in identification of the child and in the recollection of information associated with the appeal. This may then increase the number of misidentifications presented to the police that would increase the amount of time and resources devoted to following up these leads.

10.2.2. Does the Length of Appeals Affect Recall?

The effect of the length of missing children appeals on recall ability was explored via research studies one and three. The description study found that shorter lengths of descriptive information presented in the appeals are associated with significantly greater

recall accuracy. However, there were no significant differences between the length of the appeal on recall error. In addition, there were no significant differences between the type of textual information presented in the different format designs of the appeals on recall accuracy but individuals who observed the Child Rescue Alert design had significantly greater recall error on the descriptive information than individuals who observed the Twitter appeal design. Thus, the findings indicate that the length of appeals does affect recall ability, but additional research is required to further explore this effect.

Many of the participants displayed relatively low recall error scores possibly due to the way in which they were calculated which may have contributed to the non-significant findings. Nevertheless, the findings are in line with the work by Cary and Reder (2003) who explored the recall ability of participants following the observations of lists of words that ranged from 16 to 64 words in length. Participants who had viewed the 16-word list had greater recall accuracy and lower recall error than participants who had observed the 64-word list (Cary & Reder, 2003). Although this study only explored the effect of list length as opposed to descriptive paragraph length, it is the closest procedure utilised to the current experimental study. Nonetheless, the work by Cary and Reder (2003) strongly supports the current findings that the length of descriptions significantly affects recall accuracy.

The findings across the two experimental studies demonstrate a novel and significant insight into the effectiveness of descriptions and type of format design of missing children appeals. If the appeals presented to members of the public include shorter paragraph descriptions, there is the potential to significantly increase the ability to accurately recall the information enclosed. In contrast, if the appeals present longer paragraph descriptions of the missing children, this could increase the likelihood of inaccurate memory retrieval of the information presented in the appeal as there is more details to try and remember. Hence, linking this back to the previous research question, if there is greater information required to be encoded in a limited amount of time, there will be significantly greater errors than if there were less information to be encoded in the same but limited amount of time (Lampinen et al., 2012).

10.2.3. Does the Type of Content and Design Affect Recall?

The research sought to explore whether the type of content enclosed within the missing children appeals affects recall accuracy and recall error. However, there were no significant differences found in the current findings. This finding may be explained due to the mock missing children appeals presented in study one and study three enclosing near-identical information within the limited amount of information that was displayed. Additional research could explore this effect via the use of longer descriptions. Similarly, the research findings indicated that there was not a significant difference between the textual content in an appeal and recall accuracy but there was a significant difference in recall error with individuals who observed the Child Rescue Alert design having significantly greater recall error than individuals who had observed the Twitter appeal. In contrast, the results indicated a significant difference in recall accuracy for photograph-related information with individuals who observed the Child Rescue Alert appeal having significantly greater recall accuracy than individuals who observed the Twitter appeal despite both format design presenting the same photograph.

Again, as this experimental design was a novel approach, the work by Cary and Reder (2003) is the closest procedural match for the textual information but not for the photographic information. Nevertheless, Cary and Reder (2003) found that participants who observed the shorter 16-word list length had greater recall accuracy than the participants who observed the longer 64-word list length. Thus, this finding supports the current thesis finding that demonstrates shorter textual information is associated with higher recall accuracy. As the appeals presented to participants enclosed similar types of content, it may be that the two format designs and the descriptions of missing persons were too similar. Additional textual, photographic, newsworthy and non-newsworthy content may thus help to further explore the effect between the type of content on recall ability.

10.2.4. Does the Frequency of Appeals Affect Recall?

The exploration of the effect of the frequency of appeals on recall ability was explored via study two which found that an increase in the number of appeals presented in a short period of time was associated with significantly greater recall error. Similarly, the lower the number of appeals presented in a short period of time, the greater the recall accuracy. This finding is significant as members of the public may observe numerous missing children appeals in a short period of time (Lampinen & Moore, 2016). The findings therefore demonstrate the importance of presenting missing children appeals in a strategic manner to not only minimise the potential for individuals to ignore the information due to habituation (Griffin & Miller, 2008; Griffin et al., 2007), but to help to improve the likelihood of recall accuracy and reduce the potential for recall error.

Nevertheless, this research finding further supports the work of Lampinen and Moore (2016) who examined the recall ability of 465 university students. The students were presented with either a single missing person appeal or with three separate missing persons appeals across a three-day period (Lampinen & Moore, 2016). Over the next few days, the participants were informed that the individual presented in the appeal would be walking around the campus and that they are required to locate him (Lampinen & Moore, 2016). The research found that the participants who had only observed the single missing persons appeal had made significantly more correct sightings of the individual than the participants who had observed three missing persons appeals (Lampinen & Moore, 2016). Thus, individuals who are presented with a greater number of appeals are significantly more likely to have lower recall accuracy.

In relation to practical settings, the research findings demonstrate the need to present missing children appeals in a strategic manner to maximise the potential for greater recall accuracy that could thus lead to greater and more accurate identifications. However, there is also a need to locate missing children prior to them experiencing any form of harm. Thus, additional research is required to further explore the effects of the frequency of appeals and recall accuracy and identification, although the current research demonstrates that multiple appeals reduces the overall effectiveness of missing children appeals.

10.2.5. Does Confidence Affect Recall?

Across the three experimental studies, the effect of confidence on recall accuracy and recall error was mixed. Higher participant levels of confidence were found to be associated with higher recall accuracy and lower recall error for descriptions of missing persons but were only associated with higher recall accuracy for the type of format design and lower recall error scores for the photographs of missing children. Confidence levels were not associated with recall accuracy for photographs of missing children or with recall error for the type of format design. Thus, the mixed experimental findings may support the notion of Kassin et al. (2001) who considers confidence to be play a weak and impractical role in relation to ascertaining accuracy or error.

Nevertheless, the findings further support the work by Memon et al. (2003) who explored the recall ability of 164 participants after observing a video clip of a bank robbery. After observing the short video file, the participants engaged in a 40-minute distraction task followed by a photographic line-up task whereby participants had to identify the offender (Memon et al., 2003). The results indicated that individuals who had higher levels of confidence in their own identification accuracy were associated with having higher overall recall accuracy in identification than individuals who had lower levels of confidence (Memon et al., 2003). Furthermore, the work by Brewer and Wells (2006) also supports the experimental findings via their analysis of 1,200 participants who observed a simulated crime involving an offender stealing a credit card. Participants were then presented with a photographic line-up and were asked to identify the offender shown in the video and indicate their level of confidence in their accuracy (Brewer & Wells, 2006). The results found that individuals who indicated higher levels of confidence were found to have higher identification accuracy than individuals who indicated lower levels of confidence (Brewer & Wells, 2006).

The non-significant associations found within the type of format design between recall error and confidence may be explained via the calculation of error scores. An individual's error score was determined by summing up the total of incorrect references

made during the recall tasks, dividing the figure by the maximum number of possible incorrect variables, and then multiplying the total by 100 to derive a recall score percentage. Participants who were unsure of an item during the free recall task may have simply chosen to not include the information and report only the items they were more confident about. This would explain the very low error scores that were found across all three samples with a large number appearing to have an error score of 0%. Thus, this appears that the participants did not have any errors however the calculation demonstrates only an absence of inaccuracy and not a total minimisation of error. If participants were presented with a cued-recall task that required participants to input a response for each item, there may have been a significant increase in the number of incorrect items presented by the participants which would have subsequently affected their recall error scores.

Similarly, the photograph experiment found that recall accuracy was not associated with levels of confidence which may be due to the method of identification line-up task utilised. The current experimental study requested the participants to observe one, four or eight photographs of missing children sequentially followed by a short distraction task. Participants were then presented with a sequential line-up task whereby they were requested to indicate for each of the 29 photographs whether the child presented in the line-up photograph was previously presented as one of the missing children in the mock appeals. Memon et al.'s (2003) and Brewer and Wells' (2006) studies included a simultaneous line-up of just six photographs and asked to identify just one target which differs significantly from the procedure utilised in this thesis' experimental study. Previous research has demonstrated how sequential line-ups require a significantly higher level of memorial processing by the individual compared to simultaneous line-ups and typically generate higher levels of individual confidence (Dobolyi & Dodson, 2013). In addition to the above experimental finding that demonstrates how an increase in the number of photograph appeals required to be observed is associated with lower recall accuracy, there may be an interaction effect between the number of appeals, confidence and recall accuracy. Future research would thus have to explore this further.

Consequently, the thesis findings indicate that an individual's level of confidence in their recall accuracy could be an indication of their overall recall accuracy but should be considered with caution. Future missing children appeals should nevertheless aim to try and improve the public's confidence in their own ability to identify a missing child and accurately recall information that is enclosed within the appeal. As these studies were exploratory in nature, future research could explore how to specifically improve confidence in identification accuracy without necessarily overusing the appeals that could lead to habituation and thus have the opposite effect by reducing the effectiveness of appeals.

10.2.6. Are Initial and Follow-Up Recall Scores Associated?

The three experimental studies sought to explore the effect that a short three-day break may have on the recall ability finding significant associations. Higher initial recall accuracy is associated with higher recall accuracy following a short three-day break despite the overall mean accuracy scores declining for descriptions of missing children appeals. Similarly, higher initial error is associated with higher error scores following a three-day break despite overall mean error scores increasing. In contrast to the majority of findings, the initial recall error scores were not associated with recall error scores following a short three-day break for the descriptions of missing children appeals. Nevertheless, the majority of the three experimental studies support the works by Cary and Reder's (2003) two experimental studies.

The first experiment analysed the recall ability of 30 student participants for varying lists of words that ranged from 16 to 64 words in length (Cary & Reder, 2003). Participants were presented with their conditional list of words followed by the presentation of a 96-word item test that required participants to identify the words in the list that they had previously observed (Cary & Reder, 2003). Participants who had observed shorter lists of words had significantly greater recall accuracy than participants who had observed the longer lists of words (Cary & Reder, 2003). However, as participants had completed the task immediately after observing the list of words, there were low error scores which resulted in the second experiment that sought to worsen this performance via the inclusion of a delay.

The second experiment by Cary and Reder (2003) was thus an identical procedure to experiment one with the exception of the inclusion of a short delay. Eighteen participants were presented with the same varying lists of words that ranged from 16 to 64 words in length and asked to try to remember as many words as possible (Cary & Reder, 2003). However, the participants in this second experiment were then presented with a short five-minute word search puzzle to prevent rehearsal (Cary & Reder, 2003). The participants were then presented with the same 96-word item test as experiment one and asked to identify the words presented to them previously (Cary & Reder, 2003). The results found that individuals who observed the longer list of words had significantly lower recall accuracy than individuals who had observed the shorter list of words (Cary & Reder, 2003). Moreover, the hits and false alarm scores identified were near identical to the first experiment (Cary & Reder, 2003). Thus, when combined, Cary and Reder's (2003) two experiments illustrate how higher initial recall accuracy scores are associated with higher recall accuracy scores following a short delay (Cary & Reder, 2003). Likewise, higher recall error scores are associated with higher recall error scores following a short delay (Cary & Reder, 2003).

Thus, in relation to missing children appeals, the research findings demonstrate the importance of maximising the immediate accuracy of encoding and retrieval of information presented within the appeals. If members of the public only see the appeal once, in addition to the likelihood of not immediately identifying the missing child, their ability to accurately recall information enclosed in the appeal will decrease as the time between observing the appeal and requirement to retrieve the information increases. Hence, missing children appeals need to be able to maintain the ability to accurately recall the information for the same missing child possibly via the use of multiple appeals for the same missing child as multiple appeals for multiple missing children have been found to reduce accuracy and increase recall error. Nevertheless, as this research is exploratory, future research could explore the ways an appeal could maintain and improve an individual's recall accuracy over a duration of time.

10.2.7. What Increases the Likelihood of Contacting the Police?

In addition to exploring the factors that are associated with improving the effectiveness of missing children appeals, the research presented in this thesis also sought to explore some of the underlying motivations behind contacting the police. Research is near non-existent for the exploration of motivations for contacting the police in relation to missing children with only a handful of associated literature exploring these motivations from the perspective of a victim of crime (Miller et al., 2009). Thus, the research presented in this thesis sought to gain an insight into factors that increase the likelihood for contacting the police and lay the foundations for future research to explore these factors further. Across the three experimental studies, there were four prominent motivational themes identified.

Importance of locating the missing child was the primary motivational theme for contacting the police and was identified across all three experimental studies. Individuals who held this underlying notion were more likely to indicate that they would contact the police due to the belief that the child is highly vulnerable and in danger and thus the individual must contact the police to prevent additional harm. Participants had frequently demonstrated that contacting the police was simply the right thing to do as it allows the child to be reunited with their family. Thus, the motivational theme shares similarities with the work of Goudriaan et al. (2004) who explored the data enclosed within the International Crime Victims Survey and found that the primary reason for contacting the police in 40.10% of responses was due to the notion that it must be reported to the police regardless of the type of crime.

Additional motivational themes found to increase the likelihood of contacting the police includes the belief of experiencing future negative feelings of guilt if the individual did not report the child to the police, and the notion of having a high level of confidence in their recall and identification abilities. As discussed throughout this thesis, research exploring the reasons for contacting the police is near non-existent with the major literature exploring the likelihood of contacting the police if the individual is a victim of crime (Miller et al., 2009), as opposed to contacting the police if the individual is a witness to an event. Thus,

these two underlying motivational themes do not support or contrast previous research as they present a novel insight into reporting a potentially missing child to the police.

Nevertheless, increasing the perceived notion of experiencing feelings of guilt if members of the public do not report a potentially missing child could help to improve the likelihood of contacting the police. Moreover, when combined with the previous thesis findings, it could be argued that an increase in individual levels of confidence could help to improve missing children appeals as higher confidence levels have been found to be associated with recall accuracy which further increases the likelihood of contacting the police.

The final underlying motivational theme found to increase the likelihood of contacting the police was considering what may occur if they were the one who was missing, or if it was somebody else that they knew went missing. Despite this finding presenting a novel insight into why some individuals would contact the police in relation to missing children, Lampinen et al.'s (2009) research helps to support this theme. Lampinen et al. (2009) questioned supermarket customers on their view of the importance of locating missing children as part of a wider study. The study found that the customers who had children of their own were significantly more likely to declare that locating a missing child is extremely important compared to customers who did not have any children of their own (Lampinen et al., 2009). However, Lampinen et al. (2009) did not explore whether this motivated the customers to contact the police and thus remains circumstantial.

Nevertheless, the current thesis findings have demonstrated some of the underlying motivations that increase the likelihood of contacting the police which could be explored further via additional future research. Thus, if members of the public are helped to increase their confidence in their own recall abilities of the appeal, are presented with an alternative perspective to consider themselves or a related individual in the similar situation as the child, are encouraged to understand the importance of locating the child, and have an increase in perceived feelings of guilt if not reporting a potential sighting of the child, there could be an increase in the likelihood of contacting the police which could help to locate and identify the child quickly and prior to experiencing harm. However, in order to achieve this, the members of public must first be able to accurately progress through the previous stages

presented throughout this thesis to make a positive identification of the child prior to reporting the child to the police (see Lampinen et al., 2016).

10.2.8. What Reduces the Likelihood of Contacting the Police?

In contrast to the above factors associated with contacting the police, the research also sought to explore the underlying factors that are associated with not contacting the police. These factors would thus lay the foundations for future research to explore the motivations further and help to improve future missing children appeals by reducing these factors that may in turn increase the likelihood of contacting the police. Across the three experimental studies, there were two major underlying motivations that reduced the likelihood of contacting the police.

Demonstrated throughout all three experimental studies, individuals indicated that the primary reason behind their likelihood of not contacting the police was due to the belief that they would be wasting police time and resources. This was associated with the belief that the missing child may already have been located, or that the child they may have identified is not the missing child sought via the appeals. Similarities are thus drawn with the work of Felson et al. (2002) who's analysis of responses enclosed within the National Crime Victimization Survey found that the majority of individuals had indicated their main reason for not reporting crimes to the police was due to the belief that their information would be unimportant to the police and would thus waste their time. Therefore, the research findings demonstrate the importance for future missing children appeals to emphasise the importance of contacting the police and changing the perspective held by some individuals that they would not be wasting police time and resources. This recommendation may this help to improve the likelihood of members of the public contacting the police with potentially vital information on the possibility of locating a missing child.

The final underlying motivational theme identified across the three experimental studies that reduced the likelihood of individuals not contacting the police was due to the perceived lack of confidence and uncertainty in their overall accuracy and identification.

However, as this theme presents a novel insight, it does not align with the previous literature as the research availability for understanding the reasons why individuals do not contact the police is near non-existent (Miller et al., 2009). Nevertheless, this research findings illustrates the importance of trying to improve the level of individual confidence in identification and recall accuracy as higher levels are associated with an increase in the likelihood of contacting the police whilst lower levels of confidence are thus associated with a decrease in the likelihood of contacting the police. Repeating the same missing child appeal as opposed to numerous appeals of multiple missing children may help to improve the likelihood of members of the public contacting the police. Additional research is required, however, to further explore these underlying motivations behind contacting or not contacting the police.

10.3. Applicability of Research Findings

The current thesis has presented three novel experimental research studies that demonstrate significant implications and insight into an area that has limited empirical support and understanding. However, there are a small number of factors associated with the exploration of the effectiveness of missing children appeals that are unable or highly difficult to emulate within experimental simulations. This therefore challenges the current external validity of the implications and findings identified across the three studies presented in this thesis.

The most difficult element in exploring the effectiveness of true missing children appeals is causality (Drivsholm et al., 2017). It would be near impossible to ascertain the true causality of the relationship between the release of the missing child appeal and the accurate location of the missing child by a member of the public outside of a simulated environment. To achieve this, researchers would be required to observe, measure and analyse a series of stages that each enclose their own difficulties and potential for error. First, researchers would need to observe the impact and effectiveness of an appeal released to the public by the police or a charity by measuring how the appeal was distributed and

observed by members of the public. Second, researchers would be required to determine whether a member of the public had accurately encoded an appeal presented via their social media or the news and how much of this information they will be able to accurately retrieve. Third, researchers would need to explore which members of the public had correctly identified the missing child during their everyday activities either before or after observing the appeal. Finally, the researchers would then be required to measure the likelihood of that individual contacting the police and explore the reasons why they did not contact the police even though they managed to identify the missing child.

Each individual stage would be extremely difficult to achieve in a real-life setting as there are many confounding and extraneous variables that would be present. Research has, however, explored these stages individually within laboratory environments which have demonstrated low missing children appeal effectiveness. For instance, research is currently being undertaken by researchers at the University of Portsmouth who are exploring how an appeal is observed and distributed amongst members of the public via social media. In addition, Lampinen and Moore (2016) have explored how the observation of an appeal could potentially lead to the identification of the missing person during everyday activities finding that members of the public are generally poor at recognition.

Finally, this current thesis has explored how factors associated with an appeal affect recall abilities and why some individuals may not contact the police despite observing the same information as individuals who would contact the police which is the first of its kind. Moreover, the three studies have also empirically tested Lampinen, Curry and Erickson's (2016) conceptual model of appeal effectiveness. The studies have empirically demonstrated how providing attention to the appeal, encountering the missing child, identifying the missing child, recognition of the missing individual, and taking action with this information can have a significant impact on the likelihood of accurately identifying the missing child and the likelihood of reporting them to the police. Additional research may thus be able to combine these studies together to mimic the effectiveness of an appeal from publishing the appeal to contacting the police in an experimental setting which may then

help to improve the external validity of the research studies and thus mirror the effects of real-life appeals.

Additional difficulties arise in the replicability of the implications perceived by members of the public during a real missing child appeal. Research has demonstrated how some individuals may not help to assist locating a missing child due to the child going missing in a different geographic region and the belief in their own ability to be able to locate the child (Lampinen & Moore, 2016), habituation (Rankin et al., 2009), or due to the bystander effect whereby the individual may perceive that someone else will locate the child so that they don't have to (Garcia et al., 2002; Greitemeyer & Mügge, 2013). In contrast, participants in an experimental environment are aware that they must provide attention to the appeal and are required to identify the child from a line-up task. Thus, participants in an experiment setting are more engaged in locating missing children which may have a different outcome if they were to observe a real-life appeal when they may not be so engaged. Nevertheless, the present thesis presents a novel methodological approach to exploring the effectiveness of missing children appeals which has been a major underlying factor behind the difficulty in researching missing children appeals due to the difficulties in ascertaining causality between the release of an appeal and the locating of the missing child (Drivsholm, et al., 2017).

Overall, the exploration of the effectiveness of missing children appeals is extremely difficult to achieve in a real-life setting hence the current thesis explored the potential effectiveness of appeals via the exploration of factors associated with improving or decreasing recall ability, identification, and likelihood of contacting the police. One potential approach to improving this via real-life environments could be to publicise mock missing children appeals via local social media and allow the children in the appeals to walk around the area as usual. Researchers could then explore how the appeal impacted upon the public and whether the number of identifications made were accurate or inaccurate. Covert observations could further explore the individuals who identify the children but fail to contact the police. However, there are numerous ethical and impractical issues associated

with this approach which is why the exploration of appeals may best be explored via experimental designs.

10.4. Implications of Findings

Despite the potential limitations in relation to external validity, the three experimental studies presented in this thesis demonstrate significant implications in practical and academic settings. The three research studies have demonstrated how the length of time spent observing an appeal, individual levels of confidence, the number of appeals presented, the amount of textual or photographic information present in the appeal, the length of appeals, and the initial accuracy or error can influence the overall recall accuracy and recall error of information relating to a missing child appeal. The findings therefore help to demonstrate how missing children appeals could be improved by increasing the amount of time that the appeal is observed by members of the public, reducing the amount of different appeals and the information presented, and the inclusion of more textual information within the Twitter appeal and more photographic content within the Child Rescue Alert. Improving individual levels of confidence and initial recall accuracy may also help to improve future appeals.

10.4.1. Academic Implications

The studies presented within this thesis provide significant academic implications to build the current gaps within the literature and have demonstrated a novel methodological approach to exploring the effectiveness of missing children appeals. The current studies have provided empirical support to the conceptual model of appeal effectiveness (Lampinen, Peters & Gier, 2012) in multiple ways. For instance, after an appeal has been disseminated widely enough, Lampinen, Peters and Gier (2012) argue that an appeal can only begin to become effective if the public pay attention to the appeal. The three experimental studies within the thesis have provided empirical support to this concept via the use of time and attention. The results across all three studies found that as the length of time consumed by

the participants to observe the appeal increases, their overall recall accuracy of the information within the appeals is significantly higher than individuals who do not provide much attention to the appeal. Hence, the studies support the conceptual model by Lampinen, Peters and Gier (2012) by arguing that the appeal effectiveness increases if members of the public provide more attention to the appeals.

The following stages in Lampinen, Curry and Erickson's (2016) conceptual model of appeal effectiveness relates to members of the public encountering the missing child, identifying the child's facial features, and recalling the acquired information to confirm the child is in fact the child who is missing. These stages have been empirically supported through study 2's use of a photograph line-up of missing children. Within the line-up, all target missing children observed were able to be identified within the line-up task and thus allows the member of public to encounter them. The results of study 2 found that as the number of missing children images required to be remembered increases, their ability to accurately identify the children from a line-up significantly reduces. Therefore, the study indicates that a lower number of appeals will help to improve the accuracy of identifications made by members of the public. However, this issue is discussed further in the section below.

The final stage of Lampinen, Curry and Erickson's (2016) conceptual model refers to the ability to act. As with the other stages in the model, this final stage has also been empirically supported through the present research studies. Across all three studies, participants were asked to provide an insight into whether they would or would not contact the police with the information they have on the missing child in the study. They were then asked to explain why this may be the case. The research findings show that whilst many participants believe they would contact the police, other participants believe they wouldn't contact the police regardless of whether they were correct or incorrect during their identification task. Participants who were highly confident in their answers, believed it is highly important to report any child to the police, considered the missing child to be someone they knew or their own child, and had felt they would have extreme guilt if they did not report the child to the police were more likely to contact the police. In contrast,

participants who were not confident in their recall accuracy and believed that contacting the police would waste police time and resources, were found to be much less likely to contact the police. Therefore, the current thesis provides empirical support for Lampinen, Curry and Erickson's (2016) conceptual model although future research is required to address this further.

The current thesis has also provided a novel methodological approach to exploring the effectiveness of missing children appeals. The primary reason behind the lack of research exploring missing children appeals and their effectiveness is due to the difficulty in ascertaining causality (Drivsholm et al., 2017). To explore the true effectiveness of an appeal, researchers would need to collect statistical data on the number of appeals that are disseminated, the number of individuals who observe and interact with the appeals, the number of positive and negative identifications made in public, and the number of accurate and inaccurate reports made to the police by members of the public who believe they have located the missing child. Therefore, as it is near impossible to ascertain effectiveness via this approach, the research helps to present an alternative approach. The research studies utilised designs similar to research studies exploring eyewitness memory with the aims of influencing aspects associated with an appeal, such as the type of content within a description of the number of appeals presented, to establish a measurable outcome. However, there is a need for greater research to build on this novel approach further to continue to explore the effectiveness of appeals albeit from an alternative but much more feasible approach.

Finally, the current thesis builds on the current literature exploring appeal effectiveness and helps to fill in some of the gaps associated with why some members of the public would not contact the police to report a missing child despite observing the same information and appeals as other members of the public who would contact the police. The current studies lay the foundations for other researchers to continue exploring these factors associated with appeal effectiveness as well as providing empirical support to a conceptual model on the stages required to achieve an effective appeal that helps to locate a missing child quickly and prior to them experiencing harm.

10.4.2. Implications for Policy and Practice

In addition to the academic implications, the current thesis also demonstrates significant implications for practice and policy. The research studies have demonstrated how appeals required to be disseminated should be targeted and not over-disseminated as an increase in the number of appeals was found to significantly reduce recall and identification accuracy. However, this is not to say that numerous appeals should not be disseminated. It is extremely important that when a child goes missing, there are as many people as possible who are aware of this who can help locate the child as quickly as possible. However, this is an extremely difficult task to achieve as there needs to be a balance between disseminating a large number of appeals without reducing the likelihood of reduced recall accuracy. In addition, as discussed in the literature, there are already significant biases in who is provided with attention and who is not which can have significant consequences on the outcome of a safe return. Without the research available, the current thesis argues that appeals need to be disseminated to as many people as possible but could be disseminated in a more restricted and targeted manner to try and maintain the balance between the number of appeals disseminated and the effectiveness of those appeals.

The current thesis has also established some of the underlying motives held by members of the public for whether they would or would not contact the police. A missing child appeal can be perfectly effective itself but as Lampinen, Curry and Erickson's (2016) model suggests, the appeal will remain ineffective if no one acts upon this information. The findings discovered that participants who were highly confident in their answers, believed it is highly important to report any child to the police, considered the missing child to be someone they knew or their own child, and had felt they would have extreme guilt if they did not report the child to the police were more likely to contact the police. In contrast, participants who were not confident in their recall accuracy and believed that contacting the police would waste police time and resources, were found to be much less likely to contact the police. Therefore, future missing children appeals and research needs to explore ways in which the police and appeals can emphasise the importance of reporting a child to the

police, to help the public increase their level of confidence for the details they may have acquired from the appeal, and to assure the public that any call to the police would not be wasting the police's time and resources.

Finally, the current thesis has provided empirical evidence of factors associated with appeals which significantly influence the level of accuracy by members of the public. For instance, longer and non-newsworthy descriptions of missing children and presenting multiple missing children photographs were found to significantly reduce the level of accuracy during recall by members of the public. The findings presented within this thesis lay the foundations for future researchers, law enforcement and policy makers to implement changes to the current appeal designs to remove factors that reduce recall accuracy and increase the factors found to improve recall accuracy. However, this can be difficult to achieve and it should never compromise the safe return of a missing child. Hence, there is a great need for future research into the design of missing children appeals which may maximise the likelihood of successful and accurate acquisition and reduce the potential for recall errors.

10.5. Limitations and Future Directions

The current thesis studies demonstrate novel insights into the effectiveness of missing children appeals and the factors that help to improve or decrease recall accuracy. However, as with all research, there are some limitations that must be addressed and considered when interpreting the research findings.

10.5.1. Representativeness

The first limitation surrounds the representativeness of the samples utilised across the three experimental studies in relation to the general population. The studies consisted of primarily female individuals with a white ethnic background and were typically students during the data collection stages. Thus, a wider representational sample would have been beneficial to explore differences in recall accuracy and recall error between sex, age and

employment status. However, it could be argued that many of the participants lived in different geographical regions throughout the UK which helps to minimise the potential for geographical bias and thus slightly improves representability. Nevertheless, future research could utilise a much wider and more representative sample to ascertain whether differences in recall accuracy and recall error exist between sex, age, or other participant characteristics.

10.5.2. Fictional Content

A second limitation of the study derives from the use of fictional descriptions, photographs and overall appeals of children to explore recall accuracy and recall error. The descriptions utilised in the first experiment were designed to align with real descriptions of missing children presented in the media as well as enabling the descriptions to be compared with each other to ascertain if the length or type of content in the descriptions influence recall accuracy and recall error.

Additionally, the photographs used in the second experiment were designed to replicate the photograph of a missing child within an appeal. However, the images used in the mock appeals and in the line-up task were of royalty-free images with the children in the photographs being photographed in a non-natural and model-like manner. This may have had a negative influence on the effectiveness of the appeals as some images may be more recognisable than others and would have influenced the scores of participants' recall accuracies. The use of more realistic photographs would have been advantageous here to explore the effect that the photographs may have on recall accuracy. These photographs could be provided by volunteers from when they were younger to make the experimental mock appeals more realistic.

Finally, the use of mock missing children appeals via the third experiment may have also influenced the recall accuracy and recall error scores from the participants. The Child Rescue Alert was able to include marginally additional details than the Twitter appeal due to the character limit imposed which has since been extended. This may have had a significant effect on the recall error scores as the current study found that participants who observed

the Child Rescue Alert had significantly greater errors in recall than participants observing the Twitter appeal. This may not be due to the appeal design itself but due to the additional information required to be encoded. Therefore, future research could utilise more realistic appeals that contain identical information across the two design types which would reflect the rate of accuracy and error on participant recall more efficiently.

Thus, the use of more realistic descriptions, photographs and appeals of missing children may have been more beneficial to explore the recall ability although any differences that did arise could have been criticised due to the difference in the content between them. For instance, one of the target children may appear to improve recall accuracy over the other mock appeal but this could be due to the location or victim characteristics as opposed to the actual appeal presented. Thus, the same key details were required within each of the mock appeals presented to participants across all three studies to improve the research findings on factors that improve recall accuracy and reduce recall error. Nevertheless, future research could improve the mock appeals further by utilising real, but previous, missing children descriptions, photographs and appeals to ascertain whether the recall ability is influenced by the authenticity of the simulated tasks. This method, however, would require additional designs to improve the comparability between the appeals during the analysis of recall accuracy and recall error.

10.5.3. Participation Locations

The third limitation surrounding the results of the three experimental studies is associated with the location in which the participants completed the studies. As the research studies were online experimental designs, the participants were free to participate in the studies at any time and in any location that they wished. Thus, the studies were unable to control participant behaviours during the studies such as taking notes or being distracted at the time of the experiment. These behaviours may have significantly affected the subsequent recall accuracy and recall error scores for that participant. However, the study wished to ascertain the effectiveness of missing children descriptions in a setting that is true to real events. When an appeal is displayed, participants are highly unlikely to give their full

attention to the appeal as their attention may be divided if observing within their home during a meal time, for instance (Miller et al., 2009). If the participants completed the experiment in a controlled laboratory setting, this may have resulted in an increase in type I errors.

10.5.4. Calculation of Recall Error Scores

The fourth limitation surrounding the research studies derives from the calculation of recall error scores. During the first and third experiments, recall error scores were calculated by the inclusion of an incorrect detail of the missing child description within the participants' free recall task. This resulted in very low recall error scores with many participants demonstrating a 0% recall error score. This does not necessarily mean that the participant had 0% recall error, only that they did not provide an incorrect response. A participant may have been unsure on some of the details contained within the description and instead of guessing, may have simply left the detail out completely and only included the details that they were certain had been included within the description. If participants were required to complete a cued-recall task in contrast to the free-recall task and were required to provide an answer for each prompt, participants may have seen a significant increase in recall error scores. Hence, type II errors may have been increased in the calculation of participant recall error scores. Future research could therefore replicate the studies presented in this thesis but change the free-recall task to a cued-recall task and require participants to input a response for each cue. Alternatively, researchers could include both free-recall and cued-recall tasks to ascertain whether the type of recall also effects recall error.

10.5.5. Distraction Task

A fifth limitation may derive from the type of distraction task utilised across the three experimental studies to prevent participants from rehearsing the information enclosed within the appeals observed prior to the recall or identification tasks. The distraction task

was a simple word-memory task presented for two minutes and thus may not have fully prevented participants from rehearsing the images to memory as participants may not have fully engaged with the memory task. The distractor task could therefore be improved by challenging the participants to complete a more cognitively challenging task such as a sudoku or crossword puzzle. The task could also have been presented for a time duration longer than two minutes to fully minimise the likelihood of image rehearsal as this would affect the accuracy scores for individuals. However, it can be argued that the follow-up recall task was presented to participants three days after completing the initial experiment. Thus, participants would be engaged in their usual daily activities which further help to prevent rehearsal of the information enclosed within the appeals. Moreover, this procedure allowed the experimental studies to replicate real-life events as a member of the public may observe an appeal only once with many days in between before they are able to observe the appeal again. Thus, the participants' recall ability during the follow-up task may demonstrate high external validity.

10.5.6. Use of Children

A sixth limitation may derive from the exploration of missing children as opposed to missing adults. Approximately 30% of all missing persons incidents relate to missing adults which remains underrepresented in missing persons research. Gier et al. (2017) explored the identification ability of 330 university participants for identifying an elderly woman. After observing one of four video clips and engaging in a photograph line-up task, Gier et al. (2017) found only 6.7% of responses were correct in identifying the elderly woman. Thus, future research could explore the effectiveness of missing person appeals by repeating the studies but changing the targets from children to adults, or both children and adults, to explore whether the age of the missing person and the identification accuracy is influenced by the participants' age or other characteristics. Moreover, the exploration into the effectiveness of missing adult appeals could be compared to the current thesis findings to ascertain whether the factors associated with improving or reducing recall accuracy are similar.

10.5.7. Targeting Missing Children Appeals

A seventh limitation of the current research derives from the inability to explore missing children effectiveness based upon the geographic location of the appeal. Although not a primary aim of the current project, it would be highly beneficial to explore the effectiveness of appeals of missing children across different geographical locations to identify the likelihood of public attention being given to the appeals, and to improve the ability to target locations for missing children appeals to improve the effectiveness of recall accuracy overall. If an appeal of a missing child is placed in area that would increase the likelihood of encountering the child, this may further improve the effectiveness of the appeal as members of the public are more likely to encounter the child and thus increases their belief of being able to help locate the child (Lampinen et al., 2016). However, as the understanding of missing persons behaviours is limited it may be advantageous to explore narrative behaviours of missing children that can help to predict the likelihood of locations visited and thus, present an opportunity to target missing appeals.

Many researchers believe that our lives are based on a script whereby we interpret everyday events via the role we perceive ourselves as playing which further determines the actions we perform (Baumeister & Newman, 1994; Josselson & Lieblich, 1993; Katz, 1988). Thus, by understanding the narrative roles that individuals consider themselves to be when facing certain situations, there is an opportunity to further understand the major psychological aspects in relation to the relationships between an individual's intentions, desires, identity, motivations, emotions, and actions in any given event (Presser, 2009). The understanding of psychological narratives has helped to further our understanding of human behaviours across generic adult offenders (Ioannou, Canter, Youngs & Synnott, 2015; Ioannou, Canter & Youngs, 2017), young offenders (Ioannou, Synnott, Lowe & Tzani-Pepelasi, 2018), contract killers (Yaneva, Ioannou, Hammond & Synnott, 2018), rapists (Canter & Heritage, 1989), terrorists (Canter, Sarangi & Youngs, 2012), and stalkers (Canter & Ioannou, 2004). Behavioural narratives have also been explored with missing children (Payne, 1995) and missing adults (Bonny, Almond & Woolnough, 2016) although

both explorations are primarily focused on behavioural differentiations as opposed to psychological exploration.

Nevertheless, in relation to missing children appeals, psychological narratives would allow a deeper understanding into missing persons behaviours via the identification of underlying emotions, actions and desires that contribute to a decision in going and being missing. Hence, the use of narratives to further our understanding of missing persons behaviours could help to predict the likely locations that will be travelled towards by these missing individuals which will not only help to prioritise search areas for police investigations, but will also allow missing children appeals to be targeted to these locations to try to request effective help from members of the public who are more likely to encounter the missing child than appeals published generically across social media sites and irrelevant geographical locations.

10.5.8. Contacting the Police

The research studies illustrated some of the underlying motivations behind contacting or not contacting the police in relation to missing children. However, as this task was designed solely as a short complimentary and exploratory analysis, the information provided by the participants was minimal with many providing just a few words on their motivation for contacting or not contacting the police. Hence, future research could build upon this further by exploring the motives behind contacting the police or not contacting the police as a stand-alone study via qualitative semi-structured interviews or focus groups. This would help to improve the analysis of the responses and allow the researcher to delve further by asking additional questions to understand the reasons why some individuals would contact the police and others may not contact the police. Future appeals could thus try to improve the factors associated with contacting the police and reduce the factors found to reduce the likelihood of contacting the police.

10.6. Conclusion

When a child goes missing, they raise a significant level of concern for their wellbeing by members of the public, their family and friends (Lampinen et al., 2012). A common approach in these circumstances is for the police or family members to release images of the child to social media and news outlets with the aim of acquiring help from the public to locate the child (Lampinen & Moore, 2016; Lampinen & Sweeney, 2014; Sweeney & Lampinen, 2012). However, despite the wide use of missing persons appeals across the world and the importance of the appeals to locate the missing individual, there is significantly little research that explores the effectiveness of these appeals with the majority being performed in the USA (Drivsholm et al., 2017). Thus, the current thesis aimed to fill this gap in the literature and improve our understanding on the effectiveness of missing children appeals on recall accuracy. The research also sought to explore the underlying motivations behind contacting or not contacting the police as there is a limited amount of knowledge exploring this with the majority of associated literature focusing solely on contacting the police when the individual is a victim of a crime (Miller et al., 2009).

To achieve these primary aims, the thesis presented three experimental studies that explored different factors associated with missing children appeals on the public's recall ability. The first experiment sought to explore factors associated with descriptions of missing children appeals via the exploration of the effect of the length of descriptions, and the type of descriptive content, on recall accuracy and recall error finding shorter and more newsworthy content improves recall accuracy. The second experiment sought to explore the effect that the number of appeals observed, and the ability to identify unfamiliar faces, has on recall accuracy and recall error finding higher frequencies of appeals reduces the accuracy of identifying a missing child. Finally, the third experiment sought to explore the effect of the type of design of an appeal on recall accuracy and recall error finding that the textual and photographic contents enclosed influence recall accuracy between Twitter and Child Rescue Alert appeal designs. All three experimental studies further explored the role of confidence, attention, and the association between initial and follow-up recall scores as

well as the exploration behind why some individuals contact the police and some individuals do not contact the police despite observing the same information.

In relation to the implications of the studies' findings, future missing children appeals could benefit by enhancing their understanding behind factors that help to improve recall accuracy and the effectiveness of appeals, factors that motivate members of the public to contact the police once located a missing child, and the methodological approaches utilised in the studies which future research could build further. Nevertheless, there are a small number of limitations and questions over applicability of research findings in real-life environments that required caution to be taken when interpreting these results. The studies, however, have sought to match real-life settings via the allowance of the participants to engage in the research studies in their own time and location to allow for natural distractions and memory encoding to take place, the inclusion of a three-day break to further replicate real-life memory decay, and the use of realistic mock missing children appeals.

Consequently, the current findings allow policy makers, charities, law enforcement, researchers and other associated personnel to explore, identify, and enhance their understanding of factors surrounding the effectiveness of missing children appeals. Moreover, it is proposed that additional research can build on these findings to further investigate the factors that are associated with improving the effectiveness of appeals so that future missing children appeals provides the greatest possible chance of a successful and accurate locating of a missing child by a member of the public who has witnessed an appeal for help.

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Appendices

Appendix 1: Mean length of time spent observing missing children photograph appeals

Table Appendix 1a.

Mean time in seconds spent overserving missing children photographs per condition.

Condition	Target 1				Target 2				Target 3				Target 4			
	<i>m</i>	<i>SD</i>	Min	Max	<i>m</i>	<i>SD</i>	Min	Max	<i>m</i>	<i>SD</i>	Min	Max	<i>m</i>	<i>SD</i>	Min	Max
1- Photograph	15.00	0.22	15.00	15.01	-	-	-	-	-	-	-	-	-	-	-	-
4- Photograph	11.23	11.59	1.60	60.28	7.16	5.45	1.52	34.24	6.31	5.01	0.68	25.68	5.54	4.85	0.50	29.76
8- Photograph	9.30	8.79	2.15	50.99	7.01	5.70	1.19	35.12	7.62	8.38	0.75	43.68	6.24	7.59	0.98	56.21

Note. The symbol '-' denotes condition did not observe this target photograph.

Table Appendix 1b.

Mean time in seconds spent overserving missing children photographs per condition. (continued)

Condition	Target 5				Target 6				Target 7				Target 8			
	<i>m</i>	<i>SD</i>	Min	Max	<i>m</i>	<i>SD</i>	Min	Max	<i>m</i>	<i>SD</i>	Min	Max	<i>m</i>	<i>SD</i>	Min	Max
1- Photograph	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4- Photograph	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
8- Photograph	5.84	8.34	1.04	60.12	7.15	10.42	0.79	55.28	6.32	10.05	0.67	66.42	6.37	8.66	0.67	36.32

Note. The symbol '-' denotes condition did not observe this target photograph

Appendix 2: Participant Information Sheets for Experimental Studies

A: Description Study

Effectiveness of Missing Children Publicity Appeals

You are being invited to take part in a research study on the effectiveness of missing children publicity campaigns. Before you decide to take part, it is important that you fully understand why the research is being done and what it will involve. Please take the time to read the following information carefully. Please do not hesitate to contact me on the details below if there are any questions or if you would like further information.

What is the research study about and do I have to take part?

The purpose of the research study is to examine the effectiveness of missing children publicity appeals. It is your decision whether or not you take part. If you decide to take part, you will be asked to agree to a consent form and you are free to withdraw at any time throughout the research up until you have submitted your responses without giving a reason. Just close your browser to end participation.

Will my identity be disclosed?

All information that is disclosed within the research study is anonymous and will not be able to be used to identify individuals. All answers provided by individuals within the research study will be coded and presented collectively.

How long will it take, am I eligible, and what will I need to do?

The research study should take no longer than 5 minutes to complete and you must be aged 16 or over to take part. If you choose to participate in the research study, you will be asked to take part in a mock missing children appeal study followed by a word memory task. After this has been completed, you will be asked to supply some demographic information and an email address that will be used for a follow-up task. This task will be sent from 3 days after you have completed the research study.

What will happen to the information you collect?

All the information that is received within this research study will be kept securely and any potential identifying details will be removed and coded to ensure anonymity. It is anticipated that the research may, at some point, be published in a journal or report. However, if this were to happen, your anonymity will be ensured.

Who can I contact for further information?

If you have any questions about the research study, please use the details below or alternatively, you may contact my research supervisors: Dr Maria Ioannou (M.Ioannou@hud.ac.uk) or Dr John Synnott (J.P.Synnott@hud.ac.uk).

If you are happy to participate in the research study, please click the next button that will take you to the informed consent page that is required to be completed prior to starting the research study.

Thank you for your time and for participating within the research study.

Sincerely,

Daniel Hunt

Daniel.Hunt@hud.ac.uk

Doctoral Student

University of Huddersfield

Informed Consent Form

It is important that you read, understand and sign the consent form. Your contribution to this research study is entirely voluntary and you are not obliged in any way to participate. Please tick each box if you are happy to continue and participate in the research study.

- I understand that I will remain anonymous in the results
- I understand that participation is voluntary and that I have the right to withdraw from the research at any time by closing my browser
- I understand that I may contact the researcher or the researcher's supervisors if I have any questions about the research study
- I am aged 16 years or over
- I consent to taking part in the research

B: Photograph Study

Effectiveness of Missing Children Publicity Appeals

You are being invited to take part in a research study on the effectiveness of missing children publicity campaigns. Before you decide to take part, it is important that you fully understand why the research is being done and what it will involve. Please take the time to read the following information carefully. Please do not hesitate to contact me on the details below if there are any questions or if you would like further information.

What is the research study about and do I have to take part?

The purpose of the research study is to examine the effectiveness of missing children publicity appeals. It is your decision whether or not you take part. If you decide to take part, you will be asked to agree to a consent form and you are free to withdraw at any time throughout the research up until you have submitted your responses without giving a reason. Just close your browser to end participation.

Will my identity be disclosed?

All information that is disclosed within the research study is anonymous and will not be able to be used to identify individuals. All answers provided by individuals within the research study will be coded and presented collectively.

How long will it take, am I eligible, and what will I need to do?

The research study should take approximately 15 minutes to complete and you must be aged 16 or over to take part. If you choose to participate in the research study, you will be asked to take part in a mock missing children appeal study followed by a word memory task and line-up task. After this has been completed, you will be asked to supply some demographic information and an email address that will be used for a quick follow-up study. This question will be sent from 3 days after you have completed the research study.

What will happen to the information you collect?

All the information that is received within this research study will be kept securely and any potential identifying details will be removed and coded to ensure anonymity. It is anticipated that the research may, at some point, be published in a journal or report. However, if this were to happen, your anonymity will be ensured.

Who can I contact for further information?

If you have any questions about the research study, please use the details below or alternatively, you may contact my research supervisors: Dr Maria Ioannou (M.Ioannou@hud.ac.uk) or Dr John Synnott (J.P.Synnott@hud.ac.uk).

If you are happy to participate in the research study, please click the next button that will take you to the informed consent page that is required to be completed prior to starting the research study.

Thank you for your time and for participating within the research study.

Sincerely,

Daniel Hunt

Daniel.Hunt@hud.ac.uk
Doctoral Student
University of Huddersfield

Informed Consent Form

It is important that you read, understand and sign the consent form. Your contribution to this research study is entirely voluntary and you are not obliged in any way to participate. Please tick each box if you are happy to continue and participate in the research study.

- I understand that I will remain anonymous in the results
- I understand that participation is voluntary and that I have the right to withdraw from the research at any time by closing my browser
- I understand that I may contact the researcher or the researcher's supervisors if I have any questions about the research study
- I am aged 16 years or over
- I consent to taking part in the research

C: Format Study

Effectiveness of Missing Children Publicity Appeals

You are being invited to take part in a research study on the effectiveness of missing children publicity campaigns. Before you decide to take part, it is important that you fully understand why the research is being done and what it will involve. Please take the time to read the following information carefully. Please do not hesitate to contact me on the details below if there are any questions or if you would like further information.

What is the research study about and do I have to take part?

The purpose of the research study is to examine the effectiveness of missing children publicity appeals. It is your decision whether or not you take part. If you decide to take part, you will be asked to agree to a consent form and you are free to withdraw at any time throughout the research up until you have submitted your responses without giving a reason. Just close your browser to end participation.

Will my identity be disclosed?

All information that is disclosed within the research study is anonymous and will not be able to be used to identify individuals. All answers provided by individuals within the research study will be coded and presented collectively.

How long will it take, am I eligible, and what will I need to do?

The research study should take no longer than 5 minutes to complete and you must be aged 16 or over to take part. If you choose to participate in the research study, you will be asked to take part in a mock missing children appeal study followed by a word memory task. After this has been completed, you will be asked to supply some demographic information and an email address that will be used for a follow-up task. This task will be sent from 3 days after you have completed the research study.

What will happen to the information you collect?

All the information that is received within this research study will be kept securely and any potential identifying details will be removed and coded to ensure anonymity. It is anticipated that the research may, at some point, be published in a journal or report. However, if this were to happen, your anonymity will be ensured.

Who can I contact for further information?

If you have any questions about the research study, please use the details below or alternatively, you may contact my research supervisors: Dr Maria Ioannou (M.Ioannou@hud.ac.uk) or Dr John Synnott (J.P.Synnott@hud.ac.uk).

If you are happy to participate in the research study, please click the next button that will take you to the informed consent page that is required to be completed prior to starting the research study.

Thank you for your time and for participating within the research study.

Sincerely,

Daniel Hunt

Daniel.Hunt@hud.ac.uk
Doctoral Student
University of Huddersfield

Informed Consent Form

It is important that you read, understand and sign the consent form. Your contribution to this research study is entirely voluntary and you are not obliged in any way to participate. Please tick each box if you are happy to continue and participate in the research study.

- I understand that I will remain anonymous in the results
- I understand that participation is voluntary and that I have the right to withdraw from the research at any time by closing my browser
- I understand that I may contact the researcher or the researcher's supervisors if I have any questions about the research study
- I am aged 16 years or over
- I consent to taking part in the research

Appendix 3: Short Descriptions Used in Study 1

Fears Grow for Missing 13-Year-Old Schoolgirl

Fears are growing for a missing 13 year old schoolgirl who disappeared after a family argument.

Abigail Walters had gone missing at around 5pm on Tuesday evening after an argument with her parents about a new boyfriend.

Abigail was last seen wearing a red fashion scarf, plain white t-shirt, blue jeans and white Nike trainers. She has long blond hair, green eyes and usually goes by the name Abby.

Any information should be reported to your local neighbouring policing team.

Description 1: Short Argument

Fears Grow for Missing 13-Year-Old Schoolgirl

Fears are growing for a missing 13 year old schoolgirl who disappeared with an unknown male.

Abigail Walters had gone missing at around 5pm on Tuesday evening after being seen getting into the car of an unknown male by her friends.

Abigail was last seen wearing a red fashion scarf, plain white t-shirt, blue jeans and white Nike trainers. She has long blond hair, green eyes and usually goes by the name Abby.

Any information should be reported to your local neighbouring policing team.

Description 2: Short Abduction

Appendix 4: Long Descriptions Used in Study 1

Fears Grow for Missing 13-Year-Old Schoolgirl

The family of a missing 13 year old schoolgirl are desperate to find her after she disappeared following an argument with her parents about a new boyfriend.

Abigail Walters had gone missing at around 5pm on Tuesday evening after storming out of the family home. She was last seen heading towards the bus stop located two miles away from her home.

Abigail was last seen wearing a red fashion scarf, plain white t-shirt, blue jeans and white Nike trainers. She is described as white, 5ft 1in tall, of slim build, with long blond hair and green eyes. She usually goes by the name Abby.

A spokesman for the police said that they were highly concerned for her welfare and hope to find her soon. She has now been missing for 7 hours.

Any information should be reported to your local neighbouring policing team.

Description 3: Long Argument

Fears Grow for Missing 13-Year-Old Schoolgirl

The family of a missing 13 year old schoolgirl are desperate to find her after she disappeared with an unknown male after finishing school.

Abigail Walters had gone missing at around 5pm on Tuesday evening after being seen getting into the car of an unknown male by her friends. The car is described as being a silver hatchback with black tinted windows. The male is described as being white, in his mid-thirties and wearing a blue patterned t-shirt.






























Abigail was last seen wearing a red fashion scarf, plain white t-shirt, blue jeans and white Nike trainers. She is described as white, 5ft 1in tall, of slim build, with long blond hair and green eyes. She usually goes by the name Abby.

A spokesman for the police said that they were highly concerned for her welfare and hope to find her soon. She has now been missing for 7 hours.

Any information should be reported to your local neighbouring policing team.

Description 4: Long Abduction

Appendix 5: Photograph Line-Up Used in Study 2

				
Target 1	Target 4	Target 5	Target 6	Target 3
				
Target 2	Target 7	Target 8		
				
				
				
				

Appendix 6: Appeal Designs Used in Study 3

Any information? Please contact
Local Neighbourhood Policing Team

ABIGAIL WALTERS

Missing From: Salford
Date: Tuesday 13th July 2017 at 17:00

	ABIGAIL WALTERS	
	Age	13 Years
	Eyes	Green
	Height	5'0 – 5'1"
	Ethnic Appearance	White European
	Hair	Blonde
	Gender	Female
	Description	Believed to be wearing blue jeans and white Nike trainers
Reason for Disappearance	Argument with parents over new boyfriend and last seen getting into the car of an unknown male	

Condition 1: Child Rescue Alert Design

 **G M Police** 
@gmpolice [Follow](#)

Can you help us find Abigail Walters from [#Salford](#)? Went missing due to argument and last seen getting in car of unknown male



10:56am – 23 Jul 2017

Condition 2: Twitter Appeal Design

Appendix 7: Participant Debrief Sheets for Experimental Studies

A: Description Study Initial Debrief

Thank you!

The purpose of this research study was to examine the effectiveness of missing children publicity campaigns.

In this research study you were asked to remember as many details as possible for either a short 'family argument' missing child description, a long 'family argument' missing child description, a short 'abduction' missing child description, or a long 'abducted' missing child description. You were also asked to remember as many words as possible from lists of randomised words. This task was to prevent you from rehearsing the details of the descriptions of the mock missing children. You were then asked to freely recall as much information as you could about the missing children descriptions which will be used to examine the effectiveness of missing children appeals.

Important notice: For the next segment of the experiment, you will receive an email from approximately 3 days of this date for one final question. It would be extremely helpful if this question could be completed on the same day you receive the email, although I know this is not always possible so please try to complete it at the nearest possible opportunity.

If there are any questions or concerns, please do not hesitate to contact the researcher (Daniel.Hunt@hud.ac.uk) or the researcher's supervisors Dr Maria Ioannou (M.ioannou@hud.ac.uk) or Dr John Synnott (J.P.Synnott@hud.ac.uk). Alternatively, you may find the Missing People Charity (www.missingpeople.org.uk) and their helpline (116 000) advantageous for further information or assistance if you are missing, are thinking of going missing, or know someone who is missing and wish to talk about this to another individual. There is also the Samaritan charity (www.samaritans.org) and their helpline (116 123) if you wish to discuss anything non-missing related.

Thank you once again for taking part in the research. You may now close your browser to end the research participation.

B: Photograph Study Initial Debrief

Thank you!

The purpose of this research study was to examine the effectiveness of missing children publicity campaigns.

In this research study you were asked to remember as many details as possible for either 1, 4, or 8 mock missing children photographs. You were also asked to remember as many words as possible from lists of randomised words. This task was to prevent you from rehearsing the details of the photographs of the mock missing children. You were then asked to freely recall as much information as you could about the missing children photographs before observing a line-up of child photographs where you indicated whether you believe this child was presented in an earlier missing child appeal. This information will be used to examine the effectiveness of missing children appeals.

Important notice: For the next segment of the experiment, you will receive an email from approximately 3 days of this date for one final task. It would be extremely helpful if this task could be completed on the same day that you receive the email, although I know this is not always possible so please try to complete it at the nearest possible opportunity.

If there are any questions or concerns, please do not hesitate to contact the researcher (Daniel.Hunt@hud.ac.uk) or the researcher's supervisors Dr Maria Ioannou (M.ioannou@hud.ac.uk) or Dr John Synnott (J.P.Synnott@hud.ac.uk). Alternatively, you may find the Missing People Charity (www.missingpeople.org.uk) and their helpline (116 000) advantageous for further information or assistance if you are missing, are thinking of going missing, or know someone who is missing and wish to talk about this to another individual. There is also the Samaritan charity (www.samaritans.org) and their helpline (116 123) if you wish to discuss anything non-missing related.

Thank you once again for taking part in the research. You may now close your browser to end the research participation.

C: Format Study Initial Debrief

Thank you!

The purpose of this research study was to examine the effectiveness of missing children publicity campaigns.

In this research study you were asked to remember as many details as possible for either a mock Child Rescue Alert missing child appeal, or a twitter post appeal of a missing child. You were also asked to remember as many words as possible from lists of randomised words. This task was to prevent you from rehearsing the details of the descriptions of the mock missing children. You were then asked to freely recall as much information as you could about the missing child appeal which will be used to examine the effectiveness of missing children appeals.

Important notice: For the next segment of the experiment, you will receive an email from approximately 3 days of this date for one final question. It would be extremely helpful if this question could be completed on the same day you receive the email, although I know this is not always possible so please try to complete it at the nearest possible opportunity.

If there are any questions or concerns, please do not hesitate to contact the researcher (Daniel.Hunt@hud.ac.uk) or the researcher's supervisors Dr Maria Ioannou (M.ioannou@hud.ac.uk) or Dr John Synnott (J.P.Synnott@hud.ac.uk). Alternatively, you may find the Missing People Charity (www.missingpeople.org.uk) and their helpline (116 000) advantageous for further information or assistance if you are missing, are thinking of going missing, or know someone who is missing and wish to talk about this to another individual. There is also the Samaritan charity (www.samaritans.org) and their helpline (116 123) if you wish to discuss anything non-missing related.

Thank you once again for taking part in the research. You may now close your browser to end the research participation.

Appendix 8: Participant Follow-up Sheets for Experimental Studies

A: Description Study

Effectiveness of Missing Children Publicity Appeals

You are receiving this invite to participate in a follow-up research study as you have previously completed a research study on the effectiveness of missing children publicity appeals. This follow-up study contains a small number of questions that should take no longer than approximately 2-3 minutes in total to complete.

To begin the follow-up research, please press the '>>' button.

B: Photograph Study

Effectiveness of Missing Children Publicity Appeals

You are receiving this invite to participate in a follow-up research study as you have previously completed a research study on the effectiveness of missing children publicity appeals. This follow-up study contains a 'line-up' of children's photographs. Your task for this study is to observe each photograph in the line-up and complete the questions attached to each photograph. The entire study should take no longer than 5-10 minutes.

To begin the follow-up research, please press the '>>' button.

C: Format Study**Effectiveness of Missing Children Publicity Appeals**

You are receiving this invite to participate in a follow-up research study as you have previously completed a research study on the effectiveness of missing children publicity appeals. This follow-up study contains a small number of questions that should take no longer than approximately 3 minutes in total to complete.

To begin the follow-up research, please press the '>>' button.

Appendix 9: Participant Follow-up Debrief for Experimental Studies

A: Description Follow-up Debrief

Thank you!

The purpose of this follow-up research study was to examine the effectiveness of missing children publicity campaigns on your recall accuracy over a short duration of time.

In this research study you were asked to remember as many details as possible for a mock description of a missing child that was displayed in the original research study. You were also asked some follow-up questions in relation to your belief of contacting or not contacting the police to report the missing child. This will be used to explore the reasons behind why individuals do or do not contact the police when they find relevant information to an investigation and how this may be improved in the future.

This now concludes the study. The email address you provided originally will now be removed from the database.

If there are any questions or concerns, please do not hesitate to contact the researcher (Daniel.Hunt@hud.ac.uk) or the researcher's supervisors Dr Maria Ioannou (M.Ioannou@hud.ac.uk) or Dr John Synnott (J.P.Synnott@hud.ac.uk). Alternatively, you may find the Missing People Charity (www.missingpeople.org.uk) and their helpline (116 000) advantageous for further information or assistance if you are missing, are thinking of going missing, or know someone who is missing and wish to talk about this to another individual. There is also the Samaritan charity (www.samaritans.org) and their helpline (116 123) if you wish to discuss anything non-missing related.

Thank you once again for taking part in the research. You may now close your browser to end the research participation.

B: Photograph Follow-up Debrief

Thank you!

The purpose of this follow-up research study was to examine the effectiveness of missing children publicity campaigns on your recall accuracy over a short duration of time.

In this research study you were presented with a line-up of children's photographs and were asked whether the child shown was one of the children you had initially observed in the first part of the study approximately 3 days ago. You were also asked some follow-up questions in relation to your belief of contacting or not contacting the police to report the missing child and why this is the case. This will be used to explore the reasons behind why individuals do or do not contact the police when they find relevant information to an investigation and how this may be improved in the future.

This now concludes the study. The email address you provided originally will now be removed from the database.

If there are any questions or concerns, please do not hesitate to contact the researcher (Daniel.Hunt@hud.ac.uk) or the researcher's supervisors Dr Maria Ioannou (M.Ioannou@hud.ac.uk) or Dr John Synnott (J.P.Synnott@hud.ac.uk). Alternatively, you may find the Missing People Charity (www.missingpeople.org.uk) and their helpline (116 000) advantageous for further information or assistance if you are missing, are thinking of going missing, or know someone who is missing and wish to talk about this to another individual. There is also the Samaritan charity (www.samaritans.org) and their helpline (116 123) if you wish to discuss anything non-missing related.

Thank you once again for taking part in the research. You may now close your browser to end the research participation.

C: Format Follow-up Debrief

Thank you!

The purpose of this follow-up research study was to examine the effectiveness of missing children publicity campaigns on your recall accuracy over a short duration of time.

In this research study you were asked to remember as many details as possible for a mock missing child appeal that was displayed in the original research study. You were also asked some follow-up questions in relation to your belief of contacting or not contacting the police to report the missing child. This will be used to explore the reasons behind why individuals do or do not contact the police when they find relevant information to an investigation and how this may be improved in the future.

This now concludes the study. The email address you provided originally will now be removed from the database.

If there are any questions or concerns, please do not hesitate to contact the researcher (Daniel.Hunt@hud.ac.uk) or the researcher's supervisors Dr Maria Ioannou (M.Ioannou@hud.ac.uk) or Dr John Synnott (J.P.Synnott@hud.ac.uk). Alternatively, you may find the Missing People Charity (www.missingpeople.org.uk) and their helpline (116 000) advantageous for further information or assistance if you are missing, are thinking of going missing, or know someone who is missing and wish to talk about this to another individual. There is also the Samaritan charity (www.samaritans.org) and their helpline (116 123) if you wish to discuss anything non-missing related.

Thank you once again for taking part in the research. You may now close your browser to end the research participation.

Appendix 10: School Research Ethics Panel Approval

Dear Daniel,

The reviewers of your SREP application as detailed above have asked me to confirm that your application has been **approved outright**.

With best wishes for the success of your research project.

Regards,

Kirsty
(on behalf of SREP)

Kirsty Thomson

Research Administrator

☎: 01484 471156

✉: K.Thomson@hud.ac.uk

💻: www.hud.ac.uk

School of Human and Health Sciences Research Office

Ramsden Building – R1/17

University of Huddersfield | Queensgate | Huddersfield | HD1 3DH

Appendix 11: Example of Real Missing Child Description Used in the media to Design mock description appeals for Study 1

ITV REPORT

Appeal to find teenager from Somerset who went missing after family argument

Police are appealing for help to find a 16-year-old boy who has gone missing from [REDACTED] in South Somerset.

[REDACTED] left after a family disagreement just before 7pm on Friday 18 January.

He's described as white, about 5ft 9ins tall and slim with straight blond hair and blue eyes.

The last time he was seen, he was wearing a black padded jacket, khaki bottoms and black trainers. However, he did take other clothes with him.

He's thought to have travelled by bus between [REDACTED]

Officers think the teenager may have been 'sofa surfing' and want to hear from anyone he has stayed with.

[REDACTED] has been in touch with relatives and friends since he went missing but he doesn't have a mobile phone.

Description of a Missing Child from Family Argument Media Appeal

Appendix 12: Example of Real Missing Child Description Used in the media to Design mock description appeals for Study 1

Fears grow for missing 15-year-old girl thought to have run off with older man

By FRED NATHAN

25th November 2015, 9:19 pm | Updated: 6th April 2016, 5:03 am

A SCHOOLGIRL missing from her home for two days is thought to have run off with an older man

██████████, 15, has not been seen since she left her home at 7pm on Monday evening, telling her family she was going to stay with a friend.

But they have not heard from her since and revealed that since ██████████ went missing an unknown man had called her school, pretending to be her father.

Police said this morning they are “very concerned for her welfare” due to her age and the cold weather – but say they are keeping an open mind to what has happened to her.

██████████, who went missing is 5ft 7ins tall, slim build, and has shoulder length mousey brown hair.

When she left her home in ██████████, she was wearing black leggings, white trainers, a grey Abercrombie and Fitch sweatshirt and a black fur trimmed hood.

She also had a cream and black checked scarf and was carrying a black over the shoulder bag.

Inspector Greg Wood, of Essex Police, said: “Given ██████████ age and the current weather conditions we are very concerned for her welfare.

“She was on foot but had a small amount of money with her so may have taken public transport.

“We urgently need to find ██████████ and check that she is okay, if anyone has seen her I would ask them to call Brentwood Police Station on 101.

“We are exploring a range of possibilities but there is not definite evidence to suggest she is with anyone else”.

Description of a Missing Child from Unknown Male Media Appeal

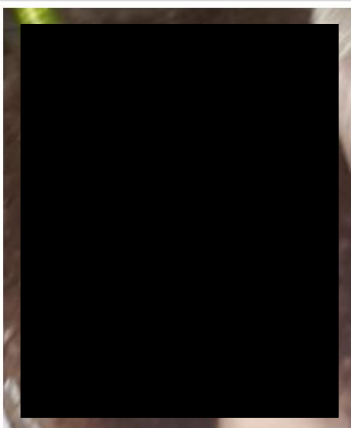
Appendix 13: Example of Real Rescue Alerts Used to Design appeal for Study 3

Date: 07/07/2019 05:00

Circumstances of Disappearance:

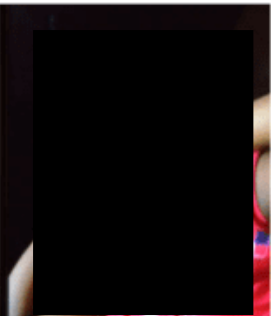
█ left her home address without being seen at 5pm on Sunday 7th July. The police are very concerned for her welfare, anyone with any information is urged to call 999.

Child

	Name	
	Age	12 Years
	Height	5' 4"
	Ethnic Appearance	Mixed Race
	Gender	Female
	Description	Medium build, light brown curly hair, brown eyes.

Child Rescue Alert

MISSING CHILD ALERT

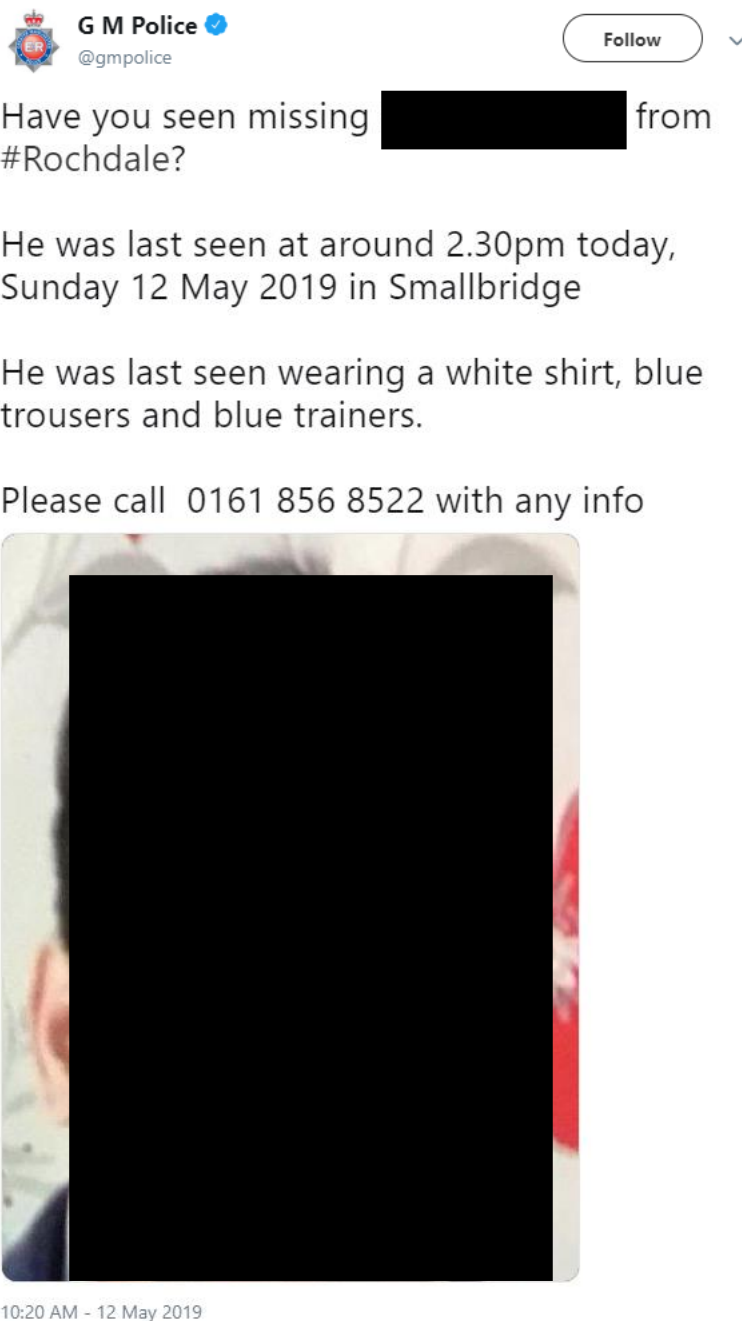
	Name	
	NAME: █	
	MISSING: █	
	AGE MISSING:	4 years
	AGE NOW:	4 years
	SEX:	Female RACE: Black
	HAIR:	Black EYES: Brown
	HEIGHT:	3'00" WEIGHT: 40
FROM:	█	
COUNTY:	█	

Child

ARRATIVE: A █ MISSING CHILD Alert has been issued for █ last seen in the area of the █. She was last seen wearing a long pink nightgown that reads "Princess". She has short braids and a birthmark from her neck to her chest which is lighter in color than her skin. █ If you have any information on the whereabouts of this child please contact the Port St Lucie Police Department at 772-871-5000 or 911.

Rescue Alert

Appendix 14: Example of Real Twitter Alerts Used to Design appeal for Study 3



Missing Persons Twitter Appeal

