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BURGLARS' SPECIALISATION: DEVELOPMENT OF A THEMATIC APPROACH IN INVESTIGATIVE PSYCHOLOGY

Kaeko Yokota* and David Canter**

In this study, the process of burglars' specialisation was examined. 15 sub-categories of burglaries committed by 3,066 burglars were analysed, using a thematic approach. The result of an SSA-I showed that four themes existed in the structure of burglary: 'residential', 'commercial', 'public', and 'industrial/storage'. Also it was found that 'residential' and 'commercial' burglaries were the most distinct from each other, providing for two dominant foci for burglaries. The results of POSA also confirmed that most burglars specialised in either 'residential' or 'commercial' burglaries. Few were specialised in 'public' or 'industrial/storage' burglaries. In addition, the number of people who specialised in commercial burglaries decreased with the increase of burgling experiences. The psychological processes underlying burglars' specialisation in one theme, or shift from one to another, are discussed. This study shows that the thematic approach offers a method of studying the multidimensional nature of burglars' psychological processes of specialisation.

1. Introduction

'Burglary' is one of the most common serious crimes in many countries. In Japan, 296,486 burglaries (i.e. thefts through breaking and entering) were recorded in 2000, being 12.1% of all crimes (National Police Agency, 2001). However the majority of burglaries remained unsolved. In 2000 only 36.8% of all burglaries (n = 109,128) were solved in Japan. The chief reason for such a poor clear-up rate is probably the delay in reporting the offence. A lot of victims are not able to report the offence as soon as it has occurred because, being away at the time, they knew nothing about it (Walsh, 1980). Moreover, burglars do not contact or confront their victims directly (Walsh, 1980). This makes it even more difficult for the police to get information about criminals from eyewitnesses or victims.

A number of studies have pointed out criminals' specialisation in burglaries, where the specialisation is defined as the consistent perpetration of one type of crimes (e.g. arson, burglary). A criminal development theory suggests that the individual learns that he or she is particularly successful or particularly attracted to certain types of activities and so a form of specialism evolves through experiences of crimes (Canter, 1995; p.352). It has been pointed out that some recidivists particularly specialise in burglaries across their criminal careers. For instance, the study of Farrington, Snyder, and Finnegan (1988)

found that burglary was one of the most specialised offenders among 21 types of offenders who passed through the juvenile courts. Also in Japan, 38.5% of all burglars who were arrested in 1996 had previous convictions for burglaries (see Table 1), revealing that the recidivism rate of burglaries was highest among 10 types of different crimes.

Table 1: Recidivism rates of 10 types of crime in Japan, 1996

	Total number of convicted people	Presence of previous conviction within the same type of crime	
Murder	1,146	84	7.3%
Robbery	1,322	128	9.7%
Arson	599	44	7.3%
Rape	896	97	10.8%
Burglary	10,503	4,046	38.5%
Vehicle theft	15,088	1,883	12.5%
Theft	51,778	6,558	12.7%
Fraud	7,819	1,677	21.4%
Indecency	3,156	376	11.9%
Kidnapping	334	11	3.3%

Table based on crime statistics of the National Police Agency (1997).

Specialisation within the type of burglaries themselves can also be expected. It can be hypothesised that burglars tend to commit certain types of burglaries (e.g. shop burglary), as they further specialise in burglaries. For instance, those who find it easy to burgle shops may be expected to commit their burglaries in shops consistently. The concept of *Modus Operandi* also assumes that burglars' behaviours become consistent across their series of crimes through a few successful accomplishments (cf. O'Hara, 1956). If so, knowledge about current types of burglary should predict earlier types and so help in the search for criminals from known burglars. It might also predict later types of offending.

Although there are few empirical studies that examine the process of specialisation within burglaries, Watanabe (1982) studied the consistency of several sub-categories of burglaries (e.g. shop burglary) among 271 convicted burglars in Japan. He utilised the categorisation of burglaries defined by the Japanese police (Table 2). He found that the consistency was low in novices, but experienced burglars tended to commit one type of burglary. However, he demonstrated that about half of burglars in his sample did not specialise in a single type of burglary.

Although his study is useful for considering the consistencies of burglars' behaviours, it is possible that the categorisation of burglaries defined by the police did not have significant meaning for some burglars. For instance, it is plausible that burglars did not distinguish an 'office burglary' from a 'shop burglary', though they are categorised as different types of burglaries by the police. Clarke and Cornish (1985) point out that it will usually be necessary to make finer distinctions between crimes than those provided by legal categories, pointing out that residential burglaries are different from commercial burglaries, although are legally just 'burglaries'.

Canter (2000) demonstrates the effectiveness of a thematic approach to the study of

Table 2: Categorisation of burglaries (i.e. thefts through breaking and entering)
defined by the Japanese police

1) House burglary (stealing daytime)
2) House burglary (sneak thieving)
3) House burglary (stealing late at night)
4) Hotel burglary
5) Locker room burglary
6) Hospital burglary
7) School burglary
8) Public office burglary
9) Petrol station burglary
10) Safe breaking
11) Office burglary
12) Shop burglary
13) Factory burglary
14) Warehouse burglary
15) Shed burglary

NB: 'House burglary (sneak thieving)' is defined as burglary where a
criminal targets an unoccupied house, distinguishing from 'House bur-
glary (stealing daytime)' or 'House burglary (stealing late at night)'.

criminals' actions. He points to the need to identify the dominant 'themes' amongst vari-
ables that characterise an offence rather than focussing on very detailed consideration of
specific actions. This is like adjusting the magnification of a microscope to a lower preci-
sion in order to see the patterns that are obscured at very high magnification. He argues
that with crime records the noise in the data is often so great that very precise sets of
very many variables may hide the overall structure that is apparent when variables are
considered as reflecting a set of related issues that cohere around a common theme. The
'theme' can be defined as a 'coherent set of actions' (Canter, 1994; p.333). Each theme
has a different focus and meaning, so that it reflects a style of each burglar's behaviours.

The central hypothesis that emerges from these considerations is that there are some
dominant themes in burglaries. For instance, a shop burglary and an office burglary might
have the same psychological meanings for most burglars and belong to the same theme
of commercial premises, although they may be classified into different sub-categories in
the official records for the police. The thematic approach makes it possible to examine
burglars' specialisation from a psychological point of view. The consistencies or inconsis-
tencies of each theme across offenders are an indication of whether burglars specialise in
a certain burglary theme or not. If the change from one theme to another is recognised
across a series of crimes for one offender, it can be regarded as the reflection of his or
her psychological change. If no change is apparent across the crimes of one offender this
indicates a preference for a particular type of burglary, in terms of specialising in it.

It is of value to clarify the difference between the 'thematic' approach, as utilised here,
and the more traditional factor analytic approach in which dimensions are identified. Can-
ter (2000) uses the analogy of the discrimination of colours. For most perceptual tasks
the underlying *dimension* of wavelength is not especially helpful in describing the psy-
chological experience of colours. Instead we work with the primary colours, of red, blue,
yellow and green. However, it is misleading to think of redness or blueness as independent

dimensions. There are many colours in daily experience that are a combination of these primary colours, such as purple or pink. Therefore the primary colours are best thought of as dominant *themes* that can usefully be drawn upon to describe any colour without the need to assume that they always operate independently from each other.

Themes, therefore, are sets of related variables that have an underlying common meaning. The difference from a 'dimension' or 'factor' lies in the fact that a) they are not assumed to be independent of (orthogonal to) one another and b) that they are a combination of a number of facet elements. This latter point derives from Guttman's *Facet Theory* (cf. Canter 1985). In the colour analogy one facet would be 'hue' indicating the wavelength of the colour. The other could be, say, 'intensity', which may be defined as how much grey the colour has in it. Together these describe the how strong the pink may be.

Over the years a powerful approach has been developed for identifying facets and their dominant themes within a facet structure. This uses the MDS procedure of SSA-I to represent the variables as points in space, such that the more highly correlated those variables are the higher their spatial propinquity is. This allows either the test of *a priori* models of the facet structure or, as in this case, an exploration of the likely facet structure and related underlying themes. In essence, themes will be expected to bring together variables with similar meaning into the same region of the space. So by examining the regional distribution of variables it is possible to infer the likely themes of which they are constituted. In the current study patterns of co-occurrence of burglar's crimes that revealed interpretable 'themes' within the SSA-I space were taken as empirical indication of burglars' specialisation.

2. Sample selection and features considered

In the current study, the data set was extracted from the database of the National Police Agency, which consisted of records of burglaries that occurred from the periods of 1993 to 1999 in Japan. However if a criminal was arrested just after the perpetration of an incident, the case was not recorded in the database. Also only solved cases were taken for the current study. Based on the database, a data matrix for the current study was produced (Table 3).

Table 3: Example from the data matrix created in the current study

Criminal ID Number	House burglary (stealing daytime)	House burglary (sneak thieving)		Warehouse burglary	Shed burglary
1	1/5	0	...	3/5	0
2	1/13	11/13		0	1/13
...	...	...		...	...

The variables are included the 15 sub-categories of burglaries shown in Table 2. This categorisation is based on types of buildings predefined by the police. The data used in the current study was collected by the police, based on this categorisation, independently

of the current research. A probability was assigned to each variable within the range of 0 to 1, based on the frequency of occurrence of that variable within the total number of crimes for that offender from 1993 to 1999. The probability (p_i) was calculated as:
Formula 1—Calculation of an Offender's Crime Type Probabilities

$$P_i = \frac{f_i}{n} \quad \text{where} \quad (n = \sum_{i=1}^{15} f_i + f_{other}, \ 0 < P_i < 1)$$

where f_i is the frequency that a variable i (e.g. shop burglary) was chosen, while n is the total number of crimes of a certain burglar. f_{other} is the frequency that an offender committed a burglary that did not match any 15 sub-categories in Table 2. For instance, if a burglar committed shop burglaries 3 times ($f_{i(shop\ burglary)}$) across his or her 10 crimes (n), the probability, 3/10, was assigned to $P_{i(shop\ burglary)}$ for him or her.

Five samples were created, depending on the total number of each burglar's records in the original database (n), as shown in Table 4. One sample included burglars who were recorded as having committed 5 burglaries between 1993–1999, and so on. Those whose total number of records was large, were regarded as experienced burglars, having committed a considerable number of burglaries between 1993 and 1999. On the other hand, those whose total number of records was few, were regarded as less experienced.

Table 4: The five samples in the current study

Subjects descriptions in five samples	Number of subjects
1) Burglars who committed 5 burglaries between 1993–1999	734
2) Burglars who committed 10–19 burglaries between 1993–1999	1,766
3) Burglars who committed 40–49 burglaries between 1993–1999	258
4) Burglars who committed 90–199 burglaries between 1993–1999	252
5) Burglars who committed 200 or more burglaries between 1993–1999	56
Total	**3,066**

The police information is not collected for the purpose of scientific examination, therefore it can be used as the basis of valuable resource for research as it is an 'unobtrusive or non-reactive measurement' (Canter and Alison, 2003). Webb, Campbell, Schwartz and Sechrest (1966) defined an unobtrusive measurement as one that does not have the researcher's input into the data collection and the subject of the data is not aware that their actions are being recorded at the time that they carry them out. Canter and Alison (2003) have pointed out police data is a particularly rich source of such unobtrusive data. There are difficulties associated with this data, but the current sample was of such a large scale that it was unlikely to be biased.

3. A study of underlining themes in burglary, based on SSA-I

3.1 Smallest Space Analysis (SSA) and data descriptions for the SSA-I

As mentioned, a considerable amount of research (reviewed by Canter, 2000) has

found non-metric multi-dimensional scaling (MDS) to be useful for finding the underlining themes. SSA is one of the MDS methods that represents the relationship between variables as distances in a geometric space. The computing algorithm of the SSA rank-orders the correlations between items. It then generates a spatial representation of those items as points in the space, and rank-orders the distances between the points. In general, then, in the SSA configuration, the more highly correlated two variables are, the closer will be the points representing those variables in the space. Themes can then be determined by considering the items in each region on the assumption that any items that belong to the same theme will be found in the same region of the space (see Canter, 1985, for details).

For the current analysis of the SSA-I, 50 burglars were extracted from each of the five samples of burglars (see Table 4) by random sampling. The total number of subjects in the new data set was 250 (50×5). The SSA-I was then carried out on a correlation matrix of Pearson coefficients (Table 5), based on the data matrix of 15 variables shown in Table 3. The correlation matrix from which the SSA is derived, is given in Table 5. The SSA represents these correlations as distances in a space.

Table 5: Correlation matrix of probabilities of 15 variables[1]

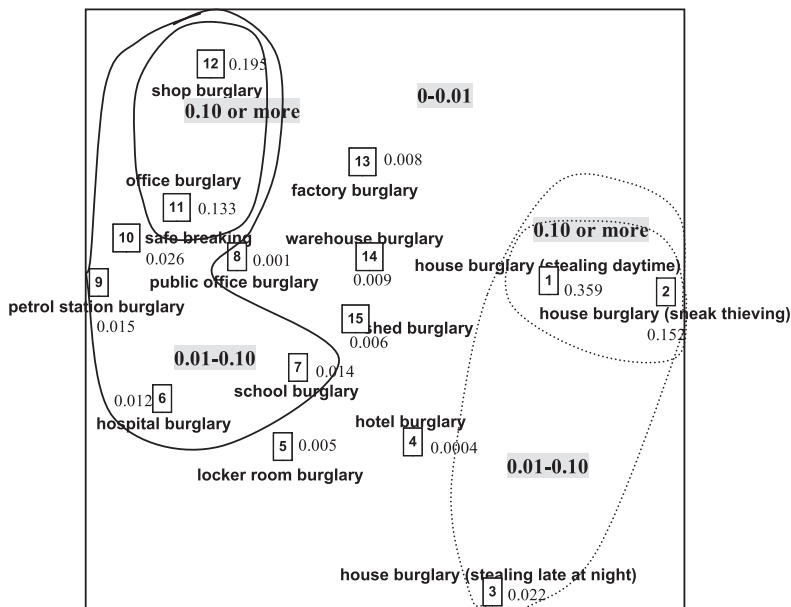|	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1 House burglary (stealing daytime)	1.00	.02	−.02	−.02	−.02	−.04	−.04	−.04	−.04	−.08	−.11	−.13**	.04	−.04	−.03
2 House burglary (sneak thieving)		1.00	−.29**	−.02	−.06	−.12	−.11	−.11	−.15*	−.25**	−.37	−.45	−.10	−.12	−.07
3 House burglary (stealing late at night)			1.00	.10	−.03	−.05	−.06	−.07	−.08	−.15*	−.21**	−.23**	−.08	−.05	−.06
4 Hotel burglary				1.00	−.00	−.01	−.01	−.01	−.01	−.02	−.04	−.04	−.01	−.01	−.01
5 Locker room burglary					1.00	−.01	−.01	−.01	−.01	−.02	−.03	−.04	−.01	−.01	−.01
6 Hospital burglary						1.00	.00	−.02	−03	.00	.02	−.02	−.03	−.03	−.02
7 School burglary							1.00	.02	−.03	−.02	−.04	−.07	−.02	.18**	.23**
8 Public office burglary								1.00	−.03	.37**	.14*	−.02	.03	−.02	−.02
9 Petrol station burglary									1.00	.19**	−.01	.02	−.03	−.02	−.02
10 Safe breaking										1.00	.26**	−.01	−.02	−.04	−.04
11 Office burglary											1.00	−.09	.07	−.02	.01
12 Shop burglary												1.00	.00	−.01	−.07
13 Factory burglary													1.00	.10	−.02
14 Warehouse burglary														1.00	.30**
15 Shed burglary															1.00

*$p < .05$, **$p < .01$ (n = 250)

[1] As calculated in Formula 1

3.2 Results of the SSA-I

For the acceptability of the result of the SSA-I, there are several criteria including the Guttman-Lingoes' coefficient of alienation. In the current analysis, the 3-dimensional solution has a coefficient of alienation 0.18 with 13 iterations, indicating a good fit. However, the interpretation of this configuration was very close to the regional structure of the 2-dimensional solution that has a coefficient of alienation of 0.25 with 10 iterations, so for simplicity the 2-dimensional structure will be presented.

Figure 1 shows the configuration of the SSA-I. The average probabilities of the 15 variables are also presented on this Figure to assist later interpretation. These are the average of probabilities (p_i) of each of the 15 types of burglary across all 250 offenders in the current sample. For instance, the average probability of 'shop burglary' was 0.195, indicating that the average of $P_{shop\ burglary}$ was 0.195 in the current sample of 250 offenders. It should be emphasised that the SSA is based on the correlations between the variables so there is no inevitable relationship with the frequencies. Any such relationship that is found is an empirical discovery.

(2 dim., Coefficient of Alienation = .25)

Figure 1: Average probabilities of 15 sub-categories of burglaries indicated on the SSA-I configuration with equal average contours (n = 250)
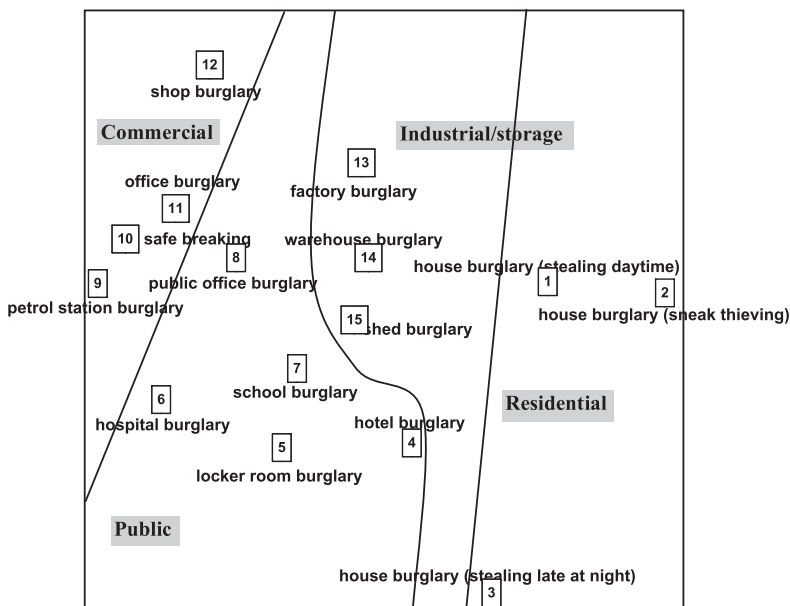
In the current analysis, the first and second most frequent variables were 'house burglary (sneak thieving)' and 'shop burglary', 0.359 and 0.195 respectively. On the other hand, 'hotel burglary' and 'shed burglary' were the first and second least frequent, 0.0004 and 0.006 respectively. It should be noted that the total of the 15 averages is 1.0, including an average of the probability that offenders committed burglaries that did not match any of the 15 sub-categories in the configuration (the average of P_{other} = 0.008).

Two foci of high frequency are revealed in the configuration of Figure 1. One is within those variables relating to house burglaries, such as 'house burglary (stealing daytime)' and 'house burglary (sneak thieving)'. The total value of probabilities of these two variables was 0.510 (0.358 + 0.152), showing that these two covered over half of all burglaries. Another focus includes variables relating to commercial burglaries, such as 'shop burglary'

and 'office burglary'. The total proportions of these two variables was 0.328 (0.195+0.133), showing that these two include approximately 30 percent of all burglaries. The two foci suggest that they were psychologically different for many burglars and not committed by same offenders in many cases. It shows that there were mainly two styles among burglars: one group of burglars mainly committed residential burglaries, while others mainly committed commercial burglaries.

The values in the correlation matrix in Table 5 support this distinction between the two sets of burglaries. The two most frequent types of burglary, 'house' and 'shop' have a highly significant *negative* correlation of -0.45. This shows the reluctance with which burglars will carry out both types of crime.

Figure 2 shows the same configuration as in Figure 1 with the interpretation of regional partitions to indicate 'themes'. Behaviourally more similar variables are expected to be found in the same region of the space, belonging to the same theme. Four themes were identified as described in Figure 2. Table 5 summarises the four themes, describing the variables in each theme.

(2 dim., Coefficient of Alienation = .25)

Figure 2: The SSA1 of 15 sub-categories of burglaries with the regional interpretation (n = 250)

One theme was defined as 'residential', including variables relevant to residential burglaries; 'house burglary (stealing daytime)', 'house burglary (sneak thieving)', and 'house burglary (stealing late at night)'. They are close together in the space, indicating that they are conceptually similar to each other. However, it is interesting that 'house burglary (stealing late at night)' was plotted further from the other two residential burglaries (i.e.

'house burglary (stealing daytime)' and 'house burglary (sneak thieving)'). This indicates that 'house burglary (stealing late at night)' is distinguishable from the other two, though all three belong to a 'residential' theme.

A second theme was defined as 'commercial', including variables relevant to burglars who targeted commercial buildings (i.e. 'office burglary', 'shop burglary', 'safe breaking', and 'petrol station burglary'). These two themes, 'residential' and 'commercial', can be regarded as dominant in the structure of burglary, considering the average probabilities of 15 variables shown in Figure 1.

The other two themes, 'public' and 'industrial/storage' were less dominant. The third theme of 'public' included the following 5 variables: 'hotel burglary', 'locker room burglary', 'hospital burglary', 'public office burglary', and 'school burglary'. All of them occur in public places, where anonymous people come and go. The fourth theme, 'industrial/storage' included the targeting of industrial or storage places (i.e. 'factory burglary', 'warehouse burglary', and 'shed burglary').

4. A study of the burglars' specialisation, based on the POSA diagrams

4.1 Partial-Order Scalograms and data descriptions for the POSA

The SSA focuses on variables, representing the relationship between crimes not variations between criminals. Various forms of individual crime profiles could therefore be created from this mixture of variables. It is therefore valuable to determine exactly what combinations of variables co-exist in the patterns of offences of individuals. The analysis procedure that allows this exploration of types of *offenders* (as distinct from the SSA structuring of *offences*) is POSA (Shye 1994).

POSA starts from the assumption that each variable has a 'common order', meaning that the changes of magnitude of each item has the same sense and direction, having the same underlying meaning (Shye, 1994). A diagram is then created representing individuals with respect to the structured attribute. In the POSA diagrams, a profile of each individual is produced and ordered according to their score. For instance, a profile, '1113' (which gives a total 'score' of 6) is higher than '1003' (with a total 'score' of 4). In the present case only binary values were used, so the 'score' is most appropriately the number of variables endorsed. So if 2 indicates endorsement and 1 lack of it, a profile of '1112' would have a score = 1 and '2112' a score = 2.

In order to determine if the four themes of offending created distinct sub-types of offenders, four thematic variables were created, one for each of the four themes revealed in the SSA-I (Table 6). Based on the data matrix in Table 2, probabilities of variables for each offender were summed up within each theme and each was marked '2' as a high probability or '1' as a low probability. If the total probability was below 0.5, it was regarded as low specialisation, and categorised as '1' because it indicated that a person committed burglaries of a certain theme in less than 50 percents of all his or her burglaries. For example, the score of the variable, 'commercial' was categorised as '1', if the total probability of four variables belonging to a theme of 'commercial' (i.e. 'office burglary', 'safe breaking',

'shop burglary', and 'petrol station burglary') was below 0.5. On the other hand, it was categorised as '2', if the total probability of all variables within one theme was above 0.5 up to 1.0.

Table 6: Four themes derived from Figure 2

Theme	Variables
Residential	house burglary (stealing daytime), house burglary (sneak thieving), house burglary (stealing late at night),
Commercial	office burglary, safe breaking, shop burglary, petrol station burglary
Public	school burglary, hospital burglary, locker room burglary, public office burglary, hotel burglary
Industrial/storage	warehouse burglary, factory burglary, shed burglary

Consequently, each criminal was assigned a four-score profile. Each profile, such as '2111', consists of four values one for each of the four themes: 'commercial', 'public', 'industrial/storage', and 'residential' from the left to the right. In this categorisation scheme, '2111', '1211', '1121', and '1112' were defined as specialisation, showing that a burglar committed burglaries with the same theme in 50 percents or more of cases. For instance, '1112' indicates that a burglar specialised in 'residential' burglaries, committing half or more of his or her burglaries in this theme. On the other hand, '1111' was regarded as versatility, suggesting that a burglar did not specialise in any particular theme. Profiles such as '2211' or '2112' would be obtained when a burglar committed one theme of burglaries in 50 percent and another theme in the other 50 percent. '2221', '2122', '2212', and '2221' could not logically exist because of the way in which the assignment to themes was calculated. Therefore the proportion of individuals with a score of 1 provides a further test of thematic specialisation. These individuals only indicate one theme in more than 50% of their offences. Table 7 summarises the profiles.

Table 7: Profiles for the POSA, together with the degree of specialisation

Profile	Degree of specialisation
2111, 1211, 1121, 1112	High
2211, 2121, 1221, 2112, 1212, 1122	↕
1111	Low

Of interest also is whether offenders who have criminal histories of different lengths, i.e. had different amounts of criminal 'experience' would show different proportions of specialisation. This was examined by comparing the POSA diagrams derived from different samples of burglars, divided on the basis of the lengths of their criminals histories as shown in Table 4.

4.2 Results of the POSA diagrams

The POSA diagrams with joint scores are shown in Figure 3-1 to Figure 3-5. Lines connecting comparable profiles represent order relations. Joint scores were calculated by
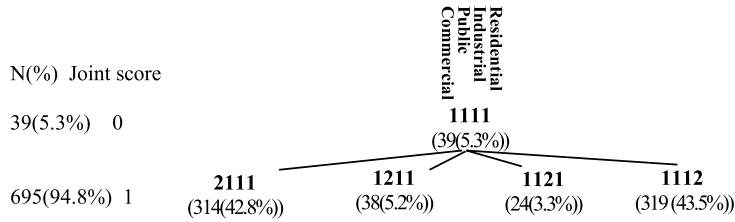
Residential
Industrial
Public
Commercial

N(%) Joint score

39(5.3%)   0

1111
(39(5.3%))

695(94.8%) 1

2111
(314(42.8%))

1211
(38(5.2%))

1121
(24(3.3%))

1112
(319(43.5%))

Figure 3-1: The POSA diagram of 4 themes by burglars who were found to commit 5 burglaries between 1993–1999 (n = 734)

Residential
Industrial
Public
Commercial

N(%) Joint score

50(2.8%)   0

1111
(50(2.8%))

1707(96.7%) 1

2111
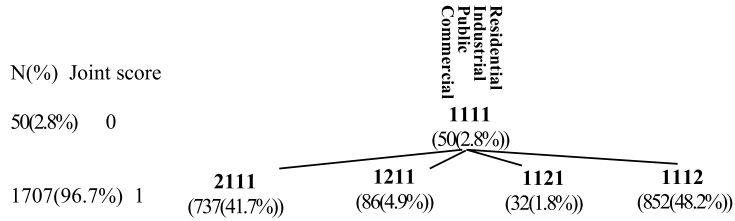(737(41.7%))

1211
(86(4.9%))

1121
(32(1.8%))

1112
(852(48.2%))

Figure 3-2: The POSA diagram of 4 themes by burglars who were found to commit 10–19 burglaries between 1993–1999 (n = 1766)

Residential
Industrial
Public
Commercial

N(%) Joint score

5(1.9%)   0

1111
(5(1.9%))

253 (98.1%) 1

2111
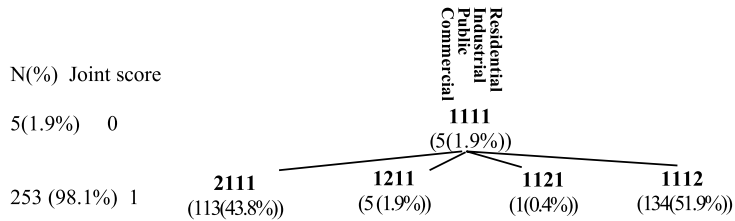(113(43.8%))

1211
(5(1.9%))

1121
(1(0.4%))

1112
(134(51.9%))

Figure 3-3: The POSA diagram of 4 themes by burglars who were found to commit 40–49 burglaries between 1993–1999 (n = 258)

Residential
Industrial
Public
Commercial

N(%) Joint score

15(6.0%)   0

1111
(15(6.0%))

237(94.0%) 1

2111
(93(36.9%))

1211
(1(0.4%))

1121
(0(0.0%))

1112
(143(56.7%))
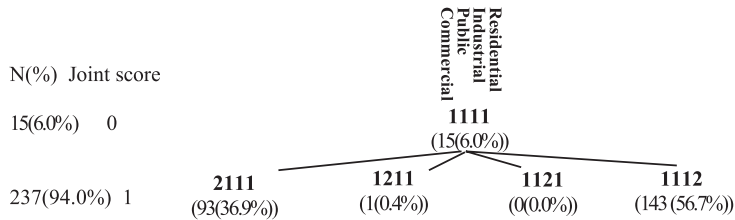
Figure 3-4: The POSA diagram of 4 themes by burglars who were found to commit 90–199 burglaries between 1993–1999 (n = 252)

Residential
Industrial
Public
Commercial

N(%) Joint score

8(14.3%)   0

1111
(8(14.3%))

48(85.7%) 1

2111
(11(19.6%))

1211
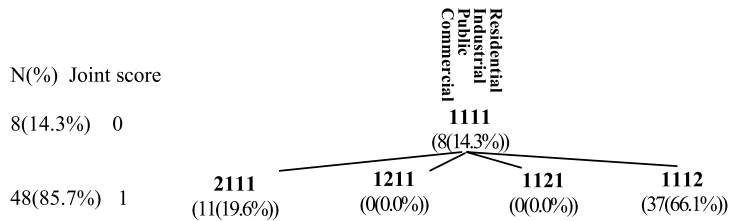(0(0.0%))

1121
(0(0.0%))

1112
(37(66.1%))

Figure 3-5: The POSA diagram of 4 themes by burglars who were found to commit 200 or more burglaries between 1993–1999 (n = 56)

summing up the number of '2's in profiles. For instance, a joint score of '0' indicates that a burglar did not specialise in any theme, while a joint score of '1' indicates that a burglar specialised in one of four themes. In addition, the proportion of each profile is shown in Figure 3-1 to Figure 3-5.

The proportion of specialised burglars (i.e. '2111', '1211', '1121', and '1112'; a joint score = 1) was very high across the five samples (85.7–98.1%), demonstrating that most burglars in the current samples specialised in one theme of burglaries. In the current analyses, '2112' profile was found in 9 cases within the sample of burglars who committed 10–19 burglaries. However for simplicity, it was not included in the diagram (Figure 3-2).

Among the four themes, the specialisation in either 'residential' or 'commercial' burglaries was the most frequent across the five samples. The profile of '1112', specialisation in 'residential', occurred in 43.5% to 66.1% across the five samples. On the other hand, the profile of '2111', the specialisation in 'commercial', occurred in 19.6% to 43.8% across the five samples. Few were specialised in 'public' or 'industrial/storage' burglaries. No one who committed burglaries 200 times or more specialised in either 'public' or 'industrial/storage' burglaries.

However, the number of people who specialised in commercial burglaries ('2111') decreased with the increase of burgling experiences. The ratio of people specialising in commercial burglaries were 42.8% in the sample of burglars who were found to commit 5 burglaries between 1993–1999 (i.e. the less experienced ones), but was 19.6% in the sample of burglars who committed 200 or more burglaries (i.e. more experienced burglars). On the other hand, the proportion of those specialising in residential burglary ('1112') increased from 43.5% to 66.1% in the same samples. Figure 4 shows the ratios of burglars who specialised in 'residential' and 'commercial' burglaries, based on Figure 3-1 to Figure 3-5.
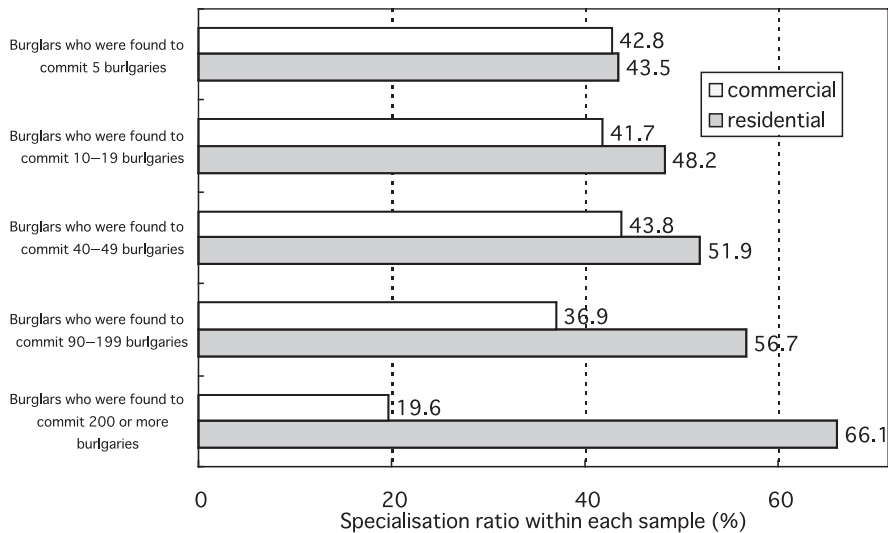

Figure 4: Ratios of burglars who specialised in 'residential' and 'commercial' burglaries

5. Discussion

The current study shows that four themes exist in 15 sub-categories of burglaries. By examining a thematic approach based on SSA-I, four themes were found: 'residential', 'commercial', 'public' and 'industrial/storage'. In addition, 'residential' and 'commercial' burglaries were shown to be more prevalent than the other two, suggesting that offenders mainly targeted either residential or commercial buildings. Even those who committed 'public' or 'industrial/storage' burglaries a few times did not commit the same burglary themes consistently. The results of the POSA diagrams supported the result of the SSA-I, showing that most burglars specialised in either 'residential' or 'commercial' burglaries, while few specialised in 'public' or 'industrial/storage' burglaries.

Some previous researchers have pointed out that a residential burglary is clearly distinguished from other types of burglaries. For instance, Walsh indicated that 'the situation of a residential burglary is very different from a theft in a public place or at a place of work, since any burglary is far more personally disturbing because of its enforced intimacy' (Walsh, 1980; p.17). Also Clarke and Cornish (1985) insist that it is necessary to differentiate at least between commercial and residential burglary when studying burglars. The results of the current study support their ideas with Japanese data, demonstrating that a theme of 'residential' predominantly exists in burglary, together with the less frequent theme of 'commercial'. The rarer themes of 'public' and 'industrial/storage' were also recognised in the current study.

Two reasons for the non-specialisation in 'public' and 'industrial/storage' burglaries can be pointed out. First of all, it can be hypothesised that the lack of availability of 'public' or 'industrial/storage' buildings makes it difficult for offenders to commit those types of burglaries. Situational crime prevention assumes that a physical environment that provides opportunities for crimes influences the amount of offending (Bennett, & Wright, 1984). There are not so many 'public' or 'industrial/storage' buildings in many communities, compared with 'residential' or 'commercial' buildings. The infrequent opportunities for encountering 'public' or 'industrial/storage' buildings possibly decreased the amount of offending.

Secondly, it can be assumed that 'public' or 'industrial/storage' burglaries are less attractive to offenders. A number of studies examine burglars' decision making from the viewpoint of rational choice theory (e.g. Clarke and Cornish, 1985; Nee and Taylor, 1988; Logie, Wright, and Decker, 1992; Decker, Wright, Logie, 1993; Wright and Decker, 1994; Baker, 2000). Originally, rational choice theory was based on economic models of criminals' decision making, which assumes that criminals choose options that maximise their expected utilities (i.e. the expected utility maximisation model of economics), depending on the balance between the rewards and risks of criminal and alternative lawful activities (Blackburn, 1993). The possibilities of getting financial gain from 'public' or 'industrial/storage' buildings are lower, as cash or materials suitable for the theft are rarely left in such places. Also burgling such places is sometimes dangerous, because of the tight security and/or people's frequent coming and going. In terms of rational choice theory, 'public' or 'industrial/storage' burglaries likely have more risks and few rewards for many

burglars.

The results also showed that many 'commercial' burglars tended to have more commercial targets to residential ones if they commit many crimes. The ratio of burglars specialising in commercial burglaries decreased from 42.8% (in the sample of burglars who were found to commit 5 burglaries between 1993–1999) to 19.6% (in the sample of burglars who were found to commit 200 or more burglaries between 1993–1999). On the other hand, the proportion of those specialising in residential burglaries increased from 43.5% to 66.1% in the same samples.

It suggests that residential burglaries are more attractive than commercial ones for some experienced burglars. One reason is that many commercial buildings are more secure than residential ones in guarding from thieves, which makes it difficult for burglars to break into such commercial buildings. The possibility of burglars' being arrested would increase in commercial burglaries. On the other hand, a number of residential buildings are less secure so that burglars possibly enter houses more easily to steal. However, Walsh (1980) indicated that a burglars' ideal target was a business firm rather than a private house, because there was more to be stolen in the former. His study was based on interviews with convicted burglars in British prisons. Though the sample in his study was rather different from those in the current study, it should be noted that a certain percentage of burglars (19.6%) who committed 200 or more burglaries were shown to specialise in commercial burglaries in the current sample also. It can be hypothesised that commercial burglars have more opportunities to get higher rewards together with more risks, compared with residential burglary. Also prison sentences are more likely so that they would fall into a prison population sample more readily. Further research is necessary to examine the process of commercial and residential burglaries more closely.

The results have demonstrated the process of burglars' specialisation, showing four themes of burglaries and the consistencies and inconsistencies of each theme. Findings in the current study can help police investigations in many ways. As mentioned, knowledge about current types of burglary may help to predict earlier or later types. For instance, a petrol station burglar might have previous experiences of 'office burglary', 'safe breaking' or 'shop burglary' because they belong to the same theme (i.e. commercial burglary).

Although a cross sectional approach was applied in the current study, longitudinal research is the method of choice to describe or assess change or development (Robson, 1993). Further research is crucial to understand the process of the burglars' specialisation comprehensively.

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