

Running head: FEMALE SUICIDE TERRORISM

Male and Female Suicide Bombers: Different Sexes, Different Reasons?

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Abstract

This paper analyses the motivations and recruitment of female suicide terrorists. Biographical accounts of 30 female and 30 male suicide terrorists were coded for method of recruitment, motivation for attack, and outcome of attack. A log-linear analysis found that female suicide terrorists were motivated more by Personal events, while males were motivated more by Religious/nationalistic factors. Females were equally likely as males to be recruited through peer influence, exploitation, or self promotion, while males were more likely to be recruited as a result of religious persuasion. The results highlight the need for continued research into female terrorism.

Male and Female Suicide Bombers: Different Sexes, Different Reasons?

On November 9, 2005 Muriel Degauque ran into an Iraqi police patrol and detonated a bomb that killed 5 people and injured many others. Although her attack was one of many that occurred over the year, Degauque's actions drew particular attention because she was the first European woman to commit an act of suicide terrorism. Her actions were a vivid reminder to academics and security professionals that little is known about the changing role of women within extreme groups. What motivated Degauque to engage in suicide bombing? Was she influenced or coerced by her husband? This paper addresses such questions by investigating the differences in the motivation and recruitment of male and female suicide terrorists.

The Growth of Female Involvement in Terrorism

Studies of the motivations and histories that underpin suicide terrorism have largely focused on men. This bias has arisen in part from a longstanding belief that women assume a passive supporting role in extremist groups, and that consequently they offer less to any examination of suicide terrorism (Zedalis 2004). Recently, however, this viewpoint has been called into question by evidence that female involvement is widening "ideologically, logistically and regionally" (Cunningham 2003). This has prompted a number of authors to examine female involvement and to suggest that it transpires from a unique set of motivations and life events. Explaining the unique circumstances of female involvement has become an important area of research and an essential part of a comprehensive strategy for combating terrorism.

A useful way to begin to understand female suicide terrorism is to consider the roots of female involvement through the lens of existing models of terrorism. For

example, Pedahzur's model (Pedahzur 2004) suggests that suicide terrorism begins with the social group showing either outright support for the act, or tolerance for the act as praiseworthy under specific circumstances (e.g., martyrdom). This societal support then facilitates strategic and personal judgments, promoting the act as a viable strategic option and reinforcing an individual's personal considerations and motivations for the attack.

When viewed in Pedahzur's framework, the few recent studies of female terrorism seem to provide significant evidence of social and strategic drivers of female involvement. At a societal level, female involvement has been justified in numerous ways including religious consent (Cook 2005) and allowances due to the exceptional times (Ness 2005).

Similarly, at a strategic level, females provide further opportunities by way of an enlarged pool of potential bombers and access to previously unavailable targets (Zedalis 2004).

Indeed, a recent issue of *Studies in Conflict and Terrorism*, dedicated to female terrorism, provides important commentaries on the history of female involvement (Ness 2005), their strategic role and impact (i.e., what roles can and do they play) (McKay 2005; Nordstrom 2005; Nacos 2005), and the strategic logic of employing females (Cook 2005).

What this special issue did not consider in detail, and where there is arguably less understanding of female involvement, is the personal level. How are females persuaded or recruited into extremism? What motivates them into carrying out an act of suicide terrorism? A few recent articles consider these questions through case descriptions and informed critiques, examining issues such as the impact of traumatic life events (Alison 2003), the chronological order of attacks (Zedalis 2004), the demographics of those who becomes involved (Pape 2005), and the historical changing roles of females in the conduct of terrorism (Ness 2005). Such efforts undoubtedly provide a foundation for

building an understanding of the personal drives behind female involvement. However, they do not provide the kinds of statistical analyses that will enable the development of models from which it is possible to make inferences (Silke 2001).

Individual Motivations for Suicide Terrorism

The result of having no extensive analysis available is the juxtaposition of a growing number of hypotheses about female motivation and few comparisons of their explanative value. For example, the accounts by Victor (Victor 2006) and Cunningham (Cunningham 2003) provide plausible but radically different explanations for why females are motivated into committing an act of suicide terrorism. Throughout her book, Victor builds the idea that women are drawn reluctantly into terrorism and are motivated by personal, private reasons. In contrast, Cunningham argues that women hold more complex, dualistic reasons for their involvement, combining collective motivations such as a desire for national independence, with individualistic motivations such as the desire for equality between the sexes.

In the absence of an analysis of multiple cases, it is difficult to determine whether or not these authors' accounts are particular to the case at hand or a reflection of the motivations that underlie the majority of female suicide terrorism cases. These, and other accounts found within the literature, are open to empirical test by examining the similarities and differences in motivations across a number of different cases. By further comparing the female cases to data on the motivations of male suicide terrorists, it is possible to begin to build up a picture of the unique personal motivations of female suicide terrorists. To develop such a comparison, we turn now to identifying the major types of motivation that have been proposed in the literature.

Religious/Nationalistic reasons. Research suggests that most extremist groups fight for religious or nationalistic reasons (Pape 2005). While these motivations are sometimes separated in the literature (Kimhi and Even 2004), we conceptualize them as a single motivation underpinned by a significant integration into a social group. In both cases, the motivation emerges from membership of a group that fosters a collective identity (i.e., in-group) and provides shared goals and aims that supersede those held by the individual. The result is de-individualization, a growing focus on group values, and an increase in the likelihood of an individual taking his or her own life for the sake of the group (Pape 2005). That is, the resulting in-group pressures, together with the indoctrination of group values, provide the individual with a new sense of purpose and an associated motivation for carrying out a suicide attack (Bloom 2005; Sageman 2004; Moghadam 2003).

However, the attraction of extremist group membership may not be equal for men and women. Terrorist groups offer compelling collective identities (Taylor & Lewis 2004) that provide a defined route for improving personal conditions and a clear framework for how an individual can advance his or her status in the group. Yet men, more so than women, are likely to experience a perceived loss of collective identity (McMahon 1995; Taylor & Lewis 2004). For this reason, more males than females are likely to join religious or nationalistic extremist groups as a means of realizing their social and personal identities. Moreover, membership of a terrorist group provides a means of acting upon anger directed towards the authorities. Since men are more likely than women to feel diminished and angry when public order is not performed properly (Juergensmeyer, 2000), this again suggests that males more than females will engage

with religious and/or nationalistic organizations. Taking these arguments together suggests that more males than females are likely to join extremist groups and that, consequently, men will more often be associated with religious/nationalistic motivations for suicide attacks. We thus predict:

H1: Compared to males, females will less often be associated with religious/nationalistic motivations for carrying out suicide terrorism.

Key Events. A second possible motivation for suicide terrorism arises out of an individual's psychological response to events and circumstances that were beyond their control. For example, the death of a family member or friend is often quoted as the "final straw" that settles the decision to become a suicide terrorist (Beyler 2003; Kushner 1996). Similarly, episodes of degradation or humiliation at the hands of the "enemy" are cited as traumas that underpin the motivation to act (Victor 2006). These key events compound difficult living conditions and act as the turning point on which a decision is made to carry out a suicide attack. A different but equally important cited reason for female engagement is exploitation, whereby an organization or individual takes advantage of an individual's specific circumstances to recruit a suicide bomber (Kimhi and Even 2004). Such exploitation, we argue, should be viewed as a key event that marks the critical point after which an individual is compelled or forced to carry out a suicide attack.

It is difficult to support or derive a hypothesis about the relative impact of key events on the motivations of male and female extremists. For example, when men and women endure the same living conditions (as is typically true of the societies we examine), it is reasonable to assume that they suffer the loss of a loved one to a similar extent. This conclusion is certainly consistent with the major trends in anxiety and health

following bereavement (Bennett, Hughes, and Smith 2005; Stroebe 2005). Similarly, accounts of extremism that cite exploitation as a key factor are found in the literature on females (Victor 2006) and males (Kimhi and Even 2004), suggesting again that both sexes are open to exploitation. Whilst the reasons behind the inability to resist exploitation may differ across men and women, both are open to external pressures and manipulation from terrorist organizations in some form (Kimhi and Even 2004).

Given this body of evidence, we predict:

H2: There will be no significant differences in the extent to which males and females are associated with key event motivations for carrying out suicide terrorism.

Revenge. The desire for revenge has been proposed as a common motive for joining a terrorist organization (Silke 2003) and for engaging in extremist activities (Kimhi and Even 2004; Moghadam 2003). Research suggests that both men and women cite revenge as a motivation for carrying out a suicide attack (Kimhi and Even 2004; Speckhard and Akhmedova 2006). On some occasions, this revenge emerges from personal factors, such as the death of a loved one or an incident of sexual abuse by foreign soldiers (Kimhi and Even 2004). On other occasions, the desire has social origins, such as following a trauma experienced as part of an occupation (Kimhi and Even 2004).

Whether or not males and females differ in their need for revenge has been a topic of research for several years. The result of this research is a set of inconsistent findings, with some studies suggesting that men are typically more vengeful than women (Mullins, Wright, and Jacobs 2004) but others showing no such difference. For example, Crombag, Rassin, and Horselenberg's comprehensive study on vengeance found no evidence to

support the idea that men are more vengeful than women or vice versa (Crombag, Rassin, and Horselenberg 2003). These findings are consistent with Cota-McKinley, Woody and Bell's study into vengeance and the desire for revenge (Cota-McKinley, Woody, and Bell 2001), and Brown's psychological comparisons, which found that the extent to which an individual expresses a desire for vengeance is unrelated to gender (Brown 2004). Finally, studies investigating aggressive triggers and aggressive capabilities, both of which can underlie a desire for revenge, found that males and females are equally capable of aggressive behavior (Hennessy and Wiensenthal 2002) and that they show no difference in their aggressive behavior following a frustrating event (Lawrence 2006). Given this weight of evidence, we predict:

H3: There will be no significant differences in the extent to which males and females are associated with revenge motivations for carrying out suicide terrorism.

Personal. Whilst early research postulated mental disorders and psychological deficiencies as factors contributing to the commitment of suicide terrorism (Pearlstein 1991), these claims have largely been dismissed by later studies (Crenshaw 2000; Pape 2005; Silke 2003). However, less pathological difficulties have been identified repeatedly in the biographies and confessions of suicide terrorists. Commonly cited problems include low self-esteem (Israeli 1997), depression (Myslobodsky 2003), isolation from society (Sageman 2004), shame and dishonor (Victor 2006), and monetary problems (Ramesh 2003). Suicide attacks may in some communities be seen as a solution to these problems, since carrying out an attack can elevate self-esteem (Lester, Lang, and Lindsay 2004), restore personal and family honor, and raise social standing (Victor 2006).

Previous studies have emphasized that females tend to hold more personal motivations than males (Schweitzer 2006; Dolnik 2004). Even women whose motivation for participation includes an ideological element are often found to hold dualistic personal and ideological motivations, rather than pure religious or nationalistic motives (Cunningham 2003). Male motivations are more likely to be found in group membership (Sageman 2004), previous involvement in the conflict (Weinberg, Pedahzur, and Canetti-Nissim 2003) and/or religious involvement (Stern 2003) than personal involvement. Consequently, we hypothesize that:

H4: Compared to males, females will be more frequently associated with Personal motivations for carrying out suicide terrorism.

Early reviews of female involvement in terrorism (e.g., (Vetter and Perlstein 1991) argued that gender equality or feminism is a motivating factor for women in the involvement with terrorism. Consistent with a number of recent papers (e.g., (Talbot 2000), our data showed no instances of this occurring as a motivation and it is therefore not explored as a motivational category.

Individual Recruitment into Suicide Terrorism

The possibility that a number of different motivations underlie individuals' involvement in suicide terrorism suggests that there may also be a number of different ways in which those individuals are recruited into terrorism. Early studies often conceptualized recruitment as a top-down process in which recruiters identify susceptible potentials and coerce them into joining their organization (McKay 2005; Taarnby 2005). However, more recent studies have suggested that recruitment may often be a reactive process in which recruiters respond to those who express an interest (Iannaccone 2003).

According to this view, an individual willing to engage in extremist activities is taken on following not so much a process of recruitment but a process of joining (Sageman 2004). For example, Taarnby (Taarnby 2005) argues that the majority of terrorist organizations do not have active recruitment drives. However, this is not to deny that recruitment processes can be facilitated by forms of active recruitment in locations such as places of worship (Kushner 1996), universities (Stern 2003) or prisons (Abu-Amr 1994). Recruitment may therefore be a proactive or reactive process, or a combination of the two. To better understand these possibilities, we now deconstruct views of recruitment in the literature in the same way in which motivations were broken down into fundamental components.

Religious/group pressure. Religious and social groups provide ripe ground for recruitment into extremist activities. At a psychological level, membership is a communal and social practice that reinforces group solidarity and participation. This in-group dynamic leads individuals to provide tacit support for another's extreme ideology, and this may later become more active support as they attempt to consolidate their earlier tacit behavior (Lofland and Stark 1965; Sageman 2004). At a practical level, religious and social groups provide opportunities for assessing an individual's potential. For example, those with leadership roles in social groups or organizations may actively recruit from their followers in fairly direct ways, such as inviting them to join privileged meetings or trialing their interest by asking them to help with peripheral tasks. For religious groups, the place of worship and group pressures surrounding them may play a large role in recruitment. A study of 35 incarcerated Palestinian terrorists (Post, Sprinzak, and Denny 2003) showed that over 50% of those belonging to religious groups cited religious

influence or the place of worship as a central pressure to joining the group. Since, as noted earlier, men are more likely to be members of religious and social groups than women, we predict that:

H5: Compared to males, females will be less likely to be recruited through religious/group pressure.

Peer pressure. The pressure to engage in suicide terrorism may also come in the form of peer or familial pressure (Post, Sprinzak, and Denny 2003). For example, Sageman found that for 68% of terrorists pre-existing friendship bonds play an important role in formal integration into the extremist group (Sageman 2004). In many cases a friend or acquaintance in the group recruited the subject. Similarly, 75% of terrorists were found to have pre-existing familial bonds to members already involved in terrorist organizations, or joined as a group with friends or relatives (Sageman 2004). Such kinship links have also been identified in the recruitment of women. In a study of the Egyptian religious militant group Repentance and Holy Flight, analyses revealed that female terrorists were mostly relatives or wives of the male members (Ibrahim 1980). An example of the role of kinship bonds can be seen in the Hamburg cell who were responsible for the 9/11 bombings. Intensive interaction between friends and peers resulted in the radicalization of ideologies, the formation of strong in-group bonds, and the absence of extra-group bonds (Taarnby 2005). Since both men and women are open to such peer and familial linkages, we predict:

H6: No significant difference in the extent to which male and female are recruited through peer pressure.

Pro-active seeking. Other terrorists may be more pro-active in their path towards suicide terrorism, seeking out groups that will take them onboard and train them to carry out a suicide attack. Pro-active seeking could be sparked by motivations such as revenge or anger induced by a turning point in the subject's life, as seen in the cases of many of Chechnya's Black Widows (Speckhard and Akhmedova 2006). These events can lead to a seeking of entry into a terrorist organization—a proactive search not necessarily constrained or molded by religious or peer pressure. As many women have not been trained as fighters before their intent to commit a suicide attack, they will have to actively ask groups to provide them with resources and help them prepare (Schweitzer 2006). Even if women are part of a terrorist organization, they may not be drafted as regularly as men and may have to actively “step forward” to pronounce their willingness. Conversely, as more men are likely to be members of terrorist groups, their proactive seeking may be confounded by other recruitment processes, and hence not reported as such. Therefore, we hypothesize that:

H7: Compared to males, females are significantly more likely to be pro-active in their recruitment.

Exploitation. In contrast to voluntarily seeking out the means to commit an attack, other individuals are forced or unduly pressured to carry out an attack. Such exploitation should thus be seen as a different form of recruitment. Interviews with female ethno-separatist terrorists revealed that the majority were initially forced to join the group (Ness 2005). Exploitation is also common in the literature about female suicide terrorists (Ness 2005; McKay 2005; Victor 2006) including cases where women have been exploited by their own families in return for a monetary reward (Vinogradova 2003). Yet, as

mentioned previously, men are also exploited for suicide attacks be it due to their age or personal circumstances (Kimhi and Even 2004). The higher prevalence of reports on exploited women is likely to be a media bias. As both men and women may be motivated by exploitation, we predict:

H8: No significant differences in the extent to which males and females are recruited to commit suicide terrorism through exploitation.

Method

Data

Data were biographical accounts of individuals reported as having either carried out or having attempted to carry out a suicide attack. This data was collated from a variety of open-source archival materials including books, journals, newspaper articles, and information retrieved from the Internet. All of the sources were written in English, although they frequently included translations of material (e.g., newspaper articles, internet sites, or books) originally written in languages other than English. The Internet searches were initiated by inputting the reference terms “bomber”, “female”, “failed”, “interview”, “terrorist”, “extremist” and “martyr” into a popular worldwide search engine. In cases where the search returned a terrorist’s name, the resulting name was used to instigate a further search. In an effort to capture a variety of perspectives, information on the individuals was retrieved from websites compiled by research institutions, think-tanks, independent researchers, Western and non-Western media sources, websites that presented as sympathetic to an extremist position, and, where possible, the official websites of the relevant groups. A number of websites were flagged repeatedly across the

different searches (e.g., <http://www.memri.org>), and these websites were, as a result, revisited and examined for all of the identified cases.

This collection of sources provided data on individuals' motives, backgrounds and recruitment into terrorism. For each individual, the kinds of information typically available were personal accounts, accounts provided by friends, family and the media, evidence gleaned from wills and testaments, and videos left by the individual prior to their attack. When deriving the accounts, we undertook to collect information from sources that were likely to have different perspectives on the individual and their life history. Previous research suggests that the Western media tends to focus on personal aspects of female suicide terrorists with actions minimised and credibility and influence diminished (Issacharouf, 2006). However, the Arab press is freer of gender stereotypes and downplays personal aspects of female terrorists (Issacharouf, 2006). By including both accounts within our data collection, we sought to reduce any bias within the data. For example, to balance Western media reporting on an individual, we also collected information from non-Western sources (e.g., international press releases) and Western media reports that incorporated Arab press releases. Similarly, we attempted to counter-balance the potential bias towards positive significant findings in Western reporting with the inclusion of information stemming from martyr videos (translated into English) and reports from pro-Palestinian websites. This range of perspectives provided considerable opportunity to verify the accuracy of the collected information. In all cases, information provided by a third party (e.g., friends, journalists) was verified by checking it against at least a second independent source.

This process yielded information on 30 female suicide terrorists, which was then matched by collecting similar information on 30 male suicide terrorists. The resulting cases cover a wide range of geographical areas and extremist groups, with the largest group of terrorists involved in the Israeli/Palestine conflict. The dataset on females contained 17 terrorists from the Middle East (but what groups?), 9 from Chechnya (again what group), ??? from the LTTE and ??? who were associated with al-Qaeda. Similarly, the dataset on males contained 22 from the Middle East (but what groups?), 5 associated with Al-Qaeda, and the remaining 3 from the LTTE, Pakistan and Kurdistan (but what groups?). Thus, as we explain below, an effort was made to derive data on individuals associated with a range of different extremist groups.

While some research suggests that suicide terrorists from different groups may hold dissimilar motivations (Jenkins 2001), our objective in this article was to provide an initial investigation of pervasive differences between females and males. Any variation across groups will serve only to reduce the saliency of the differences identified in the analysis, thereby providing a conservative benchmark that may be refined in future research. The data also include cases in which the individual was successful and unsuccessful in carrying out a suicide attack (we control for this variation in the analysis below). Specifically, of the 60 suicide terrorists, 21 of the 30 females completed their attack, while 23 of the 30 males completed their attack. Of the 22 females on which there was age data, the age ranged from 15 to 46, with a mean of 27.2 years. Of the 21 males for whom there was age data, the age ranged from 15 to 48 years, with a mean of 23.7 years.

There are doubtless problems with the reliability and analysis of archival data. The information may have been poorly recorded, or altered to portray a particular image or interpretation of the individual and their life events. We took several steps to limit the impact of this problem. First, as noted above, we established that the biographical details included in the data were reported across multiple sources. Second, as described below, we reduced the data into larger meta-categories which incorporated behaviors that reflected variations in a theme. This approach has been shown to significantly improve the reliability and validity of archival data analysis (Donohue and Taylor 2003; Taylor 2002; Taylor and Donald 2003). Third, the errors introduced by unreliability are only likely to add noise to the analysis, thereby reducing the possibility of finding support for the hypotheses. Any support for the hypothesized differences may therefore exist despite of the data rather than because of it (Porter and Alison 2006). Finally, collecting and analyzing data in this aggregated way is arguably a useful alternative to the detailed case studies and interview analyses that currently dominate the literature. The evidence that emerges from this article should add to a body of knowledge that has utilized a number of methodologies, each with their own strengths and weaknesses.

Content Analysis

A content analysis of the accounts by the first author revealed a comprehensive set of 18 motivations for carrying out a suicide attack. These motivations were derived through a grounded theory approach to categorizing written material (Glaser and Strauss 1967; Holsti 1969; Krippendorff 1980). Specifically, the biographical information was parsed into sentences, and each sentence coded for references to motivation, personal backgrounds, life events, and opinions towards religious and nationalistic events or

ideologies. This coding required iterative refinement and modification of the content dictionary until it clearly reflected the relevant information in the biographies. The data were exhaustively re-analyzed and codes added and removed until all informative units were appropriately assigned a code. These individual motivations were then grouped into four different motivational types: Religious/nationalistic, Key events, Revenge and Personal. Table 1 presents the resulting motivation codes and the four motivational types with definitions and examples.

A similar process was used to identify the different ways in which individuals were recruited to suicide terrorism. Each sentence of the biographical material was examined for information about how the individual first learned about and joined the terrorist group to which they were associated. As above, this information was coded using an iterative approach, with codes added and removed until all information about recruitment was coded across the individuals. This resulted in four different recruitment processes: Religious/organizational persuasion, peer persuasion, proactive and exploited. A fifth Unknown category was used to score cases in which no recruitment information was available. Table 2 presents the resulting five recruitment codes with definitions and examples.

Reliability of the coding was assessed by two independent judges who were experienced in content analysis but blind to the research hypotheses. As an initial examination of validity, the content dictionaries were discussed with the judges to refine the definitions of each variable and to minimize the extent to which the categories reflected the researcher's personal priorities and biases. Following this initial familiarization, reliability was assessed by having each judge independently code 6

(10%) of the cases (3 female and 3 male). Each of the two judges coded a different set of 6 cases. The reliability of the coding, measured simultaneously across motivation and recruitment categories using Cohen's Kappa (Cohen 1960), was .84 with 90% agreement for the author and first judge's coding, and .88 with 84% agreement for the author and second judge's coding. These values suggest an excellent level of coding reliability (Bakeman and Gottman 1997). All disagreements were resolved through discussion prior to analysis.

Results

Descriptive Analysis

To allow a preliminary analysis of differences, Table 3 shows the frequency of occurrence of each motivating factor for female and male suicide terrorists. The larger of the two frequencies across males and females is highlighted in bold print. For example, the actions of six females, but no males, were motivated in part by the feeling of being an outsider in society. The prevalence of this motivation in females is matched by a similar pattern for a number of personal issues, with females being more likely to be motivated than males by a desire to end their life, unhappiness with their personal situation, or family and personal problems. In contrast, more males than females were motivated by nationalistic beliefs, overt religious beliefs, foreign policy, or pressures stemming from their extremist social group.

The categories on Table 3 are ordered according to the extent to which each motivation was found for female relative to male cases. Categories towards the top of Table 3 occurred more frequently for female terrorists than male terrorists. Categories towards the bottom of Table 3 occurred more frequently for male terrorists than female

terrorists. The trend across the different motivations is most evident from the categorical totals shown in the final column of Table 3. These totals are suggestive of a continuum of motivating factors from the personal motivations that are primarily associated with females (e.g., social outsider, unhappy with life) to the social motivations that are primarily associated with males (e.g., member of extremist group, nationalistic reasons).

Table 4 shows the frequency of occurrence of each type of recruitment for female and male suicide terrorists. Consistent with Table 3, the recruitment categories are rank ordered such that categories most associated with female terrorists occur at the top of the table while categories most associated with male terrorists occur at the bottom. As can be seen in Table 4, a higher number of males compared to females became involved in suicide terrorism in response to religious or group pressure. In contrast, compared to males, females were more likely to actively seek involvement, and they showed a slight tendency to be recruited more often through exploitation or peer-persuasion. These differences mirror the trends found in female and male motivations. Specifically, the more personally focused means of recruitment (e.g., pro-active) are primarily associated with females, whereas recruitment driven by social and religious factors occurs more frequently for males.

Empirical Analysis

To examine the differences in motivation and recruitment across males and females, the frequency of occurrence of the 18 motivation categories were aggregated to form a single score for each of the 4 motivation types listed in Table 2. These aggregate scores are presented in the last column of Table 3. This reduction of data was taken on conceptual and statistical grounds. Its conceptual purpose was to focus our analysis on

the psychological rather than event-specific differences in motivations across terrorists. The Type categories avoid the danger of being too ideographic about individuals' motives and so allow for generalizable conclusions about the differences across males and females. Its statistical purpose is one of increasing the reliability of the data. Errors in the recording of motives are more likely to occur at the level of actual motive than they are when data is collapsed into meta-categories of motivation type (Donohue and Taylor 2003; Taylor 2002; Taylor and Donald 2003). The resulting motivation frequencies were then taken as a function of recruitment type and attack outcome to form a four-way contingency table of the form Gender x Recruitment x Motivation x Outcome. Specifically, this table was formed by cumulating the number of cases coded into the four motivational types for female and male suicide terrorists, within recruitment type and within outcome type. This cross-classification resulted in a contingency table consisting of 80 (2 x 4 x 5 x 2) cells on which analysis was conducted.

The contingency table was fitted to a series of nested log-linear models that investigated patterns of recruitment and motivation over time while controlling for gender and outcome. Log-linear modeling is especially useful when dealing with contingency tables of more than two dimensions because main effects and interactions among behavioral variables can be systematically isolated and tested for significance. The first stage of the current analysis was to build an overall model that used the fewest possible treatment effects to adequately model the data. By then examining the impact of individual variables on the success of the overall model, it was possible to identify differences in recruitment and motivation across males and female terrorists who were successful or unsuccessful in their attack.

We report log-linear models using Feinberg's (Feinberg 1980) notation, where the structural properties of the models are written as groups of bracketed terms. In this approach, a set of terms within brackets contains all the main effects and the possible interactions for those terms. As an example, consider a model that seeks to represent differences in motivation (M) and attack outcome (O) as a function of terrorist gender (G). In Feinberg's notation, a pure main effects model is written as [Gender] [Motivation] [Outcome]. A model examining whether or not males and females differ in their motivations independent of outcome is written as [Gender.Motivation] [Outcome], where the grouping of motivation and gender indicates that the model includes their interaction in addition to their main effects. A saturated model that contains all the possible interactions and main effects is written as [Gender.Motivation.Outcome]. The inclusion of all terms within a model eliminates all possible variation and provides an exact modeling of the data. The analysis reported here generalizes these basic models to include the effects of Recruitment. For discussions of the technical aspects of log-linear analysis, see Agresti (Agresti 1984) and Feinberg (Feinberg 1980).

Table 5 reports the likelihood fit statistics (G^2) for a set of models that were developed in a manner that enabled direct investigation of the hypotheses. The models were developed step-by-step from simple main effects to complex interactions, such that adjacent models are distinguished by allowing one additional term (e.g., a main effect, a 2-way interaction) to vary with gender and outcome. This allows the calculation of a conditional likelihood statistic (ΔG^2) for the term that distinguishes the model from its predecessor. The larger the value of ΔG^2 , the more significant the term is to an effective modeling of the similarities and differences among male and female suicide terrorists. By

developing analyses in this cumulative manner, it becomes possible to examine the main effects and interaction effects among the variables gender, motivation, recruitment, and outcome.

The first half of Table 5 shows a set of models that allow gender to interact with Motivation and Recruitment (Models 1 to 3). Specifically, Model 1 is a baseline model that includes the term [Gender.Outcome] to take account of any differences in the success of attacks across females and males. This baseline was necessary because variation in the outcome of the cases may simply be an artifact of our data sampling. Model 2 adds the main effect of motivation and the main effect of recruitment to Model 1. Both account for a large amount of variance in the data (i.e., G^2 reduces), suggesting that there are significant differences in the frequency of occurrence of the motivation and recruitment categories across the cases ($p < .01$). Model 3 allows motivation and recruitment to interact (separately) with gender, such that the added terms allow a test of the hypothesized interaction between gender and motivation. As shown by the ΔG^2 , the interaction of gender with motivation accounted for more variation in the data than the interaction of gender and recruitment. However, both are statistically significant, suggesting that at least some of the motivation and recruitment categories vary in their frequency of occurrence across males and females.

The second half of Table 5 reports those models that test the interrelationship between motivation and recruitment, and in turn their interaction with outcome (Models 4 and 5). Model 4 includes a significant interaction between motivation and recruitment, suggesting that the way in which an individual was recruited differs according to their motivation for committing an act of suicide terrorism. Model 5 allows motivation and

recruitment to interact (separately) with outcome. There is a significant interaction between outcome and motivation, suggesting that some motivations are more likely to be associated with successful acts of suicide terrorism. Finally, Model 6 is the minimal model in the table that captures the patterns in the data adequately. In this model, along with the interactions identified in Models 1 to 5, gender interacts with outcome and recruitment, motivation interactions with outcome, and there are two 3-way interactions. The first significant 3-way interaction is between gender, outcome and recruitment, suggesting that method of recruitment differs across males and females, and that different recruitment-gender combinations were more likely to lead to successful attacks. The second is a significant interaction between gender, outcome and motivation, suggesting that motivations differ across males and females, and that different motivation-gender combinations were more likely to lead to successful attacks.

To further examine the relationships between motivation, recruitment and gender, we calculated standard residuals for those main effects and interactions effects that allow a test of the hypotheses. The rationale for this approach is that adding model terms constrains the expected frequencies of particular margins of the table to equal the observed frequencies, while they would otherwise be free to vary. The analysis of standardized residuals therefore allows an examination of where expected and observed frequencies would differ if particular terms were left out of the model. Following Olekalns and Smith (Olekalns and Smith 2000), standard residuals were taken to be significant if they were greater than ± 1.00 .

Differences in motivation. Table 6 shows the standardized residuals for Model 2, thereby allowing an examination of the differences in motivation across males and

females. Consistent with the H1, female suicide terrorism is associated with significantly fewer religious/nationalistic motivations ($z = -3.03$) and significantly more personal motivations ($z = 3.01$) compared to male suicide terrorism. In contrast, male suicide terrorism is associated with significantly more religious/nationalistic motivations ($z = 3.40$) and significantly less personal motivations ($z = -3.38$) than might be expected by chance. In contrast to H3, females were associated with significantly more revenge motivations ($z = 1.06$) while males were associated with significantly less revenge motivations ($z = -1.19$).

Differences in recruitment. Table 7 shows the standardized residuals for Model 6, allowing an examination of differences in the way successful and unsuccessful male and female terrorists were recruited. Results showed a significant difference in the peer recruitment category between successful and unsuccessful males (see Table 7), with unsuccessful males being recruited through peer pressure more often than successful males ($z = 1.86$). However, both successful and unsuccessful males were heavily recruited through religious or organizational group pressure ($z = 1.39$ and 1.00), lending support to the hypothesis that this form of recruitment is the primarily found among males (H5). Also, consistent with H5, successful and unsuccessful females were less likely to be recruited through religious or group pressure ($z = -1.24$ and -1.21). Finally, we hypothesized that women would have to seek out recruitment and be pro-active as a result of not belonging to terrorist organizations (H7). This prediction received partial support, with females successful in their attack, but not those unsuccessful in their attack, having a level of pro-active recruitment that was above that found in males ($z = 0.95$ compared to $z = -0.72$). However, this result was not significant.

Discussion

Building on recent efforts to understand female extremism, this paper reports an analysis of the motivations and recruitment of females who commit acts of suicide terrorism. To complement existing case study analyses, we collected data on the life histories of 30 female and 30 male suicide terrorists and examined this data for evidence of differences in their recruitment and motivation. The results of our log-linear analysis revealed significant and complex relationships between gender and terrorists' motivations and recruitment, as well as the eventual outcome of their actions. A summary of these results can be found in Table 8

Overall, our results suggest differences in male and female motivation that reinforce Dolnik's (2004) argument about the limitation of developing typologies that consider only male terrorists. By adding female terrorists into existing datasets, or by including gender as a variable in the analysis, it is possible to account for more variance in the data and encapsulate the complexities of the social and organizational dynamics of terrorist groups. At a practical level, the inclusion of female involvement in our theoretical frameworks ensures that investigators are better supported in their efforts to understand and tackle current threats.

Gender and Motivation

Consistent with our predictions, the log-linear analysis revealed significant differences in the motivations associated with male and female suicide terrorists. Specifically, males were found to be more often motivated by religious/nationalistic factors compared to females, while females cited more revenge motivations and more personal motivations than men. Each of these differences provides insights into female

terrorism at the personal level. They are, for example, consistent with the assertion that females are less inclined than males to draw on the terrorist group as a way to restore collective identity (Taylor and Lewis 2004). Similarly, our findings confirm statistically what has often been observed in case study research, namely that female involvement is more frequently associated with personal motivations than religious/nationalistic motivations (Cunningham 2003; Dolnik 2004; Victor 2006). Thus, in line with Pedahzur's observations, suicide terrorism may incorporate both altruistic (religious/nationalistic) and fatalistic (personal) motivations (Pedahzur, Perliger, and Weinberg 2003), but the occurrence of these two motivations differ in its prevalence across males and females.

Interestingly, our findings in relation to revenge are discrepant with previous studies. Specifically, while our evidence suggests that females are more likely than males to be motivated by a desire for revenge, most empirical studies report an equal desire for revenge across men and women (Cota-McKinley, Woody, and Bell 2001; Crombag, Rassin, and Horselenberg 2003). This discrepancy is likely to be a result of the fact that the majority of studies are conducted in experimental settings rather than derived from archival data. Those few studies that have not been conducted as experiments have typically adopted a broad focus on criminal behavior rather than a specific focus on suicide terrorism. For example, Mullins et al.'s naturalistic study (Mullins, Wright, and Jacobs 2004) found that men report higher levels of vengeance than women (the opposite to our findings), but the focus of their research was on vengeance in relation to crime. Thus, our results add to the current debate on the issue of gender and vengeance and

highlight the need to consider the relationship between these factors as context or domain dependent.

Our results reveal two interesting interaction effects in relation to the motivation of female suicide terrorists. The first effect is the interaction between terrorist motivation and the outcome of the attack. This finding suggests that an individual's motivation for carrying out an attack has some bearing on whether or not they complete the attack. A development of our understanding of this motivation-outcome interaction should provide useful information to those making assessments of the risks that individuals pose. The second effect is the interaction between motivation and recruitment. This is a theoretically more intriguing relationship, since it suggests either that different forms of recruitment evoke particular motivations in those who are exposed to them, or that extremist groups are sensitive to the motivational vulnerabilities of those that they attempt to recruit, and that they adapt their recruitment accordingly. To tease apart the direction of this relationship will require a more sophisticated research design, but the value of understanding the relationship may provide significantly insights into the radicalization process.

Finally, it is interesting to note that we found no three way interaction between motivation, recruitment and outcome. This suggests that the attack of an individual who is associated with a particular combination of motivation type and recruitment type almost always concluded with the same outcome. Thus, if this data sample is representative, knowing the motivation and recruitment of an individual should enable good prediction of their likely success in committing an attack. This type of analysis has the potential to contribute to investigators' efforts to assess risk.

Gender and Recruitment

As predicted, men were recruited more readily through religious/group persuasion than through other channels, and significantly more often than women. This relates to the finding that men hold predominantly Religious/nationalistic motivations and have significantly more Religious/nationalistic motivations than women. This argument rests on the assumption that more men than women turn to terrorist organizations for a sense of identity. However, the majority of the sample in this study was taken from the Israeli/Palestinian conflict where men and women typically hold separate roles. Future work should test the strength of the current findings using larger samples of women from secular groups such as the LTTE. In these groups, women have arguably been involved in conflict for longer and they hold more diverse roles. These factors may make loss of identity less influential as an explanatory factor for our results.

In contrast, we found no significant difference in the numbers of males and females recruited by exploitation or pro-active seeking. The first of these two findings confirms our prediction that both females and males can be the subject of exploitation, albeit exploitation in subtly different ways. The second of these findings contradicted our hypothesis (and the case study evidence on which it was based) that females would be more likely than males to proactively seek recruitment. One explanation for the contradiction may be an artifact of the way in which the media represents female suicide terrorists as passive and lacking of agency (Bielby 2006; Talbot 2000; Rabbie 1991). It may also, however, be the result of a bias in the way in which researchers have understood the role of women in their societies. To explore this possibility will require a

larger set of data in which it is possible to stratify the female cases based on what is known about the role of females in the different societies.

Finally, consistent with previous research (Post, Sprinzak, and Denny 2003; Sageman 2004), our analysis found no significant difference between the number of men and women who were recruited through peer pressure. However, compared to their female counterparts, men who were recruited through peer pressure were significantly more likely to be unsuccessful in their attack. This raises two related, but not mutually exclusive, hypotheses. It may be the case that some recruitment tactics are more effective than others at moving an individual to a point where socially and personally they are prepared to carry out and complete an attack. Alternatively, it may be the case that recruitment strategies are better at recruiting different types of individual, and that males recruited through peer pressure are not people whose character is suited to suicide terrorism. Given significant evidence to suggest that there is no one “profile” for a suicide terrorist, our findings seem to suggest the former possibility, that recruitment strategies differ in their capacity to motivate an individual to carry out an attack, is the more likely explanation. However, caution is needed in interpreting this result, and future research would need to focus specifically on recruitment using a larger, more controlled sample before conclusions can be reached.

Conclusions

Our study adds a statistical body of knowledge to existing efforts to understand female suicide terrorism. While many of our findings confirm existing explanations of female involvement, others suggest differences and relationships that have not previously been considered. We propose that central among these findings are the motivation-

outcome and motivation-recruitment interactions. Understanding these interactions is arguably vital for future models and typologies of suicide terrorism, since they reflect the impact of motivation at different stages of females' engagement in suicide terrorism. Efforts to understand these relative impacts, and the changing nature of motivation over time, are likely to make a significant contribution to our understanding of female suicide terrorism.

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Table 1.

Descriptions and Example of Terrorist Motivations as a Function of Motivational Type.

Type	Motivation	Description	Example
Personal	Family problems	Had a family disagreement	He was at odds with husband and family'
	End Life	Wanted to end their life	Tried to commit suicide by a drug overdose
	Money	Were sold or did it for money	Was given 5,000 rupees to go and join a training camp
	Personal problems	Personal problems	History of drug problems
	Social Outsider	Had broken Palestinian social codes or were considered an outsider in community	Was divorced after a 9 year childless marriage
	Unhappy	Was unhappy with life	"I was in distress. I was depressed"
Revenge	Jew Hatred	Had a hatred of Jews	"She was full of hatred against Jews"
	Kill	Wanted to end the life of the 'enemy'	"[I wanted] to kill 40/50 people including as many young people as possible..."
	Revenge	Was committing the attack to avenge a past event	He wanted to "[T]ake revenge for the blood of the martyrs"
Key events	Family Killed	Family or friends had been killed in previous fighting	Ex-husband and brother killed in clashes with IDF troops
	Negative Event	Self or community was embarrassed, shamed or degraded by the 'enemy'	She was stopped by Israeli forces and ordered to remove veil, she was deeply upset about it
	Taken Advantage of	Were exploited or abducted to further the purposes of the terrorist group	Was abducted by brother
Religious/ Nationalistic	Dreamed of Martyrdom	Always wanted to become a martyr / die for Allah	"It was always my wish to turn my body into deadly shrapnel"
	Extremist Group	Was an active member of an extremist group	She had grew up fighting with the LTTE

Type	Motivation	Description	Example
	Foreign Policy	Unhappy with (foreign) policy decisions	He felt strongly about American policy in the Middle
	Nationalistic Reasons	To restore national pride, to fight towards independence or simply to fight for their country	His motivation was to “Resist the occupation”
	Overtly Religious	Was known to live life by religion and act at all times in accordance with that religion	Was a well known religious activist who used to wander...preaching Islam
	Religious Reasons	Because it is a religious imperative, or religion asks for the commitment of suicide attacks	“I believed it was right to kill the officials because they were unbelievers”

Table 2

Descriptions and Example of the Different Forms of Terrorist Recruitment.

Type	Description	Example
Religious/group pressure	Was persuaded or cajoled into carrying out the act by either religious or secular group pressures	Fell under the spell of a radical preacher and his mosque
Peer pressure	Social bonds or pressures aided/determined their perpetration of the suicide attack. Also, following in the footsteps of friends and family	The family was about to become under friendly fire for supposedly being 'traitors'. Carrying out a suicide attack was only way to prevent harm to family.
Pro-active seeking	Actively searched for a way to be chosen for a suicide mission	Addressed the Hamas a number of times asking to be made a suicide terrorist
Exploitation	Was exploited or abducted. Would not have chosen otherwise to carry out attack	Was abducted by brother
Unknown	A 'null' category for those with insufficient data	N/A

Table 3.

Frequency of Occurrence of the Coded Motivations for Female and Male Suicide Terrorists. Bold Font Indicates the Higher of the Frequencies across Males and Females

Type	Motivation	Frequency (%)			Category Difference
		Female	Male	Total	
Personal	Social Outsider	6 (30)¹	0 (0) ²	6	17 ³
	End Life	5 (25)	0 (0)	5	
	Unhappy	5 (25)	1 (5)	5	
	Family problems	2 (10)	1 (5)	3	
	Personal problems	2 (10)	1 (5)	3	
	Money	1 (5)	1 (5)	2	
Revenge	Revenge	6 (35)	3 (15)	9	4
	Jews Hated	3 (15)	1 (5)	4	
	Kill	1 (5)	2 (10)	3	
Key event	Taken advantage of	4 (20)	1 (5)	5	2
	Negative Event	6 (30)	6 (30)	12	
	Family killed	6 (30)	7 (35)	13	
Religious/ Nationalistic	Religious reasons	1 (5)	2 (10)	3	-19
	Dreamed of Martyrdom	3 (15)	5 (25)	8	
	Foreign policy	0 (0)	2 (10)	2	
	Nationalistic Reasons	7 (35)	10 (50)	17	
	Extremist Group	4 (20)	7 (35)	11	
	Overtly Religious	4 (20)	12 (60)	16	

¹ Percentage of all female cases associated with this motivation

² Percentage of all male cases associated with this motivation

³ Frequency of occurrence for Female minus the Frequency of occurrence for Male.

Table 4.

Frequency of Occurrence of Recruitment Categories across Male and Female Terrorists.

Recruitment Type	Gender (%)		Category difference
	Female	Male	
Pro-active	4 (13.3) ¹	1 (3.3)	3
Exploited	5 (16.7)	3 (10)	2
Peer Persuasion	3 (10)	2 (6.7)	1
Religious / Organizational persuasion	5 (16.7)	16 (53.3)	-11
Unknown	13 (43.3)	8 (26.7)	5

¹Percentages given in parentheses.

Table 5.

Likelihood Ratio Model Fits (G^2) and Conditional Likelihood Ratio Fits (ΔG^2) for the Motivations [M], Recruitment [R], Outcome [O], and Gender [G] of Suicide Terrorists.

Model	G^2	df	p	ΔG^2	Δdf	p
1) Baseline model of gender dependent Outcome						
[Gender(G).Outcome(O)]	265.9	76	< .001			
[Motivation(M)]				28.4	3	< .001
[Recruitment(R)]				42.3	4	< .001
2) Main effects of Motivation and Recruitment						
[G.O] [M] [R]	195.2	69	< .001			
[G.M]				48.1	3	< .001
[G.R]				33.0	4	< .001
3) Gender dependent Motivation and Recruitment						
[G.O] [G.M] [G.R]	114.1	62	< .01			
[M.R]				26.4	12	< .01
4) Gender dependent Motivation and Recruitment with Motivation-Recruitment interaction						
[G.O] [G.M] [G.R] [M.R]	87.8	50	< .01			
[O.M]				9.0	3	< .05
[O.R]				8.9	4	<i>ns</i>
5) Gender dependent Motivation and Recruitment, Motivation-Recruitment interaction, and Motivation dependent Outcome						
[G.O] [G.M] [G.R] [M.R] [O.M]	69.9	43	< .01			
[G.O.R]				41.5	4	< .001
[G.O.M]				.15	3	<i>ns</i>
6) Gender dependent Motivation and Recruitment with Motivation dependent Outcome, Gender dependent Motivation and Motivation dependent Recruitment						
[G.O.R] [M.O] [G.M] [M.R]	28.4	39	.89			<i>ns</i>

Table 6.

Observed Frequencies and Standardized Residuals of Motivations as a Function of Gender.

Gender	Motivation Type			
	Religious/National	Key Events	Revenge	Personal
Male	51 3.40	19 -.20	6 -1.19	4 -3.38
Female	21 -3.03	26 .18	16 1.06	38 3.01

NOTE: Top row in each cell shows observed frequency. Bottom row shows standardized residuals.

Table 7.

Observed Frequencies and Standardized Residuals of Recruitment as a Function of Gender and Outcome.

Gender	Outcome	Recruitment Type				
		Religious	Exploited	Peer	Pro-active	Unknown
Male	Successful	12 <i>1.39</i>	2 <i>-.61</i>	0 <i>-1.39</i>	1 <i>-.66</i>	8 <i>-.02</i>
	Unsuccessful	4 <i>1.00</i>	1 <i>.07</i>	2 <i>1.86</i>	0 <i>-.78</i>	0 <i>-1.57</i>
Female	Successful	4 <i>-1.24</i>	3 <i>.12</i>	2 <i>.19</i>	3 <i>.95</i>	9 <i>.61</i>
	Unsuccessful	1 <i>-1.21</i>	2 <i>.73</i>	1 <i>.29</i>	1 <i>.29</i>	4 <i>.48</i>

NOTE: Top row in each cell shows observed frequency. Bottom row shows standardized residuals.

Table 8.

Summary of Research Hypotheses and Findings

Personal Factor	Hypothesis	Finding
Motivation	H1: Compared to males, females will less often be associated with religious/nationalistic motivations.	Supported
	H2: There will be no significant differences in the extent to which males and females are associated with key event motivations.	Supported
	H3: There will be no significant differences in the extent to which males and females are associated with revenge motivations.	Not supported ¹
	H4: Compared to males, females will be more frequently associated with Personal motivations.	Supported
	H5: Compared to males, females will be less likely to be recruited through religious/group pressure.	Supported
Recruitment	H6: There will be no significant difference in the extent to which males and females are recruited through peer pressure.	Supported
	H7: Compared to males, females are significantly more likely to be pro-active in their recruitment.	Not supported ²
	H8: No significant differences in the extent to which males and females are exploited.	Supported

¹Women reported significantly more revenge motivations than men²Men and women were equally pro-active in the recruitment process