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Factors Associated With Family Violence By Persons With Serious Mental Illness: A National Online Survey

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Factors Associated With Family Violence By Persons With Serious Mental Illness: A National Online Survey

Abstract
Background & Significance: Despite estimates that persons with serious mental illness (SMI) are between 2 and 8 times more likely to commit acts of violence than are members of the general population and that approximately 50% of all acts of violence by persons with SMI are against family members, the subject of family violence by persons with SMI has received little research attention. Hypothesis: After reviewing the literatures on community and family violence by persons with SMI, it was hypothesized that family violence by this population is associated with factors in four domains: 1) Perpetrator, 2) Victim, 3) Interaction, and 4) Community. Methods: A cross-sectional survey design was used. Between December 29, 2015 and April 1, 2017, 523 persons with SMI living in the U.S. completed an online survey. Respondents were recruited from a range of mental health organizations across the U.S. Respondents provided information regarding themselves, a reference relative, and the interactions they and reference relatives had with each other in the past 6 months, including possible acts of violence. The association of factors with the occurrence of violence by persons with SMI towards reference relatives was estimated with multivariate logistic regression. Results: Twelve percent (n = 13) of persons with SMI reported having committed violence towards their reference relative in the past 6 months. In the final multivariate logistic regression model, the following factors were significantly associated with violence by persons with SMI towards reference: Perpetrator—history of ever committing serious violence; Victim—age; Interaction—use of limit-setting practices by relatives, psychological abuse by persons with SMI and relatives, and violence by relatives. Conclusions: Mutual violence appears to play a considerable role in family violence by this population. Practitioners may better serve clients with SMI by offering to involve family members in their treatment and by assessing and intervening in family conflict. Interventions aimed at decreasing psychological abuse may help deescalate conflict and prevent physical violence. Interventions intended to decrease or modify limit-setting practices used by relatives towards persons with SMI may decrease the risk of family violence by this population.

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FACTORS ASSOCIATED WITH FAMILY VIOLENCE BY PERSONS WITH SERIOUS MENTAL ILLNESS: A NATIONAL ONLINE SURVEY

Travis Kay Labrum

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ABSTRACT

FACTORS ASSOCIATED WITH FAMILY VIOLENCE BY PERSONS WITH SERIOUS MENTAL ILLNESS: A NATIONAL ONLINE SURVEY

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**Conclusions:** Mutual violence appears to play a considerable role in family violence by this population. Practitioners may better serve clients with SMI by offering to involve family members in their treatment and by assessing and intervening in family conflict. Interventions aimed at decreasing psychological abuse may help deescalate conflict and prevent physical violence. Interventions intended to decrease or modify limit-setting practices used by relatives towards persons with SMI may decrease the risk of family violence by this population.
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CHAPTER 1: INTRODUCTION

Statement of the Problem

Although most persons with serious mental illness (SMI)—commonly including those with bipolar, major depression, or schizophrenia related disorders—do not commit violence, epidemiological studies estimate that such persons are between 2 and 8 times more likely to commit acts of violence than are members of the general population (Arseneault, Moffitt, Caspi, Taylor, & Silva, 2000; Corrigan & Watson, 2005; Fleischman, Werbeloff, Yoffe, Davidson, & Weiser, 2014; Hodgins, Mednick, Brennan, Schulsinger, & Engberg, 1996; Joyal, Dubreucq, Gendron, & Millaud, 2007; Stuart & Arboleda-Flórez, 2001). As a result of this increased risk and exaggerated perceptions of persons with SMI as being extremely dangerous (Crisp, Gelder, Rix, Meltzer, & Rowlands, 2000), an exuberance of research has been conducted exploring factors associated with acts of community violence by persons with SMI (Desmarais et al., 2014; Monahan et al, 2001; Swanson et al., 2006; Witt, Van Dorn, & Fazel, 2013). Surprisingly, however, little research has explored the occurrence of family violence by this population. This is a significant oversight as approximately 50% of all victims of violence by persons with SMI are family members (Binder & McNeil, 1986; Estroff, Swanson, Lachicotte, Swartz, & Bolduc, 1998; Monahan et al., 2001) and family members are considerably more likely than unacquainted persons to incur serious injuries or death when victimized by this population (Nordström & Kullgren, 2003). Despite many family members becoming desensitized to threats and violence committed by
relatives with SMI (Ferriter & Huband, 2003), family violence by this population has many noxious consequences, including physical injury and death of victims (Ahn et al., 2012; Vaddadi, Soosai, Gillear, & Adlard, 1997), increased level of burden, distress, and trauma symptoms of family members (Hanzawa et al., 2013; Kageyama, Solomon, & Yokoyama, 2016; Loughland et al., 2009; Vaddadi, Gillear, & Fryer, 2002); involvement of persons with SMI in the criminal justice system (Winick, Wiener, Castro, Emmert, & Georges, 2010), impaired relationships (Varghese, Khakha, & Chadda, 2016) and disconnection and estrangement of persons with SMI from their families (Nordström, Kullgren, & Dahlgren, 2006; Solomon, Draine, & Delaney, 1995); and increased stigma towards persons with SMI (Torrey, 2011). Indeed, it was recently found that family members merely fearing that their relative with a mental illness may harm someone was associated with “more negative appraisals of caregiving, greater psychological distress, poorer mental health and greater objective burden…” (Katz, Medoff, Fang, & Dixon, 2015, p. 790). For these reasons, it is of paramount importance that family violence by persons with SMI be prevented. A prerequisite for creating effective policies and practices aimed at prevention is an improved understanding of factors associated with family violence by this population, with modifiable ones being of particular interest. Various perpetrator and community factors are known to be associated with the occurrence of community violence by persons with SMI. However, the relationship of such factors with the occurrence of family violence specifically has yet to be adequately examined, as has the association of many victim and interaction factors. The primary aim of this dissertation is to address this gap in our knowledge by conducting a national online survey of persons with SMI to answer the following question: To what extent are
perpetrator, victim, interaction, and community factors associated with the occurrence of family violence by persons with SMI?

**Background and Significance**

**Family Violence Committed by Persons with SMI**

When studies examining violence by persons with SMI collect data regarding the victims of violence, it has been found that between 45% and 54% of victims of serious violence are family members (Binder & McNeil, 1986; Estroff et al., 1998; Monahan et al., 2001), 60% of victims of minor violence are family members (Steadman et al., 1998), and relatives compose the vast majority of victims of repeated acts of violence (Estroff et al., 1998). In contrast, according to statistics provided by the Bureau of Justice, only 11% of violence perpetrated by members of the general population is committed against family members (Harlow, Langan, Motivans, Rantala, & Smith, 2005). This discrepancy combined with the increased risk of violence among persons with SMI results in family violence by persons with SMI being an all too frequent occurrence. For example, in Melbourne, Australia, among 101 family members providing care for a relative with SMI (most of whom were non-intimate partners) it was found that 22% had been hit or struck by their relative with SMI in the past year and 40% had incurred such violence at the hands of their relative with SMI since the onset of their relative’s illness (Vaddadi et al., 2002). Similarly, in Toronto, Ontario, among 61 family caregivers for persons with schizophrenia (most of whom were again non-intimate partners), Chan (2008) found that 36% of relatives reported being the victim of physical violence committed by their
relative with schizophrenia in the past year (B. Chan, personal communication, March 17, 2015). As an indication of how prevalent this social problem is, in a study of 53 women with SMI and only examining the perpetration of intimate partner violence, it was found that 17% of participants had perpetrated physical violence in the two-year study period and 23% had committed violence in their lifetime (Friedman, Loue, Heaphy, & Mendez, 2011).

Unfortunately, no representative studies exist estimating the prevalence of family violence perpetration/victimization committed by persons with SMI. However, available evidence suggests that a surprising portion of persons with SMI have committed violence against a family member. In 2005, after reviewing the research literature, Solomon, Cavanaugh, and Gelles concluded “that a conservative estimate of rates of violence toward family members by a relative with a psychiatric disorder is between 10% and 40% since diagnosis of the illness” (p.42). Upon a more recent review of the literature it was described that the best available estimate is that “20% to 35% of persons with high levels of contact with a relative with psychiatric disorders have been the victim of violence committed by their relative with psychiatric disorders in the past 6 to 12 months, and that at least 40% have been the victim of said violence since the onset of their relative’s illness” (Labrum & Solomon, 2015a, p.1). It has been noted that only the most severe incidents of family violence by persons with SMI are brought before the legal system (Nordström & Kullgren, 2003), with most such violence going unreported (Hsu & Tu, 2014; Nordström et al., 2006). Interestingly, when family members do inform the legal system of aggression committed by relatives with SMI it is often in an attempt to obtain
psychiatric care for ill relatives (Nordström et al., 2006; Solomon et al., 1995). Possible explanations for why victimized relatives fail to report violence to authorities include fear of further stigmatizing persons with SMI (Solomon et al., 2005), desires to protect relatives with SMI (Ferriter & Huband, 2003), perceptions of relatives as “harmed” and related sympathy for relatives (Band-Winterstein, Avieli, & Smeloy, 2016), desensitization of family members to threats and violence due to its repetitive nature (Ferriter & Huband, 2003), and fears of retribution by relatives with SMI (Hsu & Tu, 2014).

Despite the high prevalence of family violence committed by persons with SMI and its far-reaching consequences, this phenomenon has received scant research attention. Of the limited number of studies examining this phenomenon in the past decade, nearly all have examined very few factors associated with the occurrence of violence with the use of small samples recruited from a single geographic region, with most exclusively examining the perpetration of intimate partner violence (Ahn et al., 2012; Friedman et al., 2011; Henrichs, Bogaerts, Sijtsema, & Klerx-van Mierlo, 2014; Heru, Stuart, Rainey, Eyre, & Recupero, 2006; Walsh et al., 2010). In addition, despite the contemporary rarity of psychiatric inpatient treatment among most persons with SMI (Hasin, Goodwin, Stinson, & Grant, 2005; Substance Abuse and Mental Health Services Administration [SAMHSA], 2016), a large proportion of studies conducted in this area in the past decade and prior have recruited participants from inpatient psychiatric units (Ahn et al., 2012; Binder & McNiel, 1986; Elbogen, Swanson, Swartz, & Van Dorn, 2005; Estroff et al., 1998; Estroff, Zimmer, Lachicotte, & Benoit, 1994; Heru et al., 2006; Post et al., 1980;
Straznickas, McNeil, & Binder, 1993; Vaddadi et al., 1997; Walsh et al., 2010)—resulting in findings that are surely unrepresentative of this population. For these reasons, it is imperative that research be conducted with a relatively large, community recruited, and geographically diverse sample, exploring the relationships of many variables with the occurrence of family violence by persons with SMI. Another limitation with research on this topic conducted to date is that most studies in this area have relied on the report of family members (Kageyama et al., 2016; Labrum & Solomon, 2016; Swan & Lavitt, 1988; Vaddadi et al., 2002, 1997), resulting in an absence of research on this phenomenon reflecting the perspectives of persons with SMI.

As previously described, relatively little is known regarding the perpetration of family violence by persons with SMI, making it difficult to identify factors likely associated with this phenomenon. However, a vast research literature exists regarding factors associated with community violence by person with SMI. As there are surely many commonalities among the occurrence of community and family violence perpetrated by persons with SMI (Labrum & Solomon, 2016), it is likely that using both research literatures may most effectively guide the identification of factors likely associated with family violence by this population. Upon reviewing the research literatures regarding family violence and community violence by this population, the following factors are hypothesized to be associated with the occurrence of family violence by this population.

**Perpetrator factors.** Most research investigating violence by persons with SMI has almost exclusively focused on perpetrator factors (Monahan et al., 2001; Swanson et
al., 2006; Witt et al., 2013). Consequently, there is much research in this area to draw from in hypothesizing what characteristics are associated with acts of family violence.

**Sociodemographic characteristics.** Among persons with SMI, younger adults have repeatedly been found to be at a higher risk of perpetrating community (Monahan et al., 2001) and family violence (Vaddadi et al., 1997, 2002; Gondolf, Mulvey, & Litz, 1990; Heru et al., 2006; Swan & Lavitt, 1988). While there is conflicting evidence regarding whether men or women are more likely to commit acts of community (Hiday, Swartz, Swanson, Borum, & Wagner, 1998; Robbins, Monahan, & Silver, 2003; Swanson et al., 2002; Witt et al., 2013) or family violence (Binder & McNeil, 1986; Elbogen et al., 2005; Estroff et al., 1994; Gondolf et al., 1990; Heru et al., 2006; Kageyama et al., 2016; Labrum & Solomon, 2016; Swan & Lavitt, 1988), men appear slightly more likely to act violently (Swanson et al., 2002; Witt et al., 2013).

Socioeconomic status (Witt et al., 2013), educational attainment (Large, & Nielssen, 2011; Volavka et al., 1997), employment status (Swanson et al., 2006), and race (Witt et al., 2013; Steadman et al., 1998) are also associated with acts of community violence by this population, with income (Labrum & Solomon, 2016) and educational attainment being found to be associated with acts of family violence specifically (Swan & Lavitt, 1988).

**Clinical characteristics.** Drug and alcohol use is one of the most significant predictors of community (Arseneault et al., 2000; Fleischman et al., 2014; Swanson et al., 2002; Witt et al., 2013) and family violence (Elbogen et al., 2005; Labrum & Solomon, 2016; Swan & Lavitt, 1988; Vaddadi et al., 1997) by persons with SMI, with there even
being evidence that increased rates of drug and alcohol use account for the majority of the increased risk of community violence committed by persons with SMI (Elbogen & Johnson, 2009; Van Dorn, Volavka, & Johnson, 2012). In agreement, drug and alcohol use is one of the most common explanations asserted by parents as to why their adult offspring with schizophrenia commit violence (Nordström et al., 2006). Persons with a diagnosis of schizophrenia, schizoaffective, or bipolar disorder are more likely to commit community violence than are persons with major depression (Corrigan & Watson, 2005; Schaefer, Broadbent, & Bruce, 2016). Persons with earlier onset of illness are more likely to commit acts of community violence (Swanson et al., 2002), although, it is uncertain if a similar relationship exists when examining family violence (Labrum & Solomon, 2016). Persons with more frequent psychiatric hospitalizations have been found to be more likely to commit community (Fleischman et al., 2014) and family violence (Kageyama et al., 2016; Labrum & Solomon, 2016; Swan & Lavitt, 1988). Persons with SMI who are non-adherent to psychiatric medications and psychological therapies have been found to be at a greater risk of perpetrating acts of community (Swartz et al., 1998; Witt et al., 2013) and family violence (Kivisto & Watson, 2016; Labrum & Solomon, 2016). While it is likely that receiving other types of specific treatment services—intensive case management, referral case management, support groups, and substance abuse treatment—are also positively associated with acts of family violence by this population, studies have yet to examine the individual relationships of such treatment factors with the occurrence of violence (Estroff et al., 1998; Labrum & Solomon, 2016). For example, the MacArthur Study of Mental Disorder and Violence (Monahan et al., 2001), found that persons with psychiatric disorders who reported
attending treatment services more frequently were at a decreased risk of committing acts of violence. However, this study aggregated frequencies of attending several types of treatment, preventing the identification of specific types of treatment associated with a reduced risk in violent behavior. As providing treatment to persons with SMI may play a considerable role in decreasing the risk of violence committed by said persons it is essential that we identify which types of treatment, if any, effectively decrease the risk of family violence committed by persons with SMI.

**History of violence/crime.** Measured in a multitude of forms (frequency, severity, etc.), violent and criminal history is one of the most significant predictors of community (Monahan et al., 2001; Steadman et al., 1998) and family violence (Vaddadi et al., 2002; Elbogen et al., 2005) committed by persons with SMI. Having recently been the victim of violence also significantly increases the risk of community violence perpetration (Elbogen & Johnson, 2009; Swanson et al., 2002; Witt et al., 2013). The relationship of such victimization with the perpetration of family violence by this population has only been sparsely explored, yielding comparable results (Henrichs et al., 2014).

**Victim factors.** While substantially less research has been conducted regarding who is the most at risk of violence by persons with SMI, there are several characteristics which are likely associated with being a victim of family violence by this population.

**Sociodemographic characteristics.** Two studies have identified that among family members of persons with SMI, younger relatives are more likely to be victims of abuse (Labrum & Solomon, 2016; Vaddadi et al., 2002). Earlier studies have noted that mothers are disproportionately the victims of family violence (Cook, 1988; Estroff et al.,
1994), with one study (Estroff et al., 1998) finding that they had “a risk 24 times higher than others of being a target of violence, and of repeated acts and threats” (p. s100).

More recently, research has failed to indicate that mothers are more likely to be the victim of violence than are other family members (Kageyama et al., 2016), with it having been suggested that when related variables are controlled for (e.g. caregiving and limit-setting practices), mothers may actually be at a decreased risk of violence (Labrum & Solomon, 2016). However, mothers remain to be at an increased risk of being the victim of deadly acts of violence (Nordström & Kullgren, 2003), with more than two-thirds of parricide victims committed by persons with schizophrenia being mothers (Ahn et al., 2012). Family members who are not employed full-time (Labrum & Solomon, 2016) and those with a lower income (Kageyama et al., 2016; Labrum & Solomon, 2016; Swan & Lavitt, 1988) have been found to be at a greater risk of experiencing violence by their relative. It is likely that relatives with lower educational attainment are as well.

**Mental health status.** Among the general population, persons with symptoms of mental illness are at an increased risk of being victims of family violence (Compton, Flanagan, & Gregg, 1997; Lachs, Williams, O'Brien, Hurst, & Horwitz, 1996). Family members who report being diagnosed with a mental health condition are more likely to have been victimized by their relative with SMI (Labrum & Solomon, 2016). Similarly, the amount of violence incurred by family members by this population is positively associated with their levels of psychiatric symptoms (Vaddadi et al., 1997). While it is likely that victimization of violence by relatives with SMI results in increased symptoms of mental illness among family members, it is believed that family members with mental illness are also more likely to be victims of violence by persons with SMI.
**Interaction factors.** Despite it being acknowledged that violence by persons with SMI often occurs as a result of daily interactions and social friction (Monahan et al., 2001; Estroff et al., 1998), the specific interactions and relationship characteristics associated with violence by persons with SMI have rarely been explored. It is especially important that such factors be included in an investigation of family violence by persons with SMI as they are likely more modifiable than most perpetrator, victim, or community factors. The following characteristics are likely associated with acts of family violence by this population.

**Dependency and caregiving.** Persons with SMI who are financially dependent on family members have been found to be significantly more likely to commit acts of family violence (Estroff et al., 1998). Similarly, in quantitative and qualitative analyses demands for money have been identified as impetuses for family violence and aggression by this population (Ahn et al., 2012; Band-Winterstein et al., 2016; Varghese et al., 2016). Studies have found that family members providing greater caregiving to relatives with SMI are more likely to report being victims of violence by these relatives (Labrum & Solomon, 2016) or to fear that said relatives will harm them or others (Katz et al., 2015). Additionally, given evidence regarding family violence broadly, it appears likely that caregiving is associated with family violence by persons with SMI. For example, in the elder abuse literature it has repeatedly been found that perpetrators of violence (many of whom have histories of psychiatric hospitalization) are disproportionately likely to be dependent on their victim for aid with transportation, housing, household repair, and cooking and cleaning (Pillemer, 1985, 1986; Pillemer & Finkelhor, 1989). While there
are several possible explanations as to why persons with SMI receiving financial assistance or general caregiving from their family members are more likely to commit family violence, one likely explanation is that such persons may experience increased levels of limit-setting practices (described below), which may introduce conflict into their familial relationships (Labrum & Solomon, 2016). Regardless of the mechanisms by which family caregiving and financial dependency may result in increased rates of family violence perpetrated by persons with SMI, if caregiving and dependency do indeed increase said risk this is of considerable importance given the prevalence of family dependency and caregiving among this population (Clark & Drake, 1994; National Alliance for Caregiving [NAC], 2016).

**Living arrangement and frequency of contact.** Persons with SMI who commit acts of violence disproportionately reside with relatives (Swanson et al., 2006), with this surely being particularly true when only examining the occurrence of family violence (Gondolf et al., 1990; Labrum & Solomon, 2016; Straznickas et al., 1993; Swan & Lavitt, 1988). For example, while murder committed by persons with SMI is rare, one study found that 98% of all persons with schizophrenia who had committed parricide were living with their victim at the time of the incident (Ahn et al., 2012). In addition, high levels of family contact are reported to be associated with acts of family violence (Elbogen et al., 2005) and aggression (Hanzawa et al., 2013; Loughland et al., 2009), with it being suggested that level of contact may be associated with violence due to increased supervision of persons with SMI by family members (Loughland et al., 2009).
**Limit-setting.** Family members often seek to alter the behavior of their relative with SMI by setting limits through encouragement, verbal pressure, and the creation of behavioral and financial contingency contracts. While such limit-setting strategies may be engaged in by family members in pursuit of what is believed to be in the best interest of the relative with SMI, it is likely that such practices result in resentment held by the relative with SMI and are frequently related to family conflict. Through qualitative interviews, conflict is indeed reported to result from family limit-setting practices (Cook, 1988). Similarly, in a study of caregivers in India, nearly one-third of caregivers perceived that aggressive behavior on the part of their relative with SMI resulted from insisting that they take medications (Varghese et al., 2016), with medication use arguably being the most common area limit-setting practices are employed (Cook, 1988). Similarly, the use of financial limit-setting practices by mental health professionals towards persons with SMI have been found to be associated with relationship conflict (Angell, Martinez, Mahoney, & Corrigan, 2007). Regarding family violence, Straznickas et al. (1993) found that limit-setting practices were used by family members immediately prior to approximately half of all acts of violence, with Ahn et al. (2012) finding that similar behaviors existed at the time of parricide by persons with schizophrenia in 64% of cases. Similarly, it was recently found that the use of limit-setting practices was the variable most strongly related to family violence by persons with SMI (Labrum & Solomon, 2016).

**Money management.** Conflict among persons with SMI and mental health professionals serving as their representative payees is well documented (Angell et al.,
2007), with little research exploring conflict among persons with SMI and family members serving as their representative payees. After controlling for other covariates, Elbogen et al. (2005) found that persons with SMI who have a family member serving as their representative payee are approximately twice as likely to perpetrate acts of violence against a family member as are persons without a family representative payee. Similarly, it was recently found that family representative payees were twice as likely to report being a victim of violence by persons with SMI than were family members not serving as representative payees (Labrum & Solomon, 2016). Many family members are not legally designated representative payees but do unofficially manage the income of their relative with SMI (Elbogen, Swanson, Swartz, & Wagner, 2003). Very recently it has been found in the U.S. (Labrum & Solomon, 2016) and Japan (Kageyama et al., 2016) that family members unofficially managing the income of persons with SMI are at an increased risk of being a victim of violence by their relatives with SMI.

Expressed emotion. A premorbid poor-quality relationship between persons with SMI and their relative has been found to be associated with acts of family violence (Vaddadi et al., 1997, 2002). Persons with schizophrenia who report “feeling listened to” by family members are significantly less likely to commit violence (Swanson et al., 2006). Similarly, in a qualitative analysis, limited communication skills were reported to be a precursor to family violence by persons with schizophrenia (Hsu & Tu, 2014), with the use of incendiary communication by family members quantitatively associated with fears that persons with SMI may harm them or others (Katz et al., 2015). Additionally, persons with SMI who view their relatives as hostile are disproportionately likely to
commit acts of violence (Estroff et al., 1994, 1998), with many caregivers perceiving that aggression on the part of their relative with SMI is often the result of perceived hostility. A construct related to the findings described immediately above is expressed emotion, which consists of family members being highly critical, hostile, and emotionally over-involved. Higher levels of expressed emotion among family members have repeatedly been associated with relapse of psychiatric symptoms and hospitalization among persons with SMI (Wearden, Tarrier, Barrowclough, Zastowny, & Rahill, 2000). Due to the nature of expressed emotion, it likely contributes to family conflict and violence (Solomon et al., 2005). Unfortunately, only three studies have evaluated the association of expressed emotion with family violence by this population. Chan (2008) surprisingly found that no measured component of expressed emotion—critical comments or emotional over-involvement—significantly predicted violence against family caregivers; although, critical comments did predict acts of psychological aggression against caregivers. Onwumere et al. (2014) found that while scores of hostility among caregivers were related to violent acts by relatives with psychosis, aggregate scores of criticism, hostility, and emotional over-involvement were not associated with aggression. A rather significant limitation with the studies by Chan (2008) and Onwumere et al. (2014), however, is that they relied on samples of only 61 and 72 caregivers, respectively, and were surely statistically underpowered. Using a considerably larger sample, it was recently found that hostility and criticism by family members towards persons with schizophrenia was significantly associated with victimization of family violence (Kageyama et al., 2016). A limitation of this study, is that it did not examine the relationship of emotional over-involvement with family violence by this population.
Providing tentative evidence that emotional over-involvement is related to family violence by people with SMI, some adult patients with schizophrenia who have committed violence towards their parents are reported to perceive their parents as over-controlling and over-involved in their decision-making (Hsu & Tu, 2014).

**Mutual psychological and physical abuse.** According to Conflict Escalation Theory (Berkowitz, 1993) interpersonal violence occurs as a result of progressive and often mutually engaged in conflict. In agreement, parental violence by persons with schizophrenia is reported by victims to involve a progression of tension and conflict (Hsu & Tu, 2014). Additionally, psychological abuse is closely correlated with physical intimate partner violence by members of the general population (O'Leary, Tittle, Bromet, & Gluzman 2008; Straus, Hamby, Boney-McCoy, & Sugarman, 1996), with psychological abuse and violence by persons with SMI being strongly related when examining family violence (Labrum, 2016; Loughland et al., 2009) and abuse committed in acute psychiatric inpatient units (Carr et al., 2008). Psychological abuse has been found to predict future acts of intimate partner violence (Murphy, & O'Leary 1989), with more recent literature considering conflict to be a precursor to aggression (O'Leary, Smith Slep, & O'Leary, 2007). As such, it is likely that psychological abuse committed by persons with SMI towards a family member and vice versa are associated with an increased risk of family violence committed by persons with SMI. With regards to the general population, there is considerable evidence indicating that many persons who perpetrate intimate partner violence are engaged in mutually violent relationships (Gelles, 2016; O’Leary et al., 2008). Additionally, there is tentative evidence that persons with
mental health conditions may be particularly inclined to engage in mutual family
violence, with it having been found that history of suicide attempts predicts bidirectional
intimate partner violence (Renner & Whitney, 2012). As most violence risk studies
pertaining to persons with SMI have not collected detailed data regarding the victims of
violence, few studies are able to evaluate the role mutually violent relationships play in
violence committed by persons with SMI. However, there is extensive evidence
indicating that there is much overlap among persons with SMI who perpetrate violence
and persons with SMI who are victims of violence (Desmarais et al., 2014; Silver,
Piquero, Jennings, Piquero, & Leiber, 2011). As such, it is plausible that many persons
with SMI who commit violence are involved in mutually violent relationships. In support
of this proposition, there is occasional evidence that many persons with SMI who
perpetrate intimate partner violence are involved in mutually violent relationships (Heru
et al., 2006); although, findings are not consistent (Friedman et al., 2011). The role that
mutually violent relationships play in the perpetration of violence by persons with SMI
against any family member (opposed to exclusively examining intimate partner violence)
has yet to be the subject of any known study.

Community factors. Persons with SMI commonly reside in communities with
elevated levels of poverty and social disadvantage (Baron, Draine, & Salzer, 2013;
Draine, Salzer, Culhane, & Hadley, 2002; Metraux, Caplan, Klugman, & Hadley, 2007).
It has been argued that residing in such communities is responsible for much of the
increased risk persons with SMI have of perpetrating community violence (Hiday, 1995).
While there is inconsistency in findings (Sariaslan, Larsson, Lichtenstein, & Fazel, 2017),
some research does support this argument (Silver, 2000). Most convincingly, in a study examining the occurrence of serious acts of community violence among nearly 300 persons discharged from inpatient psychiatric treatment, after controlling for known covariates, Silver, Mulvey, and Monahan (1999) concluded that “neighborhood poverty has an impact over and above the effects of individual characteristics in identifying cases with violence” (p. 237). In the only analysis known to date examining the role of neighborhood poverty in family violence by persons with SMI (relying on zip code level data), however, it was found that neighborhood poverty was not correlated with family violence by this population (Labrum & Solomon, 2015b). The relationship of perceived neighborhood disadvantage and family violence by this population has yet to be examined.

Implications

Having an improved understanding of factors associated with the occurrence of family violence will enable treatment and criminal justice professionals to more accurately identify who and under what circumstances persons with SMI are most at risk of perpetrating family violence. Furthermore, by focusing on modifiable risk factors such as interaction factors, the proposed study has the potential to provide direction for specific areas to be targeted by clinical and policy interventions in pursuit of preventing family violence by this population.

Hypothesis
Persons with SMI who report perpetrator, interaction, or community risk factors and/or who report that their relative has victim risk factors, will be more likely to report committing acts of violence against their relative than will persons with SMI who do not report such risk factors.
CHAPTER 2: PROJECT DESIGN AND IMPLEMENTATION

Design and Sampling

A cross-sectional study was conducted using a set of independent variables corresponding to all delineated perpetrator, victim, interaction, and community factors. The dependent variable was the presence or absence of violence towards the relative reported on. While limitations of all cross-sectional studies are an inability to produce causal inferences and complete certainty regarding the temporal order of events, such studies are highly effective and feasible as exploratory studies, laying the foundation for future longitudinal projects intending to produce causal inferences.

It is only possible to access a truly representative sample of persons with SMI through a nationally representative sample of the general population, from which persons with SMI are identified. Unfortunately, the recruitment of such a sample is cost prohibitive. As described previously, most studies investigating violence by persons with SMI to date have recruited participants admitted to psychiatric inpatient facilities (Binder & McNeil, 1986; Elbogen et al., 2005; Heru et al., 2006; Monahan et al., 2001; Swartz et al., 1998; Vaddadi et al., 1997). As dangerousness to self and others is admission criteria for psychiatric hospitalization, such samples produce rates of violence among this population that are surely inflated. For example, in a study of 110 persons admitted in a psychiatric hospital with suicidal ideation (Heru et al., 2006), more than 90% of participants reported having been the victim and perpetrator of intimate partner violence in the past year. Additionally, the studies listed above have been bounded to specific geographic regions and are not clinically representative of this population as psychiatric
hospitalization is currently a relatively rare occurrence among persons with SMI (SAMHSA, 2016).

An online survey was chosen to be conducted as doing so was expected to 1) likely induce less social desirability bias than would conducting interviews (Pew Research Center, 2015), 2) enable the recruitment of enough participants for analyses to have sufficient statistical power (see power analysis section) and 3) produce a clinically and geographically diverse sample, as participants can be recruited from a multitude of locations and organizations. A limitation of using an online survey is that persons with SMI without access to the internet will be unable to participate, limiting the generalizability of findings. Unfortunately, no representative sample exists assessing the availability of internet access among persons with SMI. However, available evidence from a convenience sample suggests that most persons with SMI do at least occasionally use the internet (Townsend, Zippay, Caler, & Forenza, 2016). It is also known that the majority of Americans have access to the internet (File & Ryan, 2014) and that persons with SMI appear to use other technological devices (i.e. mobile phones) at nearly the same rate as members of the general population (Ben-Zeev, Davis, Kaiser, Krzsos, & Drake, 2013). A reflection of how many people with SMI use the internet is the reliance of community organizations and even state governments (Swinford, 2014) on the internet in providing information and services to persons with SMI as well as the proliferation of studies involving persons with SMI relying on web-based designs and/or recruitment (Kaplan, Salzer, Solomon, Brusilovskiy, & Cousounis, 2011; Kaplan, Solomon, Salzer, & Brusilovskiy, 2014; Labrum & Solomon, 2015a; Prochaska et al., 2011; Russinova,
Wewiorski, & Cash, 2002). As a result of the logic stated above, it is believed that only a minority of persons with SMI will be excluded from the study due to not accessing the internet. To decrease the number of people unable to participate due to a lack of internet access, in-person advertisements for the study reminded potential participants that public libraries often offer free internet access.

Another limitation of obtaining data through an online survey is that the quality of data is contingent on the accuracy of participants’ reporting. However, the self-report of persons with SMI participating in research, when compared to official or otherwise objective records, has been found to be reliable in a breadth of areas including presence of somatic disorders (Dixon, Postrado, Delahanty, Fischer, & Lehman, 1999), use of various health services (Rozario, Morrow-Howell, & Proctor, 2004), mental health medication compliance (Thompson, Kulkarni, & Sergejew, 2000), and arrest history (Crisanti, Laygo, & Junginger, 2003; Nieves, Draine, & Solomon, 2000). Available studies also indicate that the self-report obtained via online surveys is reliable compared to self-report obtained via other means (Ramo, Hall, & Prochaska, 2011; Sanders et al., 2010). It should be noted that evidence suggests that many persons actively experiencing psychotic symptoms are able to provide reliable self-report (Bell, Fiszdon, Richardson, Lysaker, & Bryson, 2007).

Participants were recruited from an array of organizations across the U.S. using online and in-person advertisements. Organizations approached and asked to circulate an advertisement for the survey include every state chapter as well as many city chapters of the National Alliance on Mental Illness (NAMI), all state chapters of Mental Health
America, all chapters of the Depression and Bipolar Support Alliance, the International Association of Peer Supporters, consumer run organizations across the U.S. (identified from internet searches specific to each U.S. state), Divisions of Mental Health Services at the state level of all U.S. states, and a chronic suicide support forum. These organizations were asked if they would be willing to circulate an online advertisement through online (email listservs, e-newsletters, and posts on websites and social media) or in-person means (fliers distributed to members in groups and other meetings or made available in commonly visited agency areas). Administrators of Facebook groups pertaining to mental health topics were asked to grant permission for the investigator to post an announcement for the survey in the Facebook group. An announcement for the survey was additionally posted on the website of We Search Together, a collaboration between the Depression and Bipolar Support Alliance and the University of Michigan intending to assist in the recruitment of persons with mental illness in research studies. It is known that samples recruited from NAMI are overwhelmingly Non-Hispanic Caucasian and female and it was anticipated that respondents recruited from the above organizations would possess limited diversity. As such it was sought to recruit respondents from organizations expected to have more diverse members: public mental health treatment organizations, and community-based non-profit organizations not specific to persons with mental illness. Many mental health treatment organizations in Utah and Pennsylvania were contacted and asked to allow paper fliers to be available in areas commonly visited by clients (e.g. lobbies), with fliers made available in 17 public treatment units in Utah and approximately 4 in Pennsylvania. Additionally, a range of non-profit organizations—primarily in Utah and Pennsylvania—were solicited to post
any type of online or in-person advertisement for the survey. Organizations approached included low-cost medical providers, housing assistance agencies, disability rights organizations, food banks, and religious organizations believed to have racially diverse congregations. Unfortunately, nearly all organizations not specific to mental illness were unwilling to post an announcement for the survey, with most respondents being recruited from organizations focusing on mental health (details are provided in the Results section). Many organizations were offered to be paid a small fee ($50-$100) for including an announcement in their e-newsletter. All advertisements for the survey included the web address from which prospective participants could obtain more information regarding the study and complete the survey after providing informed consent. Eligibility criteria included being at least 18 years of age, residing in the United States, and having been diagnosed with a mental illness, per self-report. Most researchers define the term SMI as having a diagnosis of schizophrenia/schizoaffective, bipolar, or major depressive disorder; however, other researchers also consider persons with posttraumatic stress disorder or borderline personality disorder to have a serious mental illness. Different still, SAMHSA defines SMI as having a diagnosable mental disorder that results in serious functional impairment that significantly interferes with at least one major life activity (SAMHSA, 2014). Based on these differing definitions of SMI, it was decided to create eligibility criteria of having been diagnosed with any mental illness, with it being anticipated that most respondents would indeed have schizophrenia/schizoaffective, bipolar, or major depressive disorder. Given the types of organizations from which respondents were recruited, it was anticipated that most respondents, including those not diagnosed with schizophrenia/schizoaffective, bipolar,
or major depressive disorder, would experience significant impairments due to their mental illness. There were no exclusion criteria.

In pursuit of recruiting a sample that resembles Americans with SMI—regarding race/ethnicity and gender—estimates of these characteristics were made of Americans with SMI. Based on the literature reviewed below, it is estimated that between 50% and 66% of persons with SMI are female and that Americans with SMI racially resemble the American population—63% Non-Hispanic White, 17% Hispanic, 5% Asian, 13% African American, and 1% American Indian (U.S. Census Bureau, 2015). It was expected with all these targeted efforts, the sample recruited would fall within these estimates regarding race/ethnicity and gender. It was originally planned to compensate respondents with a $5 e-gift card for completing a slightly longer survey. It was believed that providing such compensation could enable recruiting more than 600 participants (the targeted sample size). As such, it was planned to evaluate the racial and gender makeup of the sample six times during recruitment—at intervals of 100 participants recruited. If the sample obtained at each point was not representative of this population with regards to race/ethnicity and gender, it was planned to alter recruitment strategies and to focus on recruiting respondents from organizations believed to serve more gender and racially diverse populations (e.g. mental health treatment organizations and non-profit organizations not specific to mental health). Unfortunately, shortly after recruitment began with respondents being compensated with a $5 e-gift card, it became apparent that at least one respondent completed the survey more than 50 times with it appearing likely that the survey was completed with the assistance of a computer program. This resulted
in the decision to shorten the survey to that presented in the Appendices and, instead of compensating respondents with a $5 e-gift card, to enter respondents into a raffle to win one of 15 $50 e-gift cards. This decision was based on the experience the investigator had conducting an online survey of adults with an adult relative with SMI (Labrum & Solomon, 2015a) that was not believed to experience respondents taking the survey multiple times. In this previous study, respondents were not offered compensation beyond the option of being entered into a raffle to win an e-gift card. Due to the decision to no longer compensate respondents, it was anticipated that recruiting more than the target sample size would be unlikely. As such it was decided to attempt to recruit respondents from as many agencies thought to serve diverse populations (public mental health treatment organizations, and non-profit organizations not specific to mental health) as possible. However, it was also decided to not limit the number of respondents recruited from organizations known to supply samples that are disproportionately Non-Hispanic Caucasian and female (NAMI and other education and support organizations for persons with mental illness).

Between December 29, 2015 and April 1, 2017, 634 persons began taking the survey, with 537 (85%) persons completing. There were not significant differences regarding the race/ethnicity or gender of respondents who began the survey but did not complete vs. those who did complete. Nine respondents who completed the survey provided incorrect responses to an instructed response question (“Please select ‘3’ for this item”). They were considered careless responders (Meade & Craig, 2012) and their data were removed from the sample. If respondents selected “Other” in response to the
question “In relation to this family member are you his/her?”, they were asked to “Please specify”. From the responses five respondents entered (e.g. “myself”, “self”) and the identical demographic information they provided regarding themselves and their reference relatives, it was thought that these five respondents reported on themselves regarding their reference relatives. As such, their data were removed from the sample. The final sample employed in the present study consists of 523 respondents.

Respondents indicated that they became aware of the present study through the National Alliance on Mental Illness (24%, \(n = 127\)), Depression and Bipolar Support Alliance (23%, \(n = 118\)), outpatient mental health treatment (6%, \(n = 31\)), inpatient mental health treatment (1%, \(n = 6\)), the International Association of Peer Supporters (3%, \(n = 16\)), and other (43%, \(n = 225\)). Participants who selected “other” were asked to specify the type of organization from which they became aware of the study. Thirty did not provide an answer. Of the 195 participants who did provide a response, responses were classified as consumer run organizations (\(n = 68\)), Facebook groups (\(n = 58\)), state division of mental health listservs (\(n = 12\)), a chronic suicide support forum (\(n = 9\)), We Search Together (\(n = 7\)), and miscellaneous (\(n = 41\)), which consists of referrals from friends and family and nondescript responses such as “online”. Participants were asked but not required to provide the zip code they have primarily resided in in the past 6 months. Ninety percent (\(n = 473\)) provided a valid zip code, with respondents living in 42 states in the U.S. (not including AL, DE, HI, MS, MT, ND, NV, and WV) and the District of Columbia.

Representative Characteristics of Americans with SMI
While there is variability among representative samples, mild evidence suggests that women are more likely than men to have SMI. According to the National Comorbidity Survey Replication (NCS-R), women are significantly more likely to have major depressive disorder with an odds ratio compared to men of 1.4 (Kessler et al., 2003). Results from the National Epidemiologic Survey on Alcoholism and Related Conditions (NESARC) similarly found that women are nearly twice as likely as men to have major depressive disorder in the past 12 months (Hasin et al., 2005). More recently, the 2013 National Survey on Drug Use and Health (NSDUH) reports that the 12-month prevalence rate of major depressive episode among women is more than 150% of that of men (SAMHSA, 2014). Pertaining to bipolar disorder, while the NCS-R reports that gender is not related to rates of bipolar disorder (Merikangas et al., 2007), the Medical Expenditure Panel Survey 2004-2006, found that women are significantly more likely to have the disorder with nearly two-thirds of all persons with bipolar disorder being women (Shippee et al., 2011). While some debate exists (McGrath, 2005), from national and international studies it appears most likely that men and women are equally likely to develop schizophrenia with a systematic review finding that there is not a significant difference in the rate of schizophrenia between genders (Saha, Chant, Welham, & McGrath, 2005). Taking the findings of these studies, it is believed that between 50% and 66% of persons with SMI are female with remaining persons being male.

Unfortunately, little agreement emerges from representative samples regarding the racial makeup of Americans with SMI. The (NESARC) estimates that major depressive disorder has a higher prevalence rate among Native American and White
persons than among other races (Hasin et al., 2005). Similarly, the 2013 NSDUH estimates that major depressive episode occurs in higher rates among White, American Indian, and Multiple-Race persons (SAMHSA, 2014). However, according to the NCS-R, while not statistically significant, the inverse is found—White persons are less likely to have depressive disorder than are persons of all other races (Kessler et al., 2003).

Regarding bipolar disorder, the American Expenditure Panel Survey 2004-2006, reports that White and Multiple-race persons are significantly more likely to have bipolar disorder, with Hispanic persons being significantly less likely (Shippee et al., 2011). In contract, the NCS-R found that race/ethnicity was not related to rates of bipolar disorder (Merikangas et al., 2007). More still, representative samples indicate that opposed to White persons being more likely to have schizophrenia, Black persons are the racial group at the greatest risk of having schizophrenia (Bresnahan et al., 2007; Robins & Regier, 1991), but then there are concerns about biases in diagnostic assessments (Escobar, 2012). Due to the lack of consistent findings regarding the racial makeup of Americans with SMI, it is believed that Americans with SMI racially resemble the American population—63% Non-Hispanic White, 17% Hispanic, 5% Asian, 13% African American, and 1% American Indian (U.S. Census Bureau, 2015).

**Measures**

All data was collected from participant report through an online survey, developed with the input of two mental health professionals and pretested on three persons with SMI. The survey was estimated to take approximately 20 minutes to complete. Once a respondent began the survey, it remained open until finished or a week
had passed, allowing respondents to complete the survey in more than one sitting. The median length of time recorded from the beginning of a survey to its completion was 16.8 minutes with a mean ± SD of 67.3 ± 454 minutes (range 7.5-768). Respondents were asked to provide information regarding themselves, a reference relative, and the interactions they and this reference relative had with each other in the past 6 months, including possible acts of violence. The exact operationalization of variables not provided in Chapter 2 can be located in the file “Questionnaire for online survey” in the Appendices with the question numbers provided in parentheses. If respondents selected “Other” in response to a question in the questionnaire, they were asked to “Please specify”.

**Reference relatives.** It was described to respondents that “For the purpose of this study a family member is defined as any person you are related to by birth or law or a romantic partner whom you have been in a relationship with for at least 6 months”. Respondents then were asked to provide information regarding the adult family member with whom they spent the most time with in the past 6 months, making sure to provide information about the same person in all questions asking about “this family member”. Reference relatives are defined as the single family member respondents provided information about.

**Dependent Variable.** (Q171-190). Violence perpetrated by persons with SMI towards reference relatives in since first being diagnosed with a mental health condition and in the past 6 months were measured with adapted questions from the MacArthur Community Violence Interview ([MCVI] Monahan et al., 2001). This measure is by far
the most commonly used instrument in exploring violence by persons with SMI (Desmarais et al., 2014; Monahan et al., 2001; Steadman et al., 1998; Swanson et al., 2006) and was based on the Conflict Tactics Scale (Straus & Gelles, 1990). Determined by severity, the MCVI classifies violent acts as “other aggressive acts” or “acts of violence”. These categories have more recently been labeled as acts of “minor violence” and acts of “serious violence”, respectively (Labrum & Solomon, 2016; Swanson et al., 2006), and were labeled as such in this analysis. Identical to the MCVI, acts of “minor violence” were defined as an incident of battery not resulting in injury or involving the use of a weapon. Acts of “serious violence” were defined as an incident of battery resulting in injury or involving the use of a weapon or any act of being threatened with a knife, gun, or other lethal object with the weapon in hand. This definition is slightly modified from the MCVI as it does not include acts of sexual violence. Sexual violence was not assessed as the focus of this study is physical violence. For descriptive purposes, acts of minor and serious violence will be differentiated. Consistent with other studies on family violence by this population (Kageyama et al., 2015; Labrum & Solomon, 2016; Vaddadi et al., 2002), however, in performing inferential analyses, acts of minor and serious violence will be combined and classified as “acts of violence”.

It was decided for the present study to rely on the self-report of persons with SMI in measuring family violence by this population as 40% of all family violence in the U.S. is not reported to authorities (Harlow et al., 2005) and because most studies examining family violence by this population have relied on the report of family members (Kageyama et al., 2016; Labrum & Solomon, 2016; Swan & Lavitt, 1988). In support of
using the self-report of persons with SMI to measure perpetration of violence by this population, of all possible report sources (self-report, collateral-report, and official records) it has been found that self-report of persons with SMI yields the majority of all reported events of violence by this population (Monahan et al., 2001). Further, in a meta-analysis of 20 studies, it was discovered that while estimates of violence risk relying on self-report are slightly lower than those relying on official records, the difference is not statistically significant (Fazel, Gulati, Linsell, Geddes, & Grann, 2009).

**Independent variables.**

*Perpetrator factors.* Age was measured with the question “How old are you now?” (Q3). Gender was measured with the question “What is your gender?” (Q4; response options = male, female). Race/ethnicity was measured with two questions (Q5: “Are you of Hispanic origin?”, response options = yes/no; Q6: “Which of these groups best describes you?”, response options = American Indian, Asian, Black, White, Other). Employment status was measured with the question “What is your current employment status?” (Q8; response options = employed full time, employed part time, retired, unable to work/disabled, unemployed, student). Marital status was measured with the question “What is your current marital status?” (Q9; response options = married or in a civil union, widowed, separated, divorced, never been married). Educational attainment was measured with the question “What is the highest level of education you have completed?” (Q10; response options = some high school, high school diploma or equivalent (GED), some college, bachelor's degree, graduate or professional degree). Annual income was measured with the question “What is an estimate of your total income for the past 12
months?” (Q11; response options = less than $5,000, $5,000 to $9,999, $10,000 to $19,999, $20,000 to $39,999, $40,000 to $59,999, $60,000 to $79,999, $80,000 or more). Primary mental health diagnosis was measured with the question “What is your primary mental health diagnosis? (Q12; response options = schizophrenia or schizoaffective disorder, bipolar disorder, major depression, non-major depression, anxiety related disorder, other). Age of onset of illness was measured with the question “At approximately what age were you first diagnosed with a mental health condition?” (Q13).

Arrest history for charges of alleged acts of violence was measured with two questions (Q22: “As an adult, have you ever been arrested?”, Q24: “Were any of these arrests the result of alleged acts of violence?”; Response options = yes/no) adapted from the MSMDV (Monahan et al., 2001). The following perpetrator variables were measured with questions with response options of “yes/no”: Psychiatric hospitalization (Q14: “In the past year have you been hospitalized for a mental health reason?”), Use of mental health medications (Q30: “In the past 6 months... Have you regularly taken prescribed mental health medications?”), Regular attendance of talk psychotherapy (Q31” “In the past 6 months...Have you regularly attended talk psychotherapy or counseling for a mental health concern?”), Receipt of referral case management (Q34: “In the past 6 months...Has a case manager or other mental health professional helped you meet your needs by referring or connecting you to community resources (examples are helping you with disability benefits or housing assistance, or connecting you with food banks)?”), Receipt of intensive case management (Q35: “In the past 6 months...Has a case manager or other mental health professional directly helped you meet your needs by personally assisting you with shopping, cooking, cleaning, transportation, or other activities of daily
living?”), Attendance of social, educational, or support groups (Q36: “In the past 6 months... Have you attended social, educational, or support groups for persons with mental illness, such as those offered through NAMI or DBSA?”), Attendance of self-help drug and alcohol services (Q37: In the past 6 months... Have you attended self-help drug and alcohol services such as alcoholics anonymous or other 12 step programs?”), Attendance of professional outpatient drug or alcohol treatment (Q38: “In the past 6 months... Have you attended professional outpatient drug or alcohol treatment?), Use of illegal drugs (Q43: “In the past 6 months... Have you ever used illegal drugs?”), History of ever committing serious violence (Q25: As an adult, have you ever committed physical violence towards another person that caused them a physical injury such as a bruise, cut, broken bone or tooth, or a wound?), History of being a victim of violence (Q27: “In the past 6 months... Have you received a physical injury as a result of being the victim of violence such as a bruise, cut, broken bone or tooth, or a wound?”).

Victim factors. Age was measured with the question “About how old is s/he now?” (Q67). Gender was measured with the question “What is h/is/her gender?” (Q68; response options = male, female). Race/ethnicity was measured with two questions (Q69: “Is s/he of Hispanic origin?”, response options = yes/no; Q70: “Which of these groups best describes him/her?”), response options = American Indian, Asian, Black, White, Other). Employment status was measured with the question “What is h/is/her current employment status?” (Q72; response options = employed full time, employed part time, retired, unable to work/disabled, unemployed, student). Marital status was measured with the question “What is his or her marital status?” (Q73; response options =
married or in a civil union, widowed, separated, divorced, never been married).

Educational attainment was measured with the question “What is the highest level of education s/he has completed?” (Q74; response options = some high school, high school diploma or equivalent (GED), some college, bachelor's degree, graduate or professional degree). Annual income was measured with the question “What is an estimate of his/her total income for the past 12 months?” (Q75; response options = less than $5,000, $5,000 to $9,999, $10,000 to $19,999, $20,000 to $39,999, $40,000 to $59,999, $60,000 to $79,999, $80,000 or more). Relationship type was measured with the question “In relation to this family member are you his/her?” (Q65; response options = parent, spouse or romantic partner, child, sibling, relative-in-law, friend, other family member). Primary mental health diagnosis was measured with two questions (Q76: “To your knowledge, has s/he been diagnosed with a mental illness?”, response options = yes/no; Q77: What is his/her primary mental health diagnosis?”, response options = schizophrenia or schizoaffective disorder, bipolar disorder, major depression, non-major depression, anxiety related disorder, other, don’t know).

Interaction factors. All interaction factors pertain to the past 6 months. Co-residence was measured with the question “In the past 6 months... Have you and this family member resided in the same residence” (Q82; response options = yes/no). Level of in-person contact was measured with the question “About how often did you have in-person contact with this family member?” (Q88; response options = not at all, less than once a month, once a month, once a week, more than once a week). Representative payee status was measured with two questions (Q28: “In the past 6 months... Has anyone
officially managed your money as your representative payee?”; Q85: “In the past 6 months... Has this family member officially managed your money as your representative payee?”, response options = yes/no). **Unofficial money management** was measured with two questions (Q28: “In the past 6 months... Has anyone unofficially managed your money?”; Q86: “In the past 6 months... Has this family member unofficially managed your money?”, response options = yes/no). **Frequency of financial assistance** provided by relatives to respondents was measured with the sum of two questions (Q101, 102), modified from a previous study on this topic and found to have a Cronbach’s alpha of .78 (Labrum & Solomon, 2016). In the present study, these two questions yielded a Cronbach’s alpha of .81. Total scores range from 0-8 with higher scores indicating more frequent financial assistance. **Level of caregiving** with activities of daily living was measured with the sum of seven questions (Q93-99) adapted from the Family Experiences Interview Schedule and pertain to assistance with grooming, household chores, shopping, cooking, transportation, medication compliance, and keeping appointments. The original 10 questions have been found to have an internal reliability greater than .80 (Tessler & Gamache, 1993). In the present study, these questions produced a Cronbach’s alpha of .81. Total scores range from 0 to 28 with higher scores indicating greater caregiving. **Limit-setting practices** were measured through the sum of 10 questions (Q103-112) adapted from the Family Limit-Setting Scale (Labrum, Walk, & Solomon, 2016). The Family Limit-Setting Scale has been found to have several indicators of construct validity including a two-factor structure (Routine Limit-Setting and Crisis Prevention Limit-Setting) that is highly generalizable to Caucasian, Non-Caucasian, male, and female respondents (Labrum et al., 2016). In the present study,
these 10 questions yielded a Cronbach’s alpha of .84. Total scores range from 0 to 40 with higher scores indicating greater levels of limit-setting practices.

There is considerable variation in the measurement of psychological abuse among family violence studies (Sooryanarayana, Choo, & Hairi, 2013; Winstok & Sowan-Basheer, 2015). Commonalities among various psychological abuse measures are that abuse is considered to include acts of criticism, yelling, destruction of property, and threats of minor violence (Thompson, Basile, Hertz, & Sitterle, 2006). As such, psychological abuse by respondents towards reference relatives and psychological abuse by reference relatives towards respondents were each measured with questions assessing these four commonalities. Psychological abuse by persons with SMI towards family members has previously been measured in a near identical manner and yielded a Cronbach’s alpha of .81 (Labrum, 2016). Respondents were separately asked if four specific psychologically abusive act occurred since they were first diagnosed with a mental health condition. If respondents responded affirmatively, they were asked how many times this abusive act occurred in the past 6 months (Responses coded: 0 times = 0, 1 = 1, 2 to 4 = 2, 5 to 9 = 3, 10 to 19 = 4, 20 or more = 5). If they responded non-affirmatively, a 0 was imputed for how many times this act occurred in the past 6 months. Values for how frequently these four psychologically abusive acts occurred in the past 6 months were then summed. Total scores range from 0 to 20 with higher scores indicating greater levels of psychological abuse. Scores of 5 or more were classified as the presence of psychological abuse with scores below 5 being classified as the absence of psychological abuse. This classification is in agreement with previous family violence studies (Biggs, Manthorpe, Tinker, Doyle, & Erens, 2009; Naughton et al., 2011),
adjusted for the briefer duration of inquiry in the present study (i.e. past 6 months vs. 1 year). In the present study, values imputed or indicated by respondents pertaining to the frequency of psychologically abusive acts by respondents towards reference relatives (Q158, 160, 172, 170) and vice versa (Q123, 125, 127, 135) in the past 6 months, yielded Cronbach’s alphas of .75 and .77, respectively. Criticism and hostility—components of expressed emotion—are extremely similar to psychological abuse and therefore was not measured. The third component of expressed emotion, emotional over-involvement, was measured with the sum of three questions with response options of yes/no (Q299: “Is this family member over protective with you?”; Q300: “Does this family member get upset when you don't check in with him/her?”; Q301: “Is this family member always nosing into your business?”), adapted from the Level of Expressed Emotion Scale, which has demonstrated having sound psychometric properties (Cole & Kazarian, 1988). In the present study, these three questions yielded a Cronbach’s alpha of .66. Total scores can range from 0 to 3 with higher scores indicating greater emotional over-involvement.

Violence committed by the reference relative towards the respondent was measured with adapted questions (Q136-153) from the MCVI (Monahan et al., 2001). Acts of violence by reference relatives towards respondents was classified identically to acts of violence by respondents towards reference relatives, with differentiation made between acts of “minor violence” and “serious violence” in descriptive analyses but not in inferential analyses.

Community factors. Perceived level of neighborhood disadvantage was measured with the question: “Do you believe that people living in your neighborhood experience disadvantage when compared to other individuals in American society?”
Neighborhood poverty was not assessed as it has previously been found to not be related to family violence by persons with SMI (Labrum & Solomon, 2015b).

Analysis

Power analysis. A power analysis regarding the aim of the study was conducted. Using estimates for the association of three variables (level of limit setting practices, representative payee status, and regular attendance of mental health treatment) with family violence perpetrated by persons with SMI in 22% of cases (Labrum & Solomon, 2016) and established power calculation algorithms (Demidenko, 2007), it was estimated that we would be able to detect small to moderate effect sizes with statistical power of .80 at the significance level of .05 using a sample size of 600. Only 12% of cases in the present study involved violence by respondents towards reference relatives. As a result, power analysis was conducted for similar variables using the associations of these variables with violence by respondents found in the present study, with the rate of violence of 12%. Unfortunately, the statistical power for detecting the found effect sizes for level of limit-setting practices, representative payee status, and regular use of mental health medications were mostly less than predicted at .99, .29, and .51, respectively.

Analysis plan. To enable more accessible results, odds ratios were estimated as opposed to logit coefficients, necessitating that independent variables be dichotomies. Ordinal and continuous variables were dichotomized at the median. Non-dichotomous categorical variables were dichotomized where believed to be the most meaningful (e.g.
not employed full-time vs. employed full-time). Regarding, the hypothesis (Persons with SMI who report perpetrator, interaction, or community risk factors and/or who report that their relative has victim risk factors, will be more likely to report committing acts of violence against their relative than will persons with SMI who do not report such risk factors), models were estimated with the dependent variable being the presence or absence of violence committed by persons with respondents towards their reference relatives. First, unadjusted odds ratios for independent variables were estimated. The variance inflation factor (VIF) for all variables in a specific domain (Perpetrator, Victim, Interaction) with statistically significant unadjusted OR were computed, with VIFs ranging from 1.03 to 1.59. Adjusted odds ratios were then estimated by conducting a forward stepwise logistic regression model for each domain of factors. All independent variables in a specific domain with statistically significant unadjusted OR were permitted to enter and leave the model based on an alpha level of .05. Performing backward instead of forward stepwise logistic regression resulted in identical results. Then all variables with statistically significant adjusted OR were entered into a final model. Age of relatives was the only victim factor with a statistically significant unadjusted OR. As such, a multivariate model specific to victim factors was not computed. Age of relatives was included in the final model. The only community factor, perceived neighborhood disadvantage, did not have a statistically significant unadjusted OR and was not included in the final model. VIFs for the eight variables included in the final model were computed and ranged from 1.02 to 1.55. The \textit{pseudo} $R^2$ was estimated for the final model. To examine the variance explained by each block of factors (perpetrator, victim, and interaction), the \textit{pseudo} $R^2$ was estimated for the final model with each block of
factors separately removed. The adjusted partial $pseudo R^2$ directly attributable to perpetrator, victim, and interaction factors was estimated by subtracting the $pseudo R^2$ for the model not including the block of factors of interest from the $Pseudo R^2$ of the final model.

**Human Subjects**

Data collection took place under the monitoring of the University of Pennsylvania’s Institutional Review Board. Prior to providing any information, participants were required to indicate their consent to participate in the study. Through the informed consent form, respondents were fully informed of the purpose of the study, the study procedures, and the sensitive topics about which they would be asked. It is possible that answering questions about sensitive topics may have caused respondents emotional distress. In an effort to prevent such distress, participants were informed in advance of the sensitive topics involved in the survey and that they may discontinue their participation at any time. All efforts possible were made to protect against the risk of loss of confidentiality. Data files were stored on a password protected computer. The survey was conducted using Qualtrics (for information on security measures taken by Qualtrics please see [http://www.qualtrics.com/security-statement/](http://www.qualtrics.com/security-statement/)). The only potentially identifying information respondents were asked to provide were the zip codes in which they have resided in the most over the past 6 months and their email address (if they wished to be entered in a raffle to possibly win one of 15 $50 gift cards). However, participants were not required to provide their zip code or email address to participate in this study. Participants were informed that there may be no benefits for persons
participating in this study. The benefit of conducting this study is the potential to better understand the occurrence of family violence by persons with SMI and the implications this knowledge may have for reducing such violence.
CHAPTER 3: RESULTS

Sample Characteristics

The mean ± SD age of respondents was 43.1 ± 14.39 (range 18-73). Nearly 80% ($n = 414$) of respondents were female and nearly 90% ($n = 460$) were Non-Hispanic Caucasian. Nearly half of respondents had a college degree with 27% ($n = 144$) having attained a bachelor’s degree and 20% ($n = 107$) a professional or graduate degree. One third were married or in a civil union ($n = 167$) and employed full-time ($n = 165$), with 23% being unable to work/disabled ($n = 123$). The median category of respondents’ annual income was $10,000-$19,999. Primary diagnoses were bipolar (39%, $n = 203$), major depression (30%, $n = 154$), schizophrenia/schizoaffective (7%, $n = 36$), anxiety related (12%, $n = 64$), non-major depression (4%, $n = 20$), and other (9%, $n = 46$). Respondents who selected “Other” were asked to specify with responses being post traumatic stress, attention deficit/hyperactivity, borderline personality, and eating disorders. Sixteen percent ($n = 83$) have been hospitalized for a mental health reason in the past 12 months and 84% ($n = 442$) have regularly taken mental health medications in the past 6 months. In relation to their reference relatives, respondents were most commonly spouses/romantic partners (46%, $n = 239$), children (27%, $n = 143$), or siblings (10%, $n = 53$). Seventy percent ($n = 367$) of respondents resided with their reference relative in the past 6 months.

The mean ± SD age of reference relatives was 50.32 ± 16.89 (range 18-87). Half of reference relatives were female ($n = 260$) with 86% ($n = 450$) being Non-Hispanic Caucasian. Relatives had similar levels of education attainment as the respondents, with
26% (n = 136) having a bachelor’s degree and 19% (n = 98) having a professional or graduate degree. More than half were married or in a civil union (n = 286). Half were employed full-time (n = 259), with 10% being unable to work/disabled (n = 54). The median category of relatives’ annual income as reported by respondents was $20,000-$39,999. One third of relatives were reported to have been diagnosed with mental illness. Primary diagnoses reported were most often anxiety related (7%, n = 36), major depression (6%, n = 132), bipolar (5%, n = 28), non-major depression (5%, n = 26), and other (5%, n = 29). For more detailed information regarding the characteristics of respondents and reference relatives, see Table 1.
<table>
<thead>
<tr>
<th>Characteristics of respondents</th>
<th>Characteristics of reference relatives</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>79 (414)</td>
</tr>
<tr>
<td>Male</td>
<td>21 (109)</td>
</tr>
<tr>
<td>Race/ethnicity</td>
<td></td>
</tr>
<tr>
<td>Caucasian Non-Hispanic</td>
<td>88 (460)</td>
</tr>
<tr>
<td>Hispanic</td>
<td>3 (14)</td>
</tr>
<tr>
<td>African American</td>
<td>5 (26)</td>
</tr>
<tr>
<td>Asian</td>
<td>1 (7)</td>
</tr>
<tr>
<td>American Indian</td>
<td>0.4 (2)</td>
</tr>
<tr>
<td>Other (mixed race)</td>
<td>3 (14)</td>
</tr>
<tr>
<td>Marital status</td>
<td></td>
</tr>
<tr>
<td>Married or in a civil union</td>
<td>32 (167)</td>
</tr>
<tr>
<td>Widowed, Separated, or Divorced</td>
<td>23 (122)</td>
</tr>
<tr>
<td>Never been married</td>
<td>45 (234)</td>
</tr>
<tr>
<td>Level of education</td>
<td></td>
</tr>
<tr>
<td>Some high school</td>
<td>1 (4)</td>
</tr>
<tr>
<td>High school diploma or equivalent</td>
<td>9 (49)</td>
</tr>
<tr>
<td>Some college</td>
<td>42 (219)</td>
</tr>
<tr>
<td>Bachelor’s degree</td>
<td>27 (144)</td>
</tr>
<tr>
<td>Graduate or professional degree</td>
<td>20 (107)</td>
</tr>
<tr>
<td>Employment status</td>
<td></td>
</tr>
<tr>
<td>Employed full time</td>
<td>32 (165)</td>
</tr>
<tr>
<td>Employed part time</td>
<td>21 (110)</td>
</tr>
<tr>
<td>Retired</td>
<td>5 (29)</td>
</tr>
<tr>
<td>Unable to work/disabled</td>
<td>23 (123)</td>
</tr>
<tr>
<td>Unemployed</td>
<td>9 (48)</td>
</tr>
<tr>
<td>Student</td>
<td>9 (48)</td>
</tr>
<tr>
<td>Annual income</td>
<td></td>
</tr>
<tr>
<td>Less than $5,000</td>
<td>19 (98)</td>
</tr>
<tr>
<td>$5,000-$9,999</td>
<td>15 (78)</td>
</tr>
<tr>
<td>$10,000-$19,999</td>
<td>20 (106)</td>
</tr>
<tr>
<td>$20,000-$39,999</td>
<td>25 (133)</td>
</tr>
<tr>
<td>$40,000 to $59,999</td>
<td>11 (56)</td>
</tr>
<tr>
<td>$60,000 to $79,999</td>
<td>5 (24)</td>
</tr>
<tr>
<td>$80,000 or more</td>
<td>5 (28)</td>
</tr>
<tr>
<td>Primary mental health disorder</td>
<td>7 (36)</td>
</tr>
<tr>
<td>--------------------------------------------------------------------</td>
<td>--------</td>
</tr>
<tr>
<td>Schizophrenia or schizoaffective</td>
<td>39 (203)</td>
</tr>
<tr>
<td>Bipolar</td>
<td>30 (154)</td>
</tr>
<tr>
<td>Major depression</td>
<td>4 (20)</td>
</tr>
<tr>
<td>Non-major depression</td>
<td>12 (64)</td>
</tr>
<tr>
<td>Anxiety related disorder</td>
<td>9 (46)</td>
</tr>
<tr>
<td>Other (PTSD, ADD/ADHD, borderline PD)</td>
<td>NA</td>
</tr>
<tr>
<td>Unknown</td>
<td>NA</td>
</tr>
<tr>
<td>None</td>
<td></td>
</tr>
<tr>
<td>Relation to reference relative</td>
<td></td>
</tr>
<tr>
<td>Parent</td>
<td>7 (37)</td>
</tr>
<tr>
<td>Spouse/romantic partner</td>
<td>46 (239)</td>
</tr>
<tr>
<td>Child</td>
<td>27 (143)</td>
</tr>
<tr>
<td>Sibling</td>
<td>10 (53)</td>
</tr>
<tr>
<td>Relative-in-law</td>
<td>1 (6)</td>
</tr>
<tr>
<td>Friend</td>
<td>5 (28)</td>
</tr>
<tr>
<td>Other family member (aunt, grandchild, niece, cousin)</td>
<td>3 (17)</td>
</tr>
<tr>
<td>Psychiatric hospitalization past 12 mo.</td>
<td>16 (83)</td>
</tr>
<tr>
<td>Regularly taking MH medications past 6 mo.</td>
<td>84 (442)</td>
</tr>
<tr>
<td>Regular attendance of psychotherapy past 6 mo.</td>
<td>66 (347)</td>
</tr>
<tr>
<td>Receipt of referral case management past 6 mo.</td>
<td>22 (117)</td>
</tr>
<tr>
<td>Receipt of intensive case management past 6 mo.</td>
<td>8 (42)</td>
</tr>
<tr>
<td>Attendance of MH social, educational, or support groups past 6 mo.</td>
<td>46 (242)</td>
</tr>
<tr>
<td>Attendance of professional outpatient drug and alcohol treatment past 6 mo.</td>
<td>5 (25)</td>
</tr>
<tr>
<td>Attendance of self-help drug and alcohol services</td>
<td>16 (85)</td>
</tr>
<tr>
<td>Ever commit serious violence</td>
<td>15 (79)</td>
</tr>
<tr>
<td>Co-residing with relative past 6 mo.</td>
<td>70 (367)</td>
</tr>
</tbody>
</table>

Abbreviations: mo., months; MH, mental health; PTSD, post traumatic stress disorder, ADD/ADHD, attention deficit/hyperactivity disorder; PD, personality disorder.
Five percent ($n = 26$) of respondents reported having committed serious violence towards their reference relatives, since first being diagnosed with a mental health condition. Twenty one percent ($n = 110$) of respondents reported having only committed minor violence towards reference relatives in the same time period. Combined, 26% ($n = 136$) of respondents committed any violence against their reference relatives, since first being diagnosed with a mental health condition.

Two and a half percent ($n = 13$) of respondents reported have committed serious violence towards reference relatives, in the past 6 months, with 10% ($n = 51$) reporting having only committed minor violence towards references relatives. Combined, 12% ($n = 64$) of respondents reported having committed any violence towards reference relatives in the past 6 months. Information regarding rates of respondents having perpetrated specific acts of violence towards reference relatives are presented in Table 2. As indicated in Table 2, the most common act of violence respondents committed towards reference relatives in the past 6 months were having “pushed, grabbed, or shoved” them.

**Rates of Victimization**

Nine percent ($n = 48$) of respondents reported that their reference relative committed serious violence towards them, since they were first diagnosed with a mental health condition. Fifteen percent ($n = 81$) of respondents reported that their reference relative committed only minor violence towards them. Combined, 25% ($n = 129$) of respondents reported that their reference relatives committed any violence against them, since they were first diagnosed with a mental health condition.
In the past 6 months, 4% \((n = 23)\) of respondents reported that their reference relative committed serious violence towards them. Eight percent \((n = 44)\) of respondents reported that their reference relative committed only minor violence towards them. Combined, 13% \((n = 67)\) of respondents reported that their reference relatives committed any violence against them, in the past 6 months. Information regarding rates of respondents having been victims of specific acts of violence by reference relatives are presented in Table 3. As indicated in Table 3, the most common act of violence respondents were victims of in the past 6 months were “pushed, grabbed, or shoved”.

**Co-occurrence of Perpetration and Victimization of Violence**

Fifty six percent \((n = 76)\) of respondents who committed any violence towards reference relatives since first being diagnosed with a mental illness, reported being the victim of any violence by reference relatives in the same period \(\chi^2 (1, N = 523) = 96.39, p < .001\). Forty percent \((n = 26)\) of respondents who committed any violence towards reference relatives in the past 6 months reported being the victim of any violence by reference relatives in the past six months \(\chi^2 (1, N = 523) = 50.51, p < .001\).
Table 2. Rates of violent acts committed by respondents towards reference relatives in the past 6 months (N = 523)

<table>
<thead>
<tr>
<th>Acts constituting minor violence if not resulting in injury</th>
<th>0 % (n)</th>
<th>1 % (n)</th>
<th>2 to 4 % (n)</th>
<th>5 to 9 % (n)</th>
<th>10 to 19 % (n)</th>
<th>20 or more % (n)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thrown something</td>
<td>94 (491)</td>
<td>2 (10)</td>
<td>3 (17)</td>
<td>1 (4)</td>
<td>0.2 (1)</td>
<td>0 (0)</td>
</tr>
<tr>
<td>Pushed, grabbed, or shoved</td>
<td>91 (476)</td>
<td>3 (17)</td>
<td>4 (20)</td>
<td>1 (6)</td>
<td>0.6 (3)</td>
<td>0.2 (1)</td>
</tr>
<tr>
<td>Slapped</td>
<td>95 (497)</td>
<td>2 (13)</td>
<td>1 (6)</td>
<td>1 (5)</td>
<td>0 (0)</td>
<td>0.4 (2)</td>
</tr>
<tr>
<td>Kicked, bitten, or choked</td>
<td>98 (513)</td>
<td>1 (4)</td>
<td>1 (6)</td>
<td>0 (0)</td>
<td>0 (0)</td>
<td>0 (0)</td>
</tr>
<tr>
<td>Hit with a fist or object or beaten up</td>
<td>97 (510)</td>
<td>1 (5)</td>
<td>0.6 (3)</td>
<td>0.6 (3)</td>
<td>0.4 (2)</td>
<td>0 (0)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Acts constituting serious violence</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Threatened with a lethal object in hand</td>
<td>99 (522)</td>
<td>0 (0)</td>
<td>0.2 (1)</td>
<td>0 (0)</td>
<td>0 (0)</td>
<td>0 (0)</td>
</tr>
<tr>
<td>Used a knife or gun</td>
<td>99 (522)</td>
<td>0 (0)</td>
<td>0 (0)</td>
<td>0.2 (1)</td>
<td>0 (0)</td>
<td>0 (0)</td>
</tr>
<tr>
<td>Victim received an injury</td>
<td>98 (511)</td>
<td>1 (5)</td>
<td>1 (4)</td>
<td>01 (3)</td>
<td>0 (0)</td>
<td>0 (0)</td>
</tr>
<tr>
<td>Acts constituting minor violence if not resulting in injury</td>
<td>0 % (n)</td>
<td>1 % (n)</td>
<td>2 to 4 % (n)</td>
<td>5 to 9 % (n)</td>
<td>10 to 19 % (n)</td>
<td>20 or more % (n)</td>
</tr>
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<td>--------------</td>
<td>--------------</td>
<td>----------------</td>
<td>-----------------</td>
</tr>
<tr>
<td>Thrown something</td>
<td>93 (487)</td>
<td>3 (18)</td>
<td>2 (12)</td>
<td>1 (5)</td>
<td>0 (0)</td>
<td>0.2 (1)</td>
</tr>
<tr>
<td>Pushed, grabbed, or shoved</td>
<td>89 (465)</td>
<td>5 (28)</td>
<td>4 (19)</td>
<td>1 (8)</td>
<td>0.2 (1)</td>
<td>0.4 (2)</td>
</tr>
<tr>
<td>Slapped</td>
<td>97 (508)</td>
<td>1 (4)</td>
<td>1 (7)</td>
<td>0.4 (2)</td>
<td>0.2 (1)</td>
<td>0.2 (1)</td>
</tr>
<tr>
<td>Kicked, bitten, or choked</td>
<td>97 (508)</td>
<td>1 (6)</td>
<td>1 (6)</td>
<td>0.4 (2)</td>
<td>0 (0)</td>
<td>0.2 (1)</td>
</tr>
<tr>
<td>Hit with a fist or object or beaten up</td>
<td>97 (509)</td>
<td>1 (6)</td>
<td>1 (4)</td>
<td>0.4 (2)</td>
<td>0 (0)</td>
<td>0.4 (2)</td>
</tr>
<tr>
<td>Acts constituting serious violence</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Threatened with a lethal object in hand</td>
<td>99 (518)</td>
<td>0.4 (2)</td>
<td>0.2 (1)</td>
<td>0.4 (2)</td>
<td>0 (0)</td>
<td>0 (0)</td>
</tr>
<tr>
<td>Used a knife or gun</td>
<td>99 (519)</td>
<td>0.4 (2)</td>
<td>0 (0)</td>
<td>0.2 (1)</td>
<td>0 (0)</td>
<td>0.2 (1)</td>
</tr>
<tr>
<td>Victim received an injury</td>
<td>96 (500)</td>
<td>1 (7)</td>
<td>2 (12)</td>
<td>0.2 (1)</td>
<td>0.2 (1)</td>
<td>0.4 (2)</td>
</tr>
</tbody>
</table>
Correlates of Violence

The hypothesis (Persons with SMI who report having perpetrator, interaction, or community risk factors and/or who report that their reference relative has victim risk factors, will be more likely to report committing acts of violence against their relative than will persons with SMI who do not report such risk factors) was tested by computing unadjusted and adjusted odds ratios for delineated perpetrator, victim, interaction, and community factors. Unadjusted OR and adjusted OR (from multivariate models specific to perpetrator and interaction factors) for the occurrence of violence in the past 6 months are presented in Tables 4, 5, and 6. Unadjusted OR indicate that without controlling for other variables, violence was significantly more likely when respondents were younger and other than Non-Hispanic Caucasian. Violence was also significantly more likely when respondents had attained less than a bachelor’s degree, used illegal drugs in the past 6 months, an earlier onset of illness, ever been arrested for charges related to alleged violence, ever committed serious violence, and been a victim of any serious violence in the past 6 months. Violence was significantly less likely when respondents reported regularly taking mental health medications and was significantly more likely when respondents had attended outpatient alcohol and drug treatment, both in the past six months. Unadjusted OR indicate that violence is significantly more likely when reference relatives were younger, provide more frequent caregiving and financial assistance, are more emotionally over-involved, and engage in greater limit-setting practices towards respondents. Unadjusted OR also indicate that violence is significantly more likely when respondents have been a victim of violence by reference relatives in the
past 6 months or when either they had committed psychological abuse towards reference relatives in the past 6 months or vice versa.

Adjusted OR from the final model are presented in Table 7. Adjusted OR from the final model reveal that violence was significantly more likely when respondents had a history of ever committing serious violence and when reference relatives were younger or engaged in greater limit-setting practices towards respondents. Additionally, violence was significantly more likely when respondents reported that they had been a victim of violence by reference relatives in the past 6 months or when they had committed psychological abuse towards reference relatives in the same period. Violence was significantly less likely when reference relatives committed psychological abuse towards respondents in the past 6 months. The pseudo $R^2$ was calculated for the final model and then separately for models that excluded the blocks of perpetrator, victim, and interaction factors, respectively. The pseudo $R^2$ from models with perpetrator factors removed ($R^2 = .33$), victim factors removed ($R^2 = .35$), and interaction factors removed ($R^2 = .22$) were each subtracted from the pseudo $R^2$ of the final model ($R^2 = .41$) to calculate the adjusted partial $R^2$ directly attributable to the blocks of perpetrator ($R^2 = .08$), victim factors ($R^2 = .06$), and interaction ($R^2 = .19$) factors.

Results indicate that the hypothesized relationships between five independent variables (history of ever committing serious violence, age of relatives, level of limit-setting practices used, violence committed by relatives towards respondents, and psychological abuse committed by respondents towards relatives) and family violence
was supported in multivariate analyses, with the hypothesized relationships of remaining independent variables not being supported.
<table>
<thead>
<tr>
<th></th>
<th>Rate of violence</th>
<th>Unadjusted OR (95% CI)</th>
<th>Adjusted OR (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Overall</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Overall</td>
<td>12 (64)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt; 44</td>
<td>16 (41)</td>
<td>2.04 (1.19, 3.51)**</td>
<td>2.04 (1.19, 3.51)**</td>
</tr>
<tr>
<td>≥ 44</td>
<td>9 (23)</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Gender</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>13 (53)</td>
<td>0.76 (0.38, 1.52)</td>
<td>-</td>
</tr>
<tr>
<td>Female</td>
<td>10 (11)</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Race/ethnicity</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other than Non-Hispanic Caucasian</td>
<td>21 (13)</td>
<td>2.08 (1.06, 4.10)*</td>
<td>2.08 (1.06, 4.10)*</td>
</tr>
<tr>
<td>Non-Hispanic Caucasian</td>
<td>11 (52)</td>
<td></td>
<td>2.08 (1.06, 4.10)*</td>
</tr>
<tr>
<td>Education Level</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Less than a bachelor’s degree</td>
<td>15 (42)</td>
<td>1.90 (1.10, 3.29)*</td>
<td>-</td>
</tr>
<tr>
<td>Bachelor’s degree or above</td>
<td>9 (22)</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Employment status</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not employed full-time</td>
<td>13 (46)</td>
<td>1.20 (0.67, 2.15)</td>
<td>-</td>
</tr>
<tr>
<td>Employed full-time</td>
<td>11 (18)</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Annual income</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt; $20,000</td>
<td>14 (39)</td>
<td>1.39 (0.81, 2.37)</td>
<td>1.39 (0.81, 2.37)</td>
</tr>
<tr>
<td>≥ $20,000</td>
<td>10 (25)</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Diagnosis</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Schizophrenia or bipolar disorder</td>
<td>12 (30)</td>
<td>1.05 (0.62, 1.78)</td>
<td>-</td>
</tr>
<tr>
<td>Other</td>
<td>12 (34)</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Use of illegal drugs past 6 mo.</td>
<td>12 (30)</td>
<td>1.05 (0.62, 1.78)</td>
<td>-</td>
</tr>
<tr>
<td>Yes</td>
<td>20 (21)</td>
<td>2.18 (1.23, 3.87)**</td>
<td>2.18 (1.23, 3.87)**</td>
</tr>
<tr>
<td>No</td>
<td>10 (43)</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Onset of illness</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt; 22</td>
<td>16 (41)</td>
<td>1.95 (1.14, 3.36)*</td>
<td>2.20 (1.21, 3.98)**</td>
</tr>
<tr>
<td>≥ 22</td>
<td>9 (23)</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Psychiatric hospitalization past year</td>
<td>17 (14)</td>
<td>1.58 (0.83, 3.02)</td>
<td>-</td>
</tr>
<tr>
<td>Yes</td>
<td>17 (14)</td>
<td>1.58 (0.83, 3.02)</td>
<td>-</td>
</tr>
<tr>
<td>No</td>
<td>11 (50)</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Arrested as an adult for alleged violence</td>
<td>31 (9)</td>
<td>3.59 (1.56, 8.28)**</td>
<td>-</td>
</tr>
<tr>
<td>Yes</td>
<td>31 (9)</td>
<td>3.59 (1.56, 8.28)**</td>
<td>3.59 (1.56, 8.28)**</td>
</tr>
<tr>
<td>No</td>
<td>11 (55)</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Ever committed serious violence</td>
<td>40 (32)</td>
<td>8.77 (4.93, 15.58)**</td>
<td>7.69 (4.16, 14.20)**</td>
</tr>
<tr>
<td>Yes</td>
<td>40 (32)</td>
<td>8.77 (4.93, 15.58)**</td>
<td>7.69 (4.16, 14.20)**</td>
</tr>
<tr>
<td>No</td>
<td>7 (32)</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Victimization of serious violence past 6 mo.</td>
<td>38 (16)</td>
<td>5.55 (2.78, 11.07)***</td>
<td>2.89 (1.31, 6.34)**</td>
</tr>
<tr>
<td>Yes</td>
<td>38 (16)</td>
<td>5.55 (2.78, 11.07)***</td>
<td>5.55 (2.78, 11.07)***</td>
</tr>
<tr>
<td>No</td>
<td>10 (48)</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Regular use of MH medications past 6 mo.</td>
<td>11 (48)</td>
<td>0.49 (0.26, 0.92)*</td>
<td>0.49 (0.26, 0.92)*</td>
</tr>
<tr>
<td>Yes</td>
<td>11 (48)</td>
<td>0.49 (0.26, 0.92)*</td>
<td>0.49 (0.26, 0.92)*</td>
</tr>
<tr>
<td>No</td>
<td>20 (16)</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Regular attendance of talk psychotherapy past 6 mo.</td>
<td>12 (41)</td>
<td>0.89 (0.52, 1.54)</td>
<td>0.89 (0.52, 1.54)</td>
</tr>
<tr>
<td>Yes</td>
<td>12 (41)</td>
<td>0.89 (0.52, 1.54)</td>
<td>0.89 (0.52, 1.54)</td>
</tr>
<tr>
<td>No</td>
<td>13 (23)</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Receipt of referral case management past 6 mo.</td>
<td>11 (13)</td>
<td>0.87 (0.46, 1.66)</td>
<td>0.87 (0.46, 1.66)</td>
</tr>
<tr>
<td>Yes</td>
<td>11 (13)</td>
<td>0.87 (0.46, 1.66)</td>
<td>0.87 (0.46, 1.66)</td>
</tr>
<tr>
<td>No</td>
<td>13 (51)</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Receipt of intensive case management past 6 mo.</td>
<td>21 (9)</td>
<td>2.11 (0.96, 4.67)</td>
<td>2.11 (0.96, 4.67)</td>
</tr>
<tr>
<td>Yes</td>
<td>21 (9)</td>
<td>2.11 (0.96, 4.67)</td>
<td>2.11 (0.96, 4.67)</td>
</tr>
<tr>
<td>No</td>
<td>11 (55)</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Attendance of MH social, educational, or support groups past 6 mo.</td>
<td>11 (26)</td>
<td>0.77 (0.45, 1.31)</td>
<td>0.77 (0.45, 1.31)</td>
</tr>
<tr>
<td>Yes</td>
<td>11 (26)</td>
<td>0.77 (0.45, 1.31)</td>
<td>0.77 (0.45, 1.31)</td>
</tr>
<tr>
<td>No</td>
<td>13 (38)</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Attendance of professional outpatient A&amp;D treatment past 6 mo.</td>
<td>28 (7)</td>
<td>3.01 (1.20, 7.52)*</td>
<td>3.01 (1.20, 7.52)*</td>
</tr>
<tr>
<td>Yes</td>
<td>28 (7)</td>
<td>3.01 (1.20, 7.52)*</td>
<td>3.01 (1.20, 7.52)*</td>
</tr>
<tr>
<td>No</td>
<td>11 (57)</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Attendance of self-help drug and alcohol services past 6 mo.</td>
<td>18 (15)</td>
<td>1.70 (0.90, 3.20)</td>
<td>1.70 (0.90, 3.20)</td>
</tr>
<tr>
<td>Yes</td>
<td>18 (15)</td>
<td>1.70 (0.90, 3.20)</td>
<td>1.70 (0.90, 3.20)</td>
</tr>
<tr>
<td>No</td>
<td>11 (49)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>---</td>
<td>---</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Abbreviations: OR, odds ratio; CI, confidence interval; mo., months; MH, mental health

* $p \leq .05$
** $p \leq .01$
*** $p \leq .001$

*Pseudo $R^2$ for multivariate model = .17

Table 5. Victim factors associated with violence by respondents towards reference relatives in the past 6 months ($N = 523$)

<table>
<thead>
<tr>
<th>Rate of violence</th>
<th>Unadjusted OR (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall</td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td></td>
</tr>
<tr>
<td>&lt; 52</td>
<td>12 (64)</td>
</tr>
<tr>
<td>≥ 52</td>
<td>20 (49)</td>
</tr>
<tr>
<td>5 (15)</td>
<td>-</td>
</tr>
<tr>
<td>Education</td>
<td></td>
</tr>
<tr>
<td>Less than a bachelor’s degree</td>
<td>14 (41)</td>
</tr>
<tr>
<td>Bachelor’s degree or above</td>
<td>10 (23)</td>
</tr>
<tr>
<td>Employment status</td>
<td></td>
</tr>
<tr>
<td>Not employed full-time</td>
<td>11 (30)</td>
</tr>
<tr>
<td>Employed full-time</td>
<td>13 (34)</td>
</tr>
<tr>
<td>Annual income</td>
<td></td>
</tr>
<tr>
<td>&lt; $20,000</td>
<td>16 (32)</td>
</tr>
<tr>
<td>≥ $20,000</td>
<td>10 (32)</td>
</tr>
<tr>
<td>Relationship type</td>
<td></td>
</tr>
<tr>
<td>Parent of respondent</td>
<td>8 (11)</td>
</tr>
<tr>
<td>Not parent of respondent</td>
<td>14 (53)</td>
</tr>
<tr>
<td>Diagnosed with a mental health condition</td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>13 (22)</td>
</tr>
<tr>
<td>No</td>
<td>12 (42)</td>
</tr>
</tbody>
</table>

Abbreviations: OR, odds ratio; CI, confidence interval

*All interaction factors pertain to the past 6 months

* $p \leq .05$
** $p \leq .01$
*** $p \leq .001$

*Pseudo $R^2$ for model only including age of victim = .06
Table 6. Interaction and community factors associated with violence by respondents towards reference relatives in the past 6 months (N = 523)

<table>
<thead>
<tr>
<th></th>
<th>Rate of violence</th>
<th>Unadjusted OR (95% CI)</th>
<th>Adjusted OR (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>% (n)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Overall</td>
<td>12 (64)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Interaction factors&lt;sup&gt;a&lt;/sup&gt;</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Financial assistance</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&gt; 2</td>
<td>18 (38)</td>
<td>2.39 (1.40, 4.08)&lt;sup&gt;***&lt;/sup&gt;</td>
<td></td>
</tr>
<tr>
<td>≤ 2</td>
<td>8 (26)</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Caregiving</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&gt; 8</td>
<td>18 (43)</td>
<td>2.67 (1.54, 4.65)&lt;sup&gt;***&lt;/sup&gt;</td>
<td></td>
</tr>
<tr>
<td>≤ 8</td>
<td>7 (21)</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Co-residence</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>14 (52)</td>
<td>1.98 (1.03, 3.82)&lt;sup&gt;*&lt;/sup&gt;</td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>8 (12)</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>In-person contact</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>More than once a week</td>
<td>13 (55)</td>
<td>1.72 (0.82, 3.61)</td>
<td></td>
</tr>
<tr>
<td>Once a week or less</td>
<td>8 (9)</td>
<td>-</td>
<td></td>
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<tr>
<td>Limit-setting</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&gt; 4</td>
<td>21 (48)</td>
<td>4.56 (2.52, 8.29)&lt;sup&gt;***&lt;/sup&gt;</td>
<td>2.29 (1.14, 4.60)&lt;sup&gt;*&lt;/sup&gt;</td>
</tr>
<tr>
<td>≤ 4</td>
<td>5 (16)</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Representative payee</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>3 (1)</td>
<td>0.23 (0.03, 1.76)</td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>13 (63)</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Unofficial money management</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>8 (5)</td>
<td>0.60 (0.23, 1.55)</td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>13 (59)</td>
<td>-</td>
<td></td>
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<tr>
<td>Emotional over-involvement</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&gt; 1</td>
<td>18 (31)</td>
<td>2.21 (1.30, 3.75)&lt;sup&gt;**&lt;/sup&gt;</td>
<td></td>
</tr>
<tr>
<td>≤ 1</td>
<td>9 (33)</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Psychological abuse by respondent towards reference relative</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>34 (46)</td>
<td>10.33 (5.72, 18.67)&lt;sup&gt;***&lt;/sup&gt;</td>
<td>9.78 (4.94, 19.36)&lt;sup&gt;***&lt;/sup&gt;</td>
</tr>
<tr>
<td>No</td>
<td>5 (18)</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Psychological abuse by reference relative towards respondent</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>20 (29)</td>
<td>2.48 (1.45, 4.23)&lt;sup&gt;***&lt;/sup&gt;</td>
<td>0.34 (0.16, 0.73)&lt;sup&gt;**&lt;/sup&gt;</td>
</tr>
<tr>
<td>No</td>
<td>9 (35)</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Physical violence by reference relative towards respondent</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>39 (26)</td>
<td>6.98 (3.85, 12.62)&lt;sup&gt;***&lt;/sup&gt;</td>
<td>7.13 (3.31, 15.35)&lt;sup&gt;***&lt;/sup&gt;</td>
</tr>
<tr>
<td>No</td>
<td>8 (38)</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Community factors</td>
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<tr>
<td>Perceived neighborhood disadvantage</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>14 (13)</td>
<td>1.19 (0.62, 2.29)</td>
<td></td>
</tr>
<tr>
<td>No/maybe</td>
<td>12 (51)</td>
<td>-</td>
<td></td>
</tr>
</tbody>
</table>

Abbreviations: OR, odds ratio; CI, confidence interval
<sup>a</sup>All interaction factors pertain to the past 6 months
<sup>*</sup>p ≤ .05
<sup>**</sup>p ≤ .01
<sup>***</sup>p ≤ .001
<sup>Pseudo R</sup><sup>2</sup> for multivariate model of Interaction factors = .26


Table 7. Final model of perpetrator, victim, and interaction factors associated with violence by respondents towards reference relatives in the past 6 months (N = 523)

<table>
<thead>
<tr>
<th></th>
<th>Adjusted OR (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Perpetrator factors</strong></td>
<td></td>
</tr>
<tr>
<td>Earlier onset of illness (&lt; 22)</td>
<td>1.80 (0.88, 3.68)</td>
</tr>
<tr>
<td>History of ever committing serious violence</td>
<td>7.93 (3.64, 17.26)***</td>
</tr>
<tr>
<td>History of victimization of serious violence past 6 months</td>
<td>1.06 (0.38, 2.99)</td>
</tr>
<tr>
<td><strong>Victim factors</strong></td>
<td></td>
</tr>
<tr>
<td>Younger age (&lt; 52)</td>
<td>6.38 (2.90, 14.04)***</td>
</tr>
<tr>
<td><strong>Interaction factors</strong></td>
<td></td>
</tr>
<tr>
<td>Greater limit-setting (&gt; 4)</td>
<td>2.55 (1.16, 5.58)*</td>
</tr>
<tr>
<td>Psychological abuse by respondent towards reference relative</td>
<td>10.80 (4.85, 24.00)***</td>
</tr>
<tr>
<td>Psychological abuse by reference relative towards respondent</td>
<td>0.29 (0.12, 0.70)**</td>
</tr>
<tr>
<td>Physical violence by reference relative towards respondent</td>
<td>6.59 (2.67, 16.25)***</td>
</tr>
</tbody>
</table>

Abbreviations: OR, odds ratio; CI, confidence interval

* p ≤ .05
** p ≤ .01
***p ≤ .001

Pseudo R² for model above = .41
Pseudo R² for model above with perpetrator factors removed = .33
Pseudo R² for model above with victim factor removed = .35
Pseudo R² for model above with interaction factors removed = .22
CHAPTER 4: DISCUSSION

The results of the present study partially supported the hypothesis. In bivariate analyses, many of the independent variables were found to have the hypothesized relationships with family violence by persons with SMI. In multivariate analyses, five of the independent variables had the hypothesized relationships with family violence, with the remaining independent variables either not having a significant relationship with family violence or having the inverse relationship hypothesized (i.e. psychological abuse by reference relatives towards persons with SMI). As presented in the Analysis section, related to the low rate of family violence by persons with SMI reported in the present sample, analyses involving many independent variables likely possess inadequate statistical power, preventing the relationship of said variables from being adequately tested.

Sample Considerations

Survey respondents were overwhelmingly female and Non-Hispanic Caucasian, with reference relatives also being overwhelmingly Non-Hispanic Caucasian. This sampling bias is like that of other samples recruited from mental health support, education, and advocacy organizations (Katz et al., 2015; NAC, 2016; Skinner et al., 1992) and to a much lesser extent, of surveys in general (Curtin, Presser, & Singer, 2000; Moore & Tarnai, 2002; Singer, Van Hoewyk, & Maher, 2000). It is notable that nearly half of respondents had attained either a bachelor’s or graduate/professional degree. The educational attainment of the present sample is not only higher than that of representative
samples of persons with SMI (Luciano & Meara, 2014) but that of the general U.S. population (Ryan & Bauman, 2016). As such, with respect to educational attainment, the present sample is clearly not representative of persons with SMI. Oddly, despite being highly educated, the present sample does not have higher rates of employment than the average American with SMI (described below) and has considerably lower incomes than the general U.S. population (U.S. Census Bureau, 2016).

As described in the Design and Sampling section, there are differing definitions of SMI. Using the definition of having schizophrenia/schizoaffective, bipolar, or major depressive disorder, 75% of respondents have SMI. Using the definition advanced by SAMHSA (any mental illness that causes considerable impairment), however, it is believed that the clear majority of respondents have SMI. Examining proxies for impairment (rates of employment and psychiatric hospitalization) and SAMHSA’s definition of SMI, respondents appear similarly or more impaired than the U.S. population of persons with SMI. Like the employment rate of Americans with SMI (54.5%; Luciano & Meara, 2014), the employment rates of all respondents and respondents not primarily diagnosed with schizophrenia/schizoaffective, bipolar, or major depressive disorder were 53% (n = 275) and 58% (n = 75), respectively. While only 7% of persons with a serious mental illness have received inpatient mental health treatment in the past year (SAMHSA, 2016), the rate of annual psychiatric hospitalization of all respondents and respondents not diagnosed with schizophrenia/schizoaffective, bipolar, or major depressive disorder was 16% (n = 83) and 12% (n = 16), respectively. Despite it being believed that the vast majority of respondents experience impairments significant
enough to be classified as having SMI, whether the results changed when examining all respondents vs. only respondents with diagnoses traditionally considered to compose SMI was assessed (schizophrenia/schizoaffective, bipolar, or major depression). The eight variables included in the final multivariate model were entered in a model using the present sample with all respondents not diagnosed with schizophrenia/schizoaffective, bipolar, or major depression removed (remaining $n = 393$). The results were like those of the final model presented in Table 7, with no variable changing from having a statistically significant relationship to a non-significant relationship or vice versa.

Most studies that have examined family violence by this population have relied on samples that appear more disabled than the average American with SMI, as defined by SAMHSA, with such samples likely being more representative of persons with SMI receiving public mental health services (Elbogen et al., 2005; Gondolf et al., 1990; Labrum & Solomon, 2016; Straznickas et al., 1993; Swan & Lavitt, 1988). The sample used in this study however, is likely more representative of persons with SMI as defined by SAMHSA than it is of persons receiving public mental health services. For example, the employment rate of respondents (53%) is considerably higher than the average employment rate of Americans receiving public mental health services (20%; NAMI, 2014) but is very similar to the employment rate of Americans with SMI as measured by the National Survey on Drug Use and Health (54.5%; Luciano & Meara, 2014). Similarly, the most common primary diagnoses of respondents were bipolar disorder and major depression which is likely more representative of persons with SMI broadly than of persons with SMI receiving public mental health treatment services. Comparing family
violence by persons with SMI as defined by SAMHSA vs. persons with SMI receiving public mental health services has yet to be examined. Comparing family violence by these two overlapping populations does not appear incompatible but the difference in populations is likely a relevant consideration and was taken into account in contextualizing the findings of the present study with previous research regarding family violence by persons with SMI.

Another consideration regarding the sample presently used is the composition of the reference relatives. Nearly half of all relatives in the present sample are romantic partners of respondents. Most studies on family violence by persons with SMI have either exclusively examined violence against intimate partners (Friedman et al. 2011, Henrichs et al., 2011; Heru et al., 2006; Post et al., 1980) or against any family member (Elbogen et al., 2006; Kageyama et al., 2015; Labrum & Solomon, 2016). However, samples used to examine violence by persons with SMI against any family member have consisted of considerably more parents and fewer romantic partners than does the present study (Kageyama et al., 2015; Labrum & Solomon, 2016; Vaddadi et al., 2002). Unfortunately, no research has specifically examined whether factors related to family violence by persons with SMI vary based on whether the victim is an intimate partner or a non-intimate family member. The available studies examining violence by persons with SMI against intimate partners and family members generally, have produced some similar findings (Heru et al. 2006, Labrum & Solomon, 2016; Vaddadi et al., 2002). As such, the present sample was not intended to be specific to reference relatives who were intimate or non-intimate family members. To determine the extent to which the
relationship type (intimate or non-intimate) of reference relatives in the present sample should be considered in comparing the present findings with those of other studies on this topic, the effect of controlling for relationship type was examined. The final model of factors associated with violence by respondents was estimated while controlling for whether reference relatives were intimate partners or non-intimate family members. The results are similar to those of the final model presented in Table 7, with no variable changing from having a statistically significant relationship to a non-significant relationship or vice versa.

**Rates of Violence**

The rates of family violence committed by persons with SMI found in the current sample are considerably lower than those produced by other community-recruited samples. A review of studies examining this phenomenon with the use of community-recruited samples yielded estimates that 20% to 35% and at least 40% of family members have been a victim of violence by relatives with SMI in the past 6 to 12 months and since the relative with SMI’s onset of illness, respectively (Labrum & Solomon, 2015a). However, only 12% and 26% of respondents in the present sample reported committing violence towards their reference relatives in the past 6 months and since being diagnosed with a mental health condition, respectively. As previously noted, respondents in the present sample appear more representative of persons with SMI using SAMHSA’s definition, while other studies conducted in this area utilize samples more representative of persons with SMI utilizing public mental health treatment services, who are known to experience more severe symptoms. This difference in samples utilized may be
responsible for the discrepancy in rates of family violence found in the present study vs. estimates of such violence based on other studies in this area.

The discrepancy in rates of family violence by persons with SMI in the present study vs. those of other studies, may also be the result of whose report rates are based on. While the present study relied on the self-report of persons with SMI, nearly all other studies conducted in this area have relied on the report of family members. It is possible that due to social desirability bias, persons with SMI may underreport committing violence against relatives as compared to reports of victimization provided by family members. In mild support of this argument that persons with SMI may underreport violence, it has been found that estimates of violence relying on the self-report of persons with SMI are slightly lower than those relying on official records, although this difference was not statistically significant (Fazel, Gulati, Linsell, Geddes, & Grann, 2009).

Despite being considerably lower than rates found in other studies, the rates of family violence by persons with SMI found in the present study still indicate that in the familial lives of persons with SMI, violence is surprisingly common. While it is difficult to estimate the rate of violence between a dyad of any family members in the U.S., it is known that annual rates of intimate partner violence by the general population are considerably lower than the rates of violence found in the present study (Tjaden & Thoennes, 2000), with the National Intimate Partner and Sexual Violence Study (Breiding, Chen, & Black, 2014) finding that only 4% of women and 4.7% of men had experienced intimate partner violence in the past year. Given the deleterious
consequences family violence by this population has on family members and persons with SMI (described in Chapter 1), it is of paramount importance that mental health practitioners begin to assess the risk of family violence by this population and intervene to decrease the risk of family conflict and violence. Evidence suggests that the perceptions of persons with SMI may more accurately predict future violence than brief violence risk assessment tools, with it being recommended that all violence risk assessments include the perceptions of persons with SMI (Skeem, Manchak, Lidz, & Mulvey 2013). As such, even if mental health practitioners do not have specialized training in violence risk assessment, it may be beneficial to inquire with clients with SMI regarding their perceptions of the risk of family conflict and violence.

**Bivariate Correlates of Violence**

While the results of multivariate analyses examining the relationships between independent variables and the occurrence of family violence by this population are more valuable in explaining the occurrence of family violence, the results of bivariate analyses can be useful in understanding who with SMI is most likely to commit acts of violence, to whom violence prevention interventions should be targeted. It is especially recommended that risk assessment for family violence be conducted when persons with SMI and their family members endorse having several risk factors. With the exception of attending outpatient drug and alcohol treatment, all of the perpetrator factors found in bivariate analyses to be associated with an increased risk of family violence by respondents (age, race, level of education, onset of illness, illegal drug use, use of mental health medications, arrest history for acts of violence, and history of violence and
victimization) have previously been found to be associated with either community violence by this population (Elbogen & Johnson, 2009; Monahan et al., 2001; Steadman et al., 1998, Swanson et al., 2002; Witt et al., 2013) or both community and family violence by this population (Large, & Nielssen, 2011; Gondolf et al., 1990; Heru et al., 2006; Monahan et al., 2001; Swan & Lavitt, 1988; Vaddadi et al., 1997, 2002; Volavka et al., 1997). The bivariate finding that respondents who reported attending outpatient drug and alcohol treatment were at an increased risk of committing family violence has yet to be found in previous research. The association of attending outpatient drug and alcohol treatment and risk of family violence remains significant when controlling for use of illegal drugs in the past 6 months (OR = 2.77, 95% CI [1.09, 7.01]). While replication of this finding is needed, it may be particularly helpful for practitioners to assess the risk of family violence with clients known to be receiving substance abuse treatment. Many persons receiving substance abuse treatment are involved in the criminal justice system. It is possible that persons attending substance abuse treatment may be at an increased risk of committing family violence due to the presence of additional criminogenic factors.

Given the large overlap among perpetrator factors associated with community and family violence by persons with SMI, it is likely that interventions effective in preventing violence in general by this population may also be effective in preventing family violence. Surprisingly little is known about interventions that effectively prevent violence by persons with SMI (Martin, Dorken, Wamboldt, & Wootten, 2012; Wolf, Whiting, & Fazel, 2017). Research primarily conducted with persons in psychiatric inpatient facilities, however, has largely found that pharmacological interventions are
effective in decreasing aggression and preventing acts of violence (Victoroff et al., 2014). As available evidence indicates that compulsory community treatment is not effective in preventing violence by this population (Kisley & Campbell, 2014), it may be more effective for preventative efforts to focus on increasing accessibility and palatability of mental health treatment as opposed to providing involuntary treatment. In particular, interventions involving Motivational Interviewing techniques have been found to increase psychiatric medication adherence (Zygmunt et al., 2002) and should be considered by practitioners as a possible intervention to improve medication adherence and treatment participation. There is also tentative evidence that at least among persons with SMI involved in the criminal justice system, receipt of cognitive skills training may decrease the risk of violence (Ashford, Wong, & Sternbach, 2008). As such, it may be helpful for practitioners to engage in cognitive interventions with persons with SMI at high risk of committing family violence.

The only victim factor found to be associated with an increased risk of family violence was younger age, a finding that has been found in previous research on this topic (Labrum & Solomon, 2016; Vaddadi et al., 2002). As such, the use of risk assessments and prevention efforts may be particularly appropriate when family members with high levels of contact with persons with SMI are younger. Many of the interaction factors found to be associated with the risk of family violence by persons with SMI in bivariate analyses (financial assistance, caregiving, co-residence, and limit-setting) have previously been found to be associated with family violence by this population (Ahn et al., 2012; Band-Winterstein et al., 2016; Estroff et al., 1998; Gondolf et al., 1990;
Labrum & Solomon, 2016; Straznickas et al., 1993; Swan & Lavitt, 1988; Varghese et al., 2016) and should be considered risk factors for such violence. As discussed in Chapter 2, the relationship of emotional over-involvement and family violence by this population has only been examined twice previously and was found to not have a significant relationship with violence. However, both previous studies relied on extremely small samples that were surely underpowered. Related to the finding in the present bivariate analyses that emotional over-involvement was significantly associated with family violence and similar theory (Solomon et al., 2005), it may be helpful for practitioners to consider emotional over-involvement as a risk factor for family violence when conducting family violence risk assessments with persons with SMI. The remaining interaction factors in the present analyses with significant bivariate relationships with family violence (psychological abuse by respondents towards reference relatives and vice versa and violence by reference relatives towards respondents) have yet to be examined in other studies on this topic. Due to the findings of these analyses and their agreement with Conflict Escalation Theory, it is recommended that victimization of family violence of persons with SMI, psychological abuse by persons with SMI towards family members and vice versa be considered risk factors for family violence by this population.

**Multivariate Correlates of Violence**

The only perpetrator factor in the final model found to be significantly related to violence by respondents—history of committing serious violence (OR = 7.93)—is known to be one of the most predictive characteristics of community violence by persons
with SMI (Monahan et al., 2001; Witt et al., 2013). Similarly, after controlling for known covariates, Elbogen et al. (2005) found that persons with a history of committing serious violence were twice as likely to commit serious family violence in a 4-month period. The larger OR of history of serious violence found in the present study suggests that history of serious violence may be even more predictive of minor family violence than it is of serious family violence. Related to history of serious violence, is arrest history. Without controlling for other variables, the present study found that respondents with histories of arrest as an adult for charges related to alleged violence were more than three times as likely to report committing violence against their reference relatives. Similarly, other studies have found that among persons with SMI, those with arrest histories were significantly more likely to commit family violence (Labrum & Solomon, 2016; Vaddadi et al., 2002). Combined, these findings can be interpreted to suggest that family violence by persons with SMI may be related to antisocial traits, with such traits being well known to increase the risk of community violence and criminal recidivism by this population (Skeem, Manchak, & Peterson, 2011; Witt et al., 2013). Further research is certainly needed in this area. Since the present study and those by Labrum and Solomon (2016) and Vaddadi et al. (2002) employed cross-sectional designs, it is possible that persons with SMI with arrest histories were actually arrested as a result of violence committed towards relatives, accounting for the association between arrest histories and family. However, it should be noted that most incidents of family violence by persons with SMI are described to go unreported to legal authorities (Hsu & Tu, 2014; Nordström et al., 2006).
The only victim factor found to be significantly related with violence by respondents—younger age (OR = 6.38)—has previously been found to be associated with family violence by this population (Labrum & Solomon, 2016; Vaddadi et al., 2002), although, not consistently (Kageyama et al., 2016). To examine the relationship between age of reference relatives and violence, the final model was estimated with separately controlling for age of respondents and relationship type of reference relatives (spouse vs. non-spouse family member). The OR for age of relatives slightly changed to 6.59 when age of respondents was controlled for and to 4.62 when relationship type was controlled for. The positive association between younger age of relatives and family violence remained statistically significant, indicating that younger family members are at an increased risk of violence regardless of the age of respondents or of the relation of reference relatives to respondents. The average age of family caregivers for persons with SMI is approximately 55 years of age (NAC, 2016), with it being known that many caregivers are considerably older (Awad & Wallace, 1999 as cited in Awad & Voruganti, 2008; Lefley, 1987; NAC, 2016). Similarly, the median age of reference relatives in the present study was 52 years of age. Relatives were classified as having a younger age if they were less than 52 years old. Given the increased risk of older persons receiving injuries when subjected to violence, it is possible that persons with SMI commit violence towards older family members less often because of being aware that such violence may have more grave consequences for older persons. It is also possible that older relatives, who likely have more experience interacting with persons with SMI, may be more skilled in preventing or deescalating conflict, thereby decreasing the risk of violence. Similarly, it is possible that due to the increased risk of injury when older, older relatives may fear
conflict and violence more than their younger counterparts and, as a result, they may engage in few behaviors that they recognize can contribute to conflict with relatives with SMI. While there is yet to be evidence that older family members are more likely to fear relatives with SMI may harm them or others (Katz et al., 2015;), it is clear that many family members do fear harm (Katz et al., 2015; Loughland et al., 2009) and that such fear results in family members being extremely cautious around persons with SMI, (Hsu & Tu, 2014; Hyde, 1997; Lefley, 1996).

The finding that interaction factors contributed more unique variance to the \( \text{pseudo} \ R^2 \) of the final model than did perpetrator and victim factors combined highlights the importance of interaction factors in assessing the risk of family violence by persons with SMI and intervening to prevent such violence. A distinct interaction persons with SMI and their family members have with each other that is related to the risk of family violence by this population is the use of limit-setting practices. In the present analyses, reference relatives who were perceived to have engaged in greater levels of limit-setting practices towards respondents were at an increased risk of being a victim of violence (\( \text{OR} = 2.55 \)). The present study relies on the perceptions of persons with SMI regarding the use of limit-setting practices by relatives towards them. However, a previous study using the Family Limit-Setting Scale but from the perception of family members, also found that greater use of limit-setting practices was associated with an increased risk of victimization of violence of family members (Labrum & Solomon, 2016). Indeed, this earlier study found that limit-setting practices was the variable most strongly related to family violence by this population. A limitation of cross-sectional designs is that the
temporal order of events is uncertain. As such, it is uncertain whether the use of limit-setting practices preceded or followed acts of violence. It is feasible that relatives engage in limit-setting practices following acts of violence to prevent further violence or in an attempt to resolve crises related to acts of violence. However, it is also likely that engaging in limit-setting practices—regardless of the intentions of relatives—may be perceived by persons with SMI as coercive and ill-intended. Such perceptions could result in protest and retaliation by persons with SMI and conflictual relationships vulnerable to escalation of violence. Indirectly providing support for this argument, it has been found that limit-setting practices used by case managers towards persons with SMI are associated with decreased therapeutic alliance (Neale & Rosenheck, 2000) and relationship conflict (Angell et al., 2007). Similarly, in qualitative interviews, family members have described perceiving that setting limits with persons with SMI results in conflict (Cook, 1988). Additionally, two studies able to establish temporal order have found that the use of limit-setting practices were present prior to 50% (Straznickas et al., 1993) and 64% (Ahn et al., 2012) of acts of family violence by this population.

Given the evidence cited above, it is plausible that decreasing the use of limit-setting practices by family member or somehow modifying them, may prevent family violence by this population. While research has yet to be conducted in this area, it is likely that certain limit-setting practices are more likely to be perceived as coercive and ill intended by persons with SMI (e.g. creation of contingency contracts)—contributing to conflict and the risk of violence—than are others (e.g. verbal encouragement). As such, it may be beneficial for mental illness education and support organizations to begin
addressing with relatives how they can prevent engaging in limit-setting practices towards persons with SMI or can set limits in ways less likely to result in conflict. It may also be helpful for mental health practitioners to assess the perceptions of persons with SMI regarding the use of limit-setting practices and to attempt to modify perceptions that likely increase conflict. In addition, it is advisable that mental health practitioners more often include family members in the treatment of persons with SMI, with the consent of the person with SMI. Family members are often not included in the treatment of persons with SMI (Marshall & Solomon, 2004), with many practitioners appearing reluctant to offer such involvement (Molinaro, Solomon, Mannion, Cantwell, & Evans, 2012). However, most persons with SMI support having their family members involved in their treatment (Cohen et al., 2013), with specific types of family involvement being well documented to result in positive outcomes for persons with SMI (Pharoah, Mari, Rathbone, & Wong 2010). In a qualitative study of parents victimized by an adult child with schizophrenia, parents perceived that being involved in the treatment of their relative could help prevent violence (Hsu & Tu, 2014), with family members also being known to want information on how to deal with disruptive behaviors (Vaddadi et al., 2002). In agreement, in a study conducted in India, it was noted that some caregivers valued receiving a session with a mental health professional focused on helping them improve their coping and management skills in response to aggressive behaviors by relatives with SMI. When family members are involved in the treatment of persons with SMI, it may be beneficial for mental health practitioners to assess with persons with SMI and their family members the use of limit-setting practices and intervene to modify the use of limit-setting practices when they appear to contribute to conflict and violence.
Although perceived psychological abuse by reference relatives was found in the present study to be inversely related to the risk of family violence by respondents (described below), violence by persons with SMI has previously been found to be related to not “feeling listened to”, hostility, criticism, and incendiary and poor communication (Estroff et al., 1994; 1998; Hsu & Tu, 2014; Katz et al., 2015; Swanson et al., 2006). Relatedly, it has been proposed that involving both members of the dyad in an intervention and focusing on communication skills may help prevent family violence by persons with SMI (Hsu & Tu, 2014). As it is likely common for persons with SMI to perceive limit-setting practices as coercive and ill-intended, it may be helpful for practitioners to address communication patterns involved in setting limits, with suggestions made for communicating limits in ways less likely to be perceived as ill-intended or hostile.

As described in Chapter 1, there is a multitude of indirect evidence suggesting that many persons with SMI who commit violence may be engaged in mutually violent relationships. Extremely few studies have examined the occurrence of mutual family violence involving persons with SMI (Friedman et al., 2011; Heru et al. 2006; Post et al., 1980), with this being the first study known to do so not exclusively examining intimate partner violence. The findings of the present study that perpetration and victimization of violence between respondents and reference relatives significantly co-occur, indicate that mutually violent relationships may play a sizable role in family violence by persons with SMI. Indeed, 56% and 40% of respondents who reported committing violence towards reference relatives in the past 6 months and since first diagnosed with a mental health condition, respectively, reported also being a victim of violence by reference relatives in
the same time periods. In examining 110 psychiatric inpatients with suicidal ideation, Heru et al. (2006) found that more than 90% of participants had perpetrated and been the victim of intimate partner violence in the past year, suggesting that violence engaged in by persons with SMI towards relatives may often be mutually engaged in. Indicating that more research is needed in this area, however, Post et al. (1980) reports that only a small portion of inpatients who have been the perpetrator or victim of intimate partner violence are involved in mutually violent relationships and using a sample of 53 women with SMI, Friedman et al. (2005) found that there was not significant co-occurrence in rates of intimate partner violence perpetration and victimization. In examining intimate partner violence by members of the general population, however, mutually violent relationships are at least as common as relationships with unidirectional violence (Langhinrichsen-Rohling, Selwyn, & Rohling, 2012; Renner & Whitney, 2012). Given the likely co-occurrence between perpetration and victimization of family violence by persons with SMI, it is advisable that mental health practitioners assess for victimization when perpetration is known to be present and vice versa. A common criticism of the Conflict Tactics Scale, which the MCVI is based on is that it is unable to assess the motivation of persons in acting violently (Gelles, 2016). As such, the motivations of persons with SMI and their family members in being violent are unknown. In the literature on intimate partner violence among the general population, it is known that some persons act violently in response to assault and a pervasive pattern of control and coercion, primarily in an effort to protect themselves from future harm (Kelly & Johnson, 2008). Similarly, it is possible that one party engaging in mutual violence in the present study primarily does so in self-defense. Available evidence, however, suggests that among intimate
As described in Chapter 1, Conflict Escalation Theory (Berkowitz, 1993) posits that violence occurs as a result of escalating and often bidirectional conflict, with tentative evidence indicating that family violence by persons with SMI does indeed involve a progression of tension and conflict (Hsu & Tu, 2014). The finding of the present study that psychological abuse by respondents towards relatives is significantly
associated with violence by respondents towards relatives (OR = 10.80) provides evidence that psychological abuse and violence are related, which would be expected if conflict does indeed escalate to violence. Previous studies regarding intimate partner violence by members of the general population have also found that psychological abuse is closely correlated with physical violence (O’Leary et al., 2008; Straus et al., 1996), with the same relationship found when examining family violence by persons with SMI (Labrum, 2016; Loughland et al., 2009; Vaddadi et al., 2002). While there is much overlap in acts of violence and psychological abuse, Conflict Escalation Theory posits that psychological abuse may be a precursor to violence (Berkowitz, 1993). While the present study is unable to establish temporal order, available evidence suggests that psychological abuse does predict future acts of violence, at least by members of the general population (Murphy, & O’Leary 1989). As psychological abuse by respondents is the variable most strongly related to violence by respondents, it is advisable for practitioners to include psychological abuse by this population in assessments of risk of family violence. Given the premise of Conflict Escalation Theory and evidence providing tentative support for this premise, practitioners should assess psychological abuse by persons with SMI and intervene to decrease such abuse when necessary. Not only may decreasing psychological abuse by persons with SMI decrease the risk of violence by this population, it may also likely decrease psychological distress experienced by family members (Kageyama, Solomon, & Yokoyama, 2016).

As described above, the finding that relatives reported to have committed violence towards respondents were significantly more likely to also be a victim of violence by
respondents, provides support that family violence involving persons with SMI is often mutually engaged in. Providing contrary evidence, however, in the final model relatives who were reported to have committed psychological abuse against respondents were significantly less likely to be victims of violence (OR = 0.29). This finding is the inverse of that hypothesized and is difficult to interpret. As presented in Table 6, without controlling for any variables, psychological abuse by relatives towards respondents significantly increased the risk of relatives being a victim of violence by respondents (OR = 2.48). However, after controlling for limit-setting practices, psychological abuse by respondents towards reference relatives, and violence by relatives towards respondents, the relationship of perceived psychological abuse by relatives towards respondents changed from being positive to negative. One possible explanation for this relationship between psychological abuse by relatives and their risk of victimization is that in response to respondents being psychologically abusive towards them, relatives may have set boundaries or taken other steps to decrease psychological abuse by respondents, which respondents may have interpreted as being psychologically abusive towards them. Continuing this argument, once other interaction factors (limit-setting practices, psychological abuse by respondents, and violence by relatives) were controlled for, relatives’ behaviors targeted at decreasing psychological abuse by respondents (which may be perceived by respondents psychologically abusive) were revealed to decrease the risk of violence by respondents. It should be noted that this explanation is extremely tentative, with more research needed to explore this argument.
An aim of this study was to identify which specific treatment services are related to the risk of family violence by persons with SMI. Despite previous evidence that use of mental health medications and attendance of treatment is related to a decreased risk of family violence by this population (Kivisto & Watson, 2016; Labrum & Solomon, 2016), regular use of medications and all other treatment factors were not found in multivariate models to be significantly related to family violence by this population. This lack of significant findings is at least partially related to an inadequate level of statistical power in analyses (e.g. analyses for the relationship of regular use of mental health medications with risk of family violence had a power of .51). Related to the statistical power of such analyses, there was limited variance in many of the treatment variables (as presented in Table 1, fewer than 25% of respondents reported having received referral or intensive case management or attending professional or self-help drug and alcohol services in the past 6 months). Case management services are a large component of services provided to persons with SMI in public treatment organizations. The limited number of respondents receiving referral or intensive case management is surely related to the sample recruited being more representative of persons with SMI as defined by SAMHSA than persons with SMI receiving public mental health treatment (i.e. experiencing less severe impairment). Future analyses examining the relationship between specific treatment services and the risk of family violence by persons with SMI should have adequate statistical power and should seek to target recruitment of participants with levels of impairment appropriate for receiving such treatment services.

Limitations, Strengths, & Future Research
As previously noted, a limitation with the present study is that it relies on a sample that is overwhelmingly female and Non-Hispanic Caucasian as well as highly educated. As a result, the sample cannot be argued to be representative of persons with SMI. Future studies conducted in this area should obtain a sample that is more representative of persons with SMI regarding race/ethnicity, gender, and educational attainment. Despite these limitations, the sample obtained appears similarly impaired as the U.S. population of persons with SMI. Strengths of the sample obtained are that respondents were recruited from diverse geographic regions (42 States and the District of Columbia) and from an array of types of organizations. Nearly all other studies examining this phenomenon have utilized samples of severely impaired persons with SMI, with no research examining this phenomenon among more moderately impaired persons with SMI. As a result, there is much value in the present study examining family violence by more moderately impaired persons with SMI.

A limitation with cross-sectional designs is an inability to establish the temporal order of events and to produce causal inferences. Although findings from previous studies provide support that certain variables of interest (e.g. limit-setting practices and psychological abuse) do precede family violence by persons with SMI, the temporal order of events in the present study is unknown. Future research should utilize longitudinal designs able to establish the temporal order of events. Another limitation with the present study is that while analyses for certain independent variables did have statistical power greater than .80, analyses for many independent variables did not have adequate statistical power. A challenge in researching any phenomenon with a relatively
low base rate is obtaining enough observations for analyses to have adequate power. Many studies examining violence by persons with SMI have recruited participants from sources where persons with SMI are believed to have higher rates of committing violence (i.e. inpatient psychiatric treatment). It was chosen not to do this in pursuit of obtaining a sample that was less severely impaired and likely more representative of community-residing persons with SMI. Future research on this topic should seek to obtain as large a sample as possible.

Nearly all studies conducted to date regarding family violence by persons with SMI have relied on the self-report of relatives and have failed to obtain the perspectives of persons with SMI. Given the current emphasis of the recovery movement on valuing and eliciting the perspectives of persons with SMI (Department of Health and Human Services, 2003) and the considerable evidence indicating that persons with SMI are reliable reporters (Crisanti et al., 2003; Dixon et al., 1999; Nieves et al., 2000; Rozario et al., 2004; Thompson et al., 2000), it was decided for the present study to rely on the self-report of persons with SMI. In this way, the findings of the present analyses report on a relatively new perspective regarding family violence by this population: that of persons with SMI. Future research on this topic should continue to involve the perceptions of persons with SMI and would ideally involve the perceptions of both persons with SMI and their relatives in examining interactions related to the risk of violence.

Finally, few studies to date have examined the role mutual violence plays in violence by persons with SMI, with this being the first known study not focusing exclusively on intimate partner violence to examine mutual family violence involving
persons with SMI. It is imperative that additional research be conducted regarding the role of mutual violence in the perpetration and victimization of violence of persons with SMI, bridging the literatures on perpetration and victimization. Perpetration and victimization of violence are both significant public health concerns, with mutual violence appearing to play a significant role in both phenomena involving persons with SMI. Future research regarding mutual violence among persons with SMI may lay imperative groundwork in the development of policies and interventions for preventing both the victimization and perpetration of violence by this population. As very little is known about mutual family or non-family violence involving persons with SMI, future research should seek to provide more context in understanding mutual violence, with qualitative studies likely being particularly apt.

**Conclusion**

Relatives are often a crucial source of emotional, social, and financial support for persons with SMI (NAC, 2016). While offering such support can provide gratification, intimacy, and other uplifts (Greenberg, Seltzer, & Greenley, 1993; NAC, 2016), family members frequently incur significant emotional and financial costs as a result of caregiving responsibilities (Lefley, 1996; Solomon & Draine, 1995; Veltman, Cameron, & Stewart, 2002). As persons with SMI and their family members are comparatively vulnerable populations, it is critical that research continue to be performed on this topic and that policy makers and mental health practitioners use such research to inform their efforts to prevent this social problem and its widespread nocius sequelae. Preventing this phenomenon is particularly congruent with the profession of social work, owing not
only to the profession’s commitment to the betterment of disadvantaged persons but also its high valuation of human relationships (National Association of Social Workers, 1999).
Figure 1: Model of factors hypothesized to be associated with the occurrence of family violence by persons with serious mental illness
Questionnaire

University of Pennsylvania, School of Social Policy & Practice

Introduction

You are being asked to volunteer in a research study. Please take the time to read the following information carefully. Please contact the researchers if anything is not clear or if you need more information.

Purpose of the Research

The purpose of this study is to better understand the relationships, interactions, and possible conflict people with a mental illness have with their family members.

Who Can Participate?

In order to participate you must be at least 18 years of age, currently residing in the United States, and you must have been diagnosed with a mental illness.

Location of the Study

The survey is located online.

Time Commitment

The survey is estimated to take 20 minutes to complete.

What Will I Be Asked to Do?

If you agree to participate in this study, you will be asked to answer questions about yourself and the adult family member with whom you have spent the most time in the past 6 months. For the purpose of this study an adult family member is defined as any person who is at least 18 years old whom you are related to by birth or law or a romantic partner whom you have been in a relationship with for at least 6 months. Along with demographics, you will be asked questions related to mental health, participation in treatment, family caregiving, limit-setting, and possible conflict you may have experienced with your relative. You will be asked questions about whether you have committed or been the victim of physical violence. However, you do not need to have experienced violence or conflict to participate in this study.

Reward

Participants who complete the survey and provide a valid email address will be entered to win 1 of 15 $50 Amazon.com or Walmart (your choice) electronic gift cards.

Confidentiality

All efforts possible will be taken to keep information provided in this study confidential. You will not be asked to provide your name or the name of your relative. The most
potentially identifying information you will be asked to provide is your email address (if you wish to be entered to win an e-gift card) and the zip code you reside in. However, you are not required to provide your email address or zip code to participate. The software used to conduct this survey (Qualtrics) secures all responses provided. The information you provide will only be accessible to personnel involved in the study through the use of password protected files. The overall results of this study may be published but the results of a single person will not be shared with anyone outside of the research team.

Risks and Benefits of the Study

As part of the survey you will be asked questions pertaining to sensitive topics, including whether you have experienced physical violence. Although it is not our intention, you may experience discomfort as a result of thinking about these topics. If thinking about these topics causes you emotional distress you may discontinue the survey at anytime. It is hoped that the knowledge gained from this study will benefit the lives of people with a mental illness and their family members. Although, you may not benefit from participating in this survey.

Voluntary Nature of the Study

Your participation in this study is strictly voluntary. You may withdraw at any time.

Questions

If you have any questions now or in the future, please contact the student investigator, Travis Labrum at tlabrum@sp2.upenn.edu.

If you are at least 18 years of age, residing in the United States, have been diagnosed with a mental illness, and have read and understood the above, please click the arrow below to indicate your consent to participate and begin the survey.

Q2 Instructions: Please start by answering some questions about yourself.

Q251 From what type of organization did you become aware of this study?
   - National Alliance on Mental Illness (1)
   - Depression and Bipolar Support Alliance (2)
   - Outpatient mental health treatment (3)
   - Inpatient mental health treatment (4)
   - Other (5)
   - InterNational Association of Peer Supporters (6)

Answer If From what type of organization did you become aware of this study? Other Is Selected
Q252 Please specify
Q3 How old are you now?

Q4 What is your gender?
   - Male (1)
   - Female (2)

Q5 Are you of Hispanic origin?
   - Yes (1)
   - No (2)

Q6 Which of these groups best describes you?
   - American Indian (1)
   - Asian (2)
   - Black (3)
   - White (4)
   - Other (5)

   Answer If Which of these groups best describes you? Other Is Selected

Q7 Please specify

Q8 What is your current employment status?
   - Employed full time (1)
   - Employed part time (2)
   - Retired (3)
   - Unable to work/disabled (4)
   - Unemployed (5)
   - Student (6)

Q9 What is your current marital status?
   - Married or in a civil union (1)
   - Widowed (2)
   - Separated (4)
   - Divorced (5)
   - Never been married (6)

Q217 Which of these groups best describes how you think of yourself?
   - Straight or heterosexual (1)
   - Lesbian, gay, or homosexual (2)
   - Bisexual (3)
   - Other (4)
   - Don't know (5)

   Answer If Which of these groups best describes you? Other Is Selected

Q219 Please specify
Q10 What is the highest level of education you have completed?
- Some high school (1)
- High school diploma or equivalent (GED) (2)
- Some college (3)
- Bachelor's degree (4)
- Graduate or professional degree (5)

Q11 What is an estimate of your total income for the past 12 months?
- Less than $5,000 (1)
- $5,000 to $9,999 (2)
- $10,000 to $19,999 (3)
- $20,000 to $39,999 (4)
- $40,000 to $59,999 (5)
- $60,000 to $79,999 (6)
- $80,000 or more (7)

Q262 What 5 digit zip code have you primarily resided in for the past 6 months (if you don't feel comfortable answering you may leave blank)?

Q258 Do you believe that people living in your neighborhood experience disadvantage when compared to other individuals in American society?
- Yes (2)
- Partly (3)
- No (4)

Q12 What is your primary mental health diagnosis?
- Schizophrenia or schizoaffective disorder (1)
- Bipolar disorder (2)
- Major Depression (3)
- Non-major depression (4)
- Anxiety related disorder (5)
- Other (6)

Answer If What is your primary mental health diagnosis? Other Is Selected
Q273 Please specify

Q13 At approximately what age were you first diagnosed with a mental health condition?

Q14 In the past year have you been hospitalized for a mental health reason?
- Yes (1)
- No (2)
Q15 In the past year how many times have you been hospitalized for a mental health reason?
- 1 (1)
- 2 (2)
- 3 or more (3)

Q22 As an adult, have you ever been arrested?
- Yes (1)
- No (2)

Q23 As an adult, how many times have you been arrested?
- 1 (1)
- 2 (2)
- 3 or more (3)

Q24 Were any of these arrests the result of alleged acts of violence?
- Yes (1)
- No (2)

Q25 As an adult, have you ever committed physical violence towards another person that caused them a physical injury such as a bruise, cut, broken bone or tooth, or a wound?
- Yes (1)
- No (2)

Q221 As an adult, have you ever committed physical violence towards any family member that caused them a physical injury such as a bruise, cut, broken bone or tooth, or a wound?
- Yes (1)
- No (2)

Q223 As an adult, have you ever committed minor physical violence towards any family member such as pushing, slapping, hitting, or throwing something at them?
- Yes (1)
- No (2)
Q255 As an adult, have you ever threatened to commit physical violence towards any family member?
- Yes (1)
- No (2)

Q26 Instructions: Please answer some questions about yourself regarding the past 6 months.

Q27 In the past 6 months... Have you received a physical injury as a result of being the victim of violence such as a bruise, cut, broken bone or tooth, or a wound?
- Yes (1)
- No (2)

Q28 In the past 6 months... Has anyone officially managed your money as your representative payee?
- Yes (1)
- No (2)

Answer If In the past 6 months... Has anyone officially managed your money as your representative payee? Yes Is Selected
Q215 In the past 6 months... Has your representative payee been a
- Family member (1)
- Friend (2)
- Case manager/mental health professional (3)
- Non mental health professional (5)

Answer If In the past 6 months... Has anyone officially managed your money as your representative... Yes Is Selected
Q227 In the past 6 months... How satisfied have you been with your representative payee arrangement?
- Very dissatisfied (1)
- Somewhat dissatisfied (2)
- Somewhat satisfied (3)
- Very satisfied (4)

Answer If In the past 6 months... Has anyone officially managed your money as your representative... Yes Is Selected
Q228 In the past 6 months... How often have you had conflict or arguments with your representative payee because of how s/he handles your money?
- Never (1)
- Rarely (2)
- Sometimes (3)
- Often (4)
- Always (5)
Answer If In the past 6 months... Has anyone officially managed your money as your representative payee? Yes Is Selected

Q256 In the past 6 months... How often did your representative payee warn you that s/he would not give you or allow you to use your own money if you did not change your behavior (examples are take your medications, clean up the house, etc.)?

☐ Never (1)
☐ Rarely (2)
☐ Sometimes (3)
☐ Often (4)
☐ Always (5)

Q29 In the past 6 months... Has anyone unofficially managed your money?

☐ Yes (1)
☐ No (2)

Q30 In the past 6 months... Have you regularly taken prescribed mental health medications?

☐ Yes (1)
☐ No (2)

Q31 In the past 6 months... Have you regularly attended talk psychotherapy or counseling for a mental health concern?

☐ Yes (1)
☐ No (2)

Q34 In the past 6 months... Has a case manager or other mental health professional helped you meet your needs by referring or connecting you to community resources (examples are helping you with disability benefits or housing assistance, or connecting you with food banks)?

☐ Yes (1)
☐ No (2)

Q35 In the past 6 months... Has a case manager or other mental health professional directly helped you meet your needs by personally assisting you with shopping, cooking, cleaning, transportation, or other activities of daily living?

☐ Yes (1)
☐ No (2)

Q36 In the past 6 months... Have you attended social, educational, or support groups for persons with mental illness, such as those offered through NAMI or DBSA?

☐ Yes (1)
☐ No (2)
Q37 In the past 6 months... Have you attended self-help drug and alcohol services such as alcoholics anonymous or other 12 step programs?
- Yes (1)
- No (2)

Q38 In the past 6 months... Have you attended professional outpatient drug or alcohol treatment?
- Yes (1)
- No (2)

Q42 In the past 6 months... Have you regularly drank alcohol?
- Yes (1)
- No (2)

Q43 In the past 6 months... Have you ever used illegal drugs?
- Yes (1)
- No (2)

Q64 Instructions: Please answer some questions about the living adult (at least 18 years of age) family member with whom you’ve spent the most time in the past 6 months. For the purpose of this study a family member is defined as any person you are related to by birth or law or a romantic partner whom you have been in a relationship with for at least 6 months. Regardless of which family member you select, please refer to the same person in all questions asking about "this family member". We realize that you may not be certain of the answers to some of these questions. However, please answer them to the best of your knowledge.

Q65 In relation to this family member are you his/her?
- Parent (1)
- Spouse or romantic partner (2)
- Child (3)
- Sibling (4)
- Relative-in-law (5)
- Friend (6)
- Other family member (7)

Answer If In relation to your family member with a mental illness are you his/her? Other family member Is Selected
Q66 Please specify

Q67 About how old is s/he now?

Q68 What is his/her gender?
- Male (1)
- Female (2)
Q69 Is s/he of Hispanic origin?
- Yes (1)
- No (2)

Q70 Which of these groups best describes him/her?
- American Indian (1)
- Asian (2)
- Black (3)
- White (4)
- Other (5)

Answer If Which of these groups best describes him/her? Other Is Selected
Q71 Please specify

Q72 What is his/her current employment status?
- Employed full time (1)
- Employed part time (2)
- Retired (3)
- Unable to work/disabled (4)
- Unemployed (5)
- Student (6)

Q73 What is his or her marital status?
- Married or in a civil union (1)
- Widowed (2)
- Separated (3)
- Divorced (4)
- Never been married (5)

Q74 What is the highest level of education s/he has completed?
- Some high school (1)
- High school diploma or equivalent (GED) (2)
- Some college (3)
- Bachelor's degree (4)
- Graduate or professional degree (5)
Q75 What is an estimate of his/her total income for the past 12 months?
- Less than $5,000 (1)
- $5,000 to $9,999 (2)
- $10,000 to $19,999 (3)
- $20,000 to $39,999 (4)
- $40,000 to $59,999 (5)
- $60,000 to $79,999 (6)
- $80,000 or more (7)

Q76 To your knowledge, has s/he been diagnosed with a mental illness?
- Yes (1)
- No (2)

Answer If To your knowledge, has s/he been diagnosed with a mental illness? Yes Is Selected
Q77 What is his/her primary mental health diagnosis?
- Schizophrenia or schizoaffective disorder (1)
- Bipolar disorder (2)
- Major depressive disorder (3)
- Non major depression (4)
- Anxiety related disorder (5)
- Other (6)
- Don't know (9)

Answer If What is his/her primary mental health diagnosis? Other Is Selected
Q78 Please specify

Q82 In the past 6 months... Have you and this family member resided in the same residence?
- Yes (1)
- No (2)

Answer If In the past 6 months... Have you and this family member resided in the same residence? Yes Is Selected
Q83 In the past 6 months... Did this family member contribute what you believe to be at least market value rent?
- Yes (1)
- No (2)
Answer If In the past 6 months... Have you and this family member resided in the same residence? Yes Is Selected
Q84 In the past 6 months... Did you contribute what you believe to be at least market value rent?
- Yes (1)
- No (2)

Answer If In the past 6 months... Has your representative payee been a Family member Is Selected
Q85 In the past 6 months... Has this family member officially managed your money as your representative payee?
- Yes (1)
- No (2)

Answer If In the past 6 months... Has anyone unofficially managed your money? Yes Is Selected
Q86 In the past 6 months... Has this family member unofficially managed your money?
- Yes (1)
- No (2)

Q87 We are hoping to find out what types of interactions people are having with their family members. In this section you'll be asked about your relationship and interactions with "this family member". In answering the following questions, again, please refer to the past 6 months. If you or this family member did not engage in an activity please select “not at all” or "no". In the past 6 months...

Q88 About how often did you have in-person contact with this family member?
- Not at all (0)
- Less than once a month (1)
- Once a month (2)
- Once a week (3)
- More than once a week (4)

Q90 About how often did having this family member in your life make you happy?
- Not at all (0)
- Less than once a month (1)
- Once a month (2)
- Once a week (3)
- More than once a week (4)
Q91 About how often did you help this family member with meal preparation, shopping, or other household chores?
- Not at all (0)
- Less than once a month (1)
- Once a month (2)
- Once a week (3)
- More than once a week (4)

Q92 About how often did you help this family member out financially?
- Not at all (0)
- Less than once a month (1)
- Once a month (2)
- Once a week (3)
- More than once a week (4)

Q93 About how often did this family member help or remind you to do things like grooming, bathing or dressing?
- Not at all (0)
- Less than once a month (1)
- Once a month (2)
- Once a week (3)
- More than once a week (4)

Q94 About how often did this family member help, encourage, or remind you to take your medications?
- Not at all (0)
- Less than once a month (1)
- Once a month (2)
- Once a week (3)
- More than once a week (4)

Q95 About how often did this family member help or remind you to do housework or laundry?
- Not at all (0)
- Less than once a month (1)
- Once a month (2)
- Once a week (3)
- More than once a week (4)
Q96 About how often did this family member help or remind you to do shopping for groceries, clothes, or other necessities?
- Not at all (0)
- Less than once a month (1)
- Once a month (2)
- Once a week (3)
- More than once a week (4)

Q97 About how often did this family member cook for you or help you prepare meals?
- Not at all (0)
- Less than once a month (1)
- Once a month (2)
- Once a week (3)
- More than once a week (4)

Q98 About how often did this family member give you a ride or help you use public transportation?
- Not at all (0)
- Less than once a month (1)
- Once a month (2)
- Once a week (3)
- More than once a week (4)

Q99 About how often did this family member remind or urge you to attend activities such as work, school, mental health treatment, or medical appointments?
- Not at all (0)
- Less than once a month (1)
- Once a month (2)
- Once a week (3)
- More than once a week (4)

Q101 About how often did this family member personally pay for or give you money for basic living necessities such as food, transportation, or rent?
- Not at all (0)
- Less than once a month (1)
- Once a month (2)
- Once a week (3)
- More than once a week (4)
Q102 About how often did this family member personally pay for or give you money for non-necessities such as spending money, personal items, or cigarettes?
- Not at all (0)
- Less than once a month (1)
- Once a month (2)
- Once a week (3)
- More than once a week (4)

Q103 About how often did this family member suggest that you should change your behavior?
- Not at all (0)
- Less than once a month (1)
- Once a month (2)
- Once a week (3)
- More than once a week (4)

Q104 About how often did this family member firmly tell you what you should do about something, or what attitude you should have about it?
- Not at all (0)
- Less than once a month (1)
- Once a month (2)
- Once a week (3)
- More than once a week (4)

Q231 About how often did this family member point out harmful consequences of some things you do?
- Not at all (0)
- Less than once a month (1)
- Once a month (2)
- Once a week (3)
- More than once a week (4)

Q232 About how often did this family member offer to do something for you, if you did something for him/her?
- Not at all (0)
- Less than once a month (1)
- Once a month (2)
- Once a week (3)
- More than once a week (4)
Q105 About how often did this family member refuse or delay helping you in some way because of your behavior?
- Not at all (0)
- Less than once a month (1)
- Once a month (2)
- Once a week (3)
- More than once a week (4)

Q106 About how often did this family member tell you something like “I will help you with this, when you do that”?
- Not at all (0)
- Less than once a month (1)
- Once a month (2)
- Once a week (3)
- More than once a week (4)

Q107 About how often did this family member try to prevent you from drinking alcohol or using illegal drugs?
- Not at all (0)
- Less than once a month (1)
- Once a month (2)
- Once a week (3)
- More than once a week (4)

Q108 About how often did this family member encourage you to voluntarily admit yourself to a mental health hospital when you did not think it was necessary?
- Not at all (0)
- Less than once a month (1)
- Once a month (2)
- Once a week (3)
- More than once a week (4)

Q109 About how often was this family member involved in committing you to a mental health hospital against your will?
- Not at all (0)
- Less than once a month (1)
- Once a month (2)
- Once a week (3)
- More than once a week (4)
Q233 About how often was this family member involved in getting someone else to commit you to a mental health hospital against your will?
- Not at all (0)
- Less than once a month (1)
- Once a month (2)
- Once a week (3)
- More than once a week (4)

Q110 About how often did this family member warn you that you could not continue living with him/her if you did not change your behavior (examples are take your medications, clean up after yourself, etc.)?
- Not at all (0)
- Less than once a month (1)
- Once a month (2)
- Once a week (3)
- More than once a week (4)

Q234 About how often did this family member tell you something like “I will give you money for this, when you do that”?
- Not at all (0)
- Less than once a month (1)
- Once a month (2)
- Once a week (3)
- More than once a week (4)

Q111 About how often did this family member warn you that s/he would withhold money for basic living necessities such as food, transportation, or rent if you did not change your behavior (examples are take your medications, clean up after yourself, etc.)?
- Not at all (0)
- Less than once a month (1)
- Once a month (2)
- Once a week (3)
- More than once a week (4)

Q112 About how often did this family member warn you that s/he would withhold money for non-necessities such as spending money, personal items, or cigarettes if you did not change your behavior (examples are take your medications, clean up after yourself, etc.)?
- Not at all (0)
- Less than once a month (1)
- Once a month (2)
- Once a week (3)
- More than once a week (4)
Q299 Is this family member over protective with you?
- Yes (1)
- No (0)

Q300 Does this family member get upset when you don't check in with him/her?
- Yes (1)
- No (0)

Q301 Is this family member always nosing into your business?
- Yes (1)
- No (0)

Q121 Instructions: This is the last section of the survey. While most of us prefer not to have conflict with our family members, sometimes it is unavoidable. As a result, at some point in our lives most people will experience some type of conflict with their family members. In this section you’ll be asked to answer some questions about conflict that you may have experienced with “this family member”. You will first be asked about conflict that “this family member” may have committed towards you. Then you will be asked about conflict that you may have committed towards “this family member”. We understand that you may not have experienced some of these forms of conflict. If not please select “no” or “0”. Please answer the following questions about conflict that “this family member” may have committed towards you.

Q122 Since you were first diagnosed with a mental health condition, has this family member ever insulted, criticized, or swore at you?
- Yes (1)
- No (0)

Answer If Has your FMMI ever insulted, criticized, or swore at you? Yes Is Selected

Q123 In the past 6 months how many times has s/he insulted, criticized, or swore at you?
- 0 (0)
- 1 (1)
- 2 to 4 (2)
- 5 to 9 (3)
- 10 to 19 (4)
- 20 or more (5)

Q124 Since you were first diagnosed with a mental health condition, has this family member ever yelled, shouted, or screamed at you?
- Yes (1)
- No (0)
Q125 In the past 6 months how many times has s/he yelled, shouted, or screamed at you?
- 0 (0)
- 1 (1)
- 2 to 4 (2)
- 5 to 9 (3)
- 10 to 19 (4)
- 20 or more (5)

Q126 Since you were first diagnosed with a mental health condition, has this family member ever destroyed or broken something that belonged to you?
- Yes (1)
- No (0)

Q127 In the past 6 months how many times has s/he destroyed or broken something that belonged to you?
- 0 (0)
- 1 (1)
- 2 to 4 (2)
- 5 to 9 (3)
- 10 to 19 (4)
- 20 or more (5)

Q283 Since you were first diagnosed with a mental health condition, has this family member ever tried to limit your contact with family or friends?
- Yes (1)
- No (0)

Q284 In the past 6 months, how many times has this family member tried to limit your contact with family or friends?
- 0 (0)
- 1 (1)
- 2 to 4 (2)
- 5 to 9 (3)
- 10 to 19 (4)
- 20 or more (5)
Answer If In relation to this family member are you his/her? Spouse or romantic partner Is Selected
Q285 Since you were first diagnosed with a mental health condition, has this family member ever been jealous or possessive of you?
- Yes (1)
- No (0)

Answer If Since you were first diagnosed with a mental health condition, has this family member ever been jealous or possessive of you? Yes Is Selected
Q286 In the past 6 months, how many times has this family member been jealous or possessive of you?
- 0 (0)
- 1 (1)
- 2 to 4 (2)
- 5 to 9 (3)
- 10 to 19 (4)
- 20 or more (5)

Answer If In relation to this family member are you his/her? Spouse or romantic partner Is Selected
Q287 Since you were first diagnosed with a mental health condition, has this family member ever insisted on knowing who you were with?
- Yes (1)
- No (0)

Answer If Since you were first diagnosed with a mental health condition, has this family member ever insisted on knowing who you were with? Yes Is Selected
Q288 In the past 6 months, how many times has this family member insisted on knowing who you are with?
- 0 (0)
- 1 (1)
- 2 to 4 (2)
- 5 to 9 (3)
- 10 to 19 (4)
- 20 or more (5)

Answer If In relation to this family member are you his/her? Spouse or romantic partner Is Selected
Q289 Since you were first diagnosed with a mental health condition, has this family member ever prevented you from knowing about or having access to family income even when you ask?
- Yes (1)
- No (0)
Answer If Since you were first diagnosed with a mental health condition, has this family member ever prevented you from knowing about or having access to family income even when you ask? Yes Is Selected

Q290 In the past 6 months, how many times has this family member prevented you from knowing about or having access to family income even when you ask?
- 0 (0)
- 1 (1)
- 2 to 4 (2)
- 5 to 9 (3)
- 10 to 19 (4)
- 20 or more (5)

Q128 Since you were first diagnosed with a mental health condition, have this family member ever misused or stolen any of your funds, property, or assets?
- Yes (1)
- No (0)

Answer If Has your FMMI ever misused or stolen any of your funds, property, or assets? Yes Is Selected

Q129 In the past 6 months how many times has s/he misused or stolen any of your funds, property, or assets?
- 0 (0)
- 1 (1)
- 2 to 4 (2)
- 5 to 9 (3)
- 10 to 19 (4)
- 20 or more (5)

Q130 Since you were first diagnosed with a mental health condition, have you ever been afraid that this family member might physically harm you or another member of your family?
- Yes (1)
- No (0)

Answer If Have you ever been afraid that your FMMI might physically harm you or another member of your family? Yes Is Selected

Q131 In the past 6 months how many times have you been afraid that s/he might physically harm you or another member of your family?
- 0 (0)
- 1 (1)
- 2 to 4 (2)
- 5 to 9 (3)
- 10 to 19 (4)
- 20 or more (5)
Q134 Since you were first diagnosed with a mental health condition, has this family member ever threatened to hit, slap, or throw something at you?
  - Yes (1)
  - No (0)

Answer If Since your FMMI was first diagnosed with a mental health condition, has s/he ever threatened to hit, slap, or throw something at you? Yes Is Selected

Q135 In the past 6 months how many times has s/he threatened to hit, slap, or throw something at you?
  - 0 (0)
  - 1 (1)
  - 2 to 4 (2)
  - 5 to 9 (3)
  - 10 to 19 (4)
  - 20 or more (5)

Q136 Since you were first diagnosed with a mental health condition, has this family member ever threatened you with a knife, gun, or other lethal object?
  - Yes (1)
  - No (0)

Answer If Since you were first diagnosed with a mental health condition, has this family member ever threatened you with a knife, gun, or other lethal object? Yes Is Selected

Q137 While making these threats did this family member ever have a knife, gun, or other lethal object in his/her hand?
  - Yes (1)
  - No (0)

Answer If Since your FMMI was first diagnosed with a mental health condition, has s/he ever threatened you with a knife, gun, or other lethal object? Yes Is Selected

Q138 In the past 6 months how many times has s/he threatened you with a knife, gun, or other lethal object?
  - 0 (0)
  - 1 (1)
  - 2 to 4 (2)
  - 5 to 9 (3)
  - 10 to 19 (4)
  - 20 or more (5)
Answer If In the past 6 months how many times has s/he threatened you with a knife, gun, or other lethal object... 0 Is Not Selected And While making these threats did this family member ever have a knife, gun, or other lethal object... Yes Is Selected

Q139 In the past 6 months, while making these threats how many times did this family member have a knife, gun, or other lethal object in his/her hand?
- 0 (0)
- 1 (1)
- 2 to 4 (2)
- 5 to 9 (3)
- 10 to 19 (4)
- 20 or more (5)

Q140 Since you were first diagnosed with a mental health condition, has this family member ever thrown something at you?
- Yes (1)
- No (0)

Answer If Has your FMMI ever thrown something at you? Yes Is Selected

Q141 In the past 6 months how many times has s/he thrown something at you?
- 0 (0)
- 1 (1)
- 2 to 4 (2)
- 5 to 9 (3)
- 10 to 19 (4)
- 20 or more (5)

Q142 Since you were first diagnosed with a mental health condition, has this family member ever pushed, grabbed or shoved you?
- Yes (1)
- No (0)

Answer If Has your FMMI ever pushed, grabbed or shoved you? Yes Is Selected

Q143 In the past 6 months how many times has s/he pushed, grabbed or shoved you?
- 0 (0)
- 1 (1)
- 2 to 4 (2)
- 5 to 9 (3)
- 10 to 19 (4)
- 20 or more (5)

Q144 Since you were first diagnosed with a mental health condition, has this family member ever slapped you?
- Yes (1)
- No (0)
Q145 In the past 6 months how many times has s/he slapped you?
- 0 (0)
- 1 (1)
- 2 to 4 (2)
- 5 to 9 (3)
- 10 to 19 (4)
- 20 or more (5)

Q146 Since you were first diagnosed with a mental health condition, has this family member ever kicked, bitten, or choked you?
- Yes (1)
- No (0)

Q147 In the past 6 months how many times has s/he kicked, bitten, or choked you?
- 0 (0)
- 1 (1)
- 2 to 4 (2)
- 5 to 9 (3)
- 10 to 19 (4)
- 20 or more (5)

Q148 Since you were first diagnosed with a mental health condition, has this family member ever hit you with a fist or object or beaten you up?
- Yes (1)
- No (0)

Q149 In the past 6 months how many times has s/he hit you with a fist or object or beaten you up?
- 0 (0)
- 1 (1)
- 2 to 4 (2)
- 5 to 9 (3)
- 10 to 19 (4)
- 20 or more (5)
Q150 Since you were first diagnosed with a mental health condition, have you ever received an injury from violence this family member committed against you, such as a bruise, cut, broken bone or tooth, or a wound?
- Yes (1)
- No (0)

**Answer**

If Since your FMMI was first diagnosed with a mental health condition, have you ever received an injury from violence s/he committed against you, such as a bruise, cut, broken bone or tooth, or a wound? Yes Is Selected

Q151 In the past 6 months how many times have you received an injury from violence s/he committed against you, such as a bruise, cut, broken bone or tooth, or a wound?
- 0 (0)
- 1 (1)
- 2 to 4 (2)
- 5 to 9 (3)
- 10 to 19 (4)
- 20 or more (5)

Q152 Since you were first diagnosed with a mental health condition, has this family member ever used a knife or gun at you?
- Yes (1)
- No (0)

**Answer**

If Has your FMMI ever used a knife or gun at you? Yes Is Selected

Q153 In the past 6 months how many times has s/he used a knife or gun at you?
- 0 (0)
- 1 (1)
- 2 to 4 (2)
- 5 to 9 (3)
- 10 to 19 (4)
- 20 or more (5)

Q132 Since you were first diagnosed with a mental health condition, have you ever informed the police, pressed charges, or filed a restraining/protective order against this family member as a result of violence or threats s/he committed against you?
- Yes (1)
- No (0)
Answer If Have you ever informed the police, pressed charges, or filed a protective order against your FMMI as a result of violence or threats s/he committed? Yes Is Selected

Q133 In the past 6 months how many times have you informed the police, pressed charges, or filed a restraining/protective order against him/her as a result of violence or threats s/he committed against you?

- 0 (0)
- 1 (1)
- 2 to 4 (2)
- 5 to 9 (3)
- 10 to 19 (4)
- 20 or more (5)

Q261 Please select '3' for this item

- 1 (1)
- 2 (2)
- 3 (3)
- 4 (4)

Q156 Instructions: Please answer the following questions about conflict that you may have committed towards this family member.

Q157 Since you were first diagnosed with a mental health condition, have you ever insulted, criticized, or swore at this family member?

- Yes (1)
- No (0)

Answer If Since you were first diagnosed with a mental health condition, have you ever insulted, criticized, or swore at your specific family member? Yes Is Selected

Q158 In the past 6 months how many times have you insulted, criticized, or swore at him/her?

- 0 (0)
- 1 (1)
- 2 to 4 (2)
- 5 to 9 (3)
- 10 to 19 (4)
- 20 or more (5)

Q159 Since you were first diagnosed with a mental health condition, have you ever yelled, shouted, or screamed at this family member?

- Yes (1)
- No (0)
Answer If Since you were first diagnosed with a mental health condition, have you ever yelled, shouted, or screamed at this specific family member? Yes Is Selected

Q160 In the past 6 months how many times have you yelled, shouted, or screamed at him/her?
- 0 (0)
- 1 (1)
- 2 to 4 (2)
- 5 to 9 (3)
- 10 to 19 (4)
- 20 or more (5)

Q161 Since you were first diagnosed with a mental health condition, have you ever destroyed or broken something that belonged to this family member?
- Yes (1)
- No (2)

Answer If Since you were first diagnosed with a mental health condition, have you ever destroyed or broken something that belonged to this specific family member? Yes Is Selected

Q162 In the past 6 months how many times have you destroyed or broken something that belonged to him/her?
- 0 (0)
- 1 (1)
- 2 to 4 (2)
- 5 to 9 (3)
- 10 to 19 (4)
- 20 or more (5)

Answer If In relation to this family member are you his/her? Spouse or romantic partner Is Selected

Q291 Since you were first diagnosed with a mental health condition, have you ever tried to limit this family member's contact with family or friends?
- Yes (1)
- No (0)
Answer If Since you were first diagnosed with a mental health condition, have you ever tried to limit this family member's contact with family or friends? Yes Is Selected

Q292 In the past 6 months, how many times have you tried to limit this family member's contact with family or friends?
- 0 (0)
- 1 (1)
- 2 to 4 (2)
- 5 to 9 (3)
- 10 to 19 (4)
- 20 or more (5)

Answer If In relation to this family member are you his/her? Spouse or romantic partner Is Selected

Q293 Since you were first diagnosed with a mental health condition, have you ever been jealous or possessive of this family member?
- Yes (1)
- No (0)

Answer If Since you were first diagnosed with a mental health condition, have you ever insisted on knowing who this family member is with? Yes Is Selected

Q294 In the past 6 months, how many times have you been jealous or possessive of this family member?
- 0 (0)
- 1 (1)
- 2 to 4 (2)
- 5 to 9 (3)
- 10 to 19 (4)
- 20 or more (5)

Answer If In relation to this family member are you his/her? Spouse or romantic partner Is Selected

Q295 Since you were first diagnosed with a mental health condition, have you ever insisted on knowing who this family member is with?
- Yes (1)
- No (0)
Answer If Since you were first diagnosed with a mental health condition, have you ever insisted on knowing who this family member is with? Yes Is Selected
Q296 In the past 6 months, how many times have you insisted on knowing who this family member is with?
- 0 (0)
- 1 (1)
- 2 to 4 (2)
- 5 to 9 (3)
- 10 to 19 (4)
- 20 or more (5)

Answer If In relation to this family member are you his/her? Spouse or romantic partner Is Selected
Q297 Since you were first diagnosed with a mental illness, have you ever prevented this family member from knowing about or having access to family income even when s/he asks?
- Yes (1)
- No (0)

Answer If Since you were first diagnosed with a mental illness, have you ever prevented this family member from knowing about or having access to family income even when s/he asks? Yes Is Selected
Q298 In the past 6 months, how many times have you prevented this family member from knowing about or having access to family income even when s/he asks?
- 0 (0)
- 1 (1)
- 2 to 4 (2)
- 5 to 9 (3)
- 10 to 19 (4)
- 20 or more (5)

Q163 Since you were first diagnosed with a mental health condition, have you ever misused or stolen any funds, property, or assets belonging to this family member?
- Yes (1)
- No (0)
Answer If Since you were first diagnosed with a mental health condition, have you ever misused or stolen any funds, property, or assets belonging to this specific family member? Yes Is Selected
Q164 In the past 6 months how many times have you misused or stolen any funds, property, or assets belonging to him/her?
- 0 (0)
- 1 (1)
- 2 to 4 (2)
- 5 to 9 (3)
- 10 to 19 (4)
- 20 or more (5)

Q165 Since you were first diagnosed with a mental health condition, do you think this family member has ever been afraid that you might physically harm him/her or another member of your family?
- Yes (1)
- No (0)

Answer If Since you were first diagnosed with a mental health condition, do you believe this specific family member has ever been afraid that you might physically harm him/her or another member of your family? Yes Is Selected
Q166 In the past 6 months how many times do you think this family member has been afraid that you might physically harm him/her or another member of your family?
- 0 (0)
- 1 (1)
- 2 to 4 (2)
- 5 to 9 (3)
- 10 to 19 (4)
- 20 or more (5)

Q169 Since you were first diagnosed with a mental health condition, have you ever threatened to hit, slap, or throw something at this family member?
- Yes (1)
- No (0)
Answer If Since you were first diagnosed with a mental health condition, have you ever threatened to hit, slap, or throw something at this specific family member? Yes Is Selected

Q170 In the past 6 months how many times have you threatened to hit, slap, or throw something at him/her?
- 0 (0)
- 1 (1)
- 2 to 4 (2)
- 5 to 9 (3)
- 10 to 19 (4)
- 20 or more (5)

Q171 Since you were first diagnosed with a mental health condition, have you ever threatened this family member with a knife, gun, or other lethal object?
- Yes (1)
- No (0)

Answer If Since you were first diagnosed with a mental health condition, have you ever threatened this family member with a knife, gun, or other lethal object? Yes Is Selected

Q172 While making these threats did you ever have a knife, gun, or other lethal object in your hand?
- Yes (1)
- No (0)

Answer If Since you were first diagnosed with a mental health condition, have you ever threatened this specific family member with a knife, gun, or other lethal object? Yes Is Selected

Q173 In the past 6 months how many times have you threatened him/her with a knife, gun, or other lethal object?
- 0 (0)
- 1 (1)
- 2 to 4 (2)
- 5 to 9 (3)
- 10 to 19 (4)
- 20 or more (5)
Answer If In the past 6 months, how many times have you threatened him/her with a knife, gun, or other lethal object in your hand? 0 Is Not Selected And While making these threats did you ever have a knife, gun, or other lethal object in your hand? Yes Is Selected
Q174 In the past 6 months while making these threats how many times did you have a knife, gun, or other lethal object in your hand?
- 0 (0)
- 1 (1)
- 2 to 4 (2)
- 5 to 9 (3)
- 10 to 19 (4)
- 20 or more (5)

Q177 Since you were first diagnosed with a mental health condition, have you ever thrown something at this family member?
- Yes (1)
- No (0)

Answer If Since you were first diagnosed with a mental health condition, have you ever pushed, grabbed, or shoved this family member? Yes Is Selected
Q178 In the past 6 months how many times have you thrown something at him/her?
- 0 (0)
- 1 (1)
- 2 to 4 (2)
- 5 to 9 (3)
- 10 to 19 (4)
- 20 or more (5)

Q179 Since you were first diagnosed with a mental health condition, have you ever pushed, grabbed, or shoved this family member?
- Yes (1)
- No (0)

Answer If Since you were first diagnosed with a mental health condition, have you ever pushed, grabbed, or shoved this specific family member? Yes Is Selected
Q180 In the past 6 months how many times have you pushed, grabbed, or shoved him/her?
- 0 (0)
- 1 (1)
- 2 to 4 (2)
- 5 to 9 (3)
- 10 to 19 (4)
- 20 or more (5)
Q181 Since you were first diagnosed with a mental health condition, have you ever slapped this family member?
- Yes (1)
- No (0)

Answer If Since you were first diagnosed with a mental health condition, have you ever slapped this specific family member? Yes Is Selected

Q182 In the past 6 months how many times have you slapped him/her?
- 0 (0)
- 1 (1)
- 2 to 4 (2)
- 5 to 9 (3)
- 10 to 19 (4)
- 20 or more (5)

Q183 Since you were first diagnosed with a mental health condition, have you ever kicked, bitten, or choked this family member?
- Yes (1)
- No (0)

Answer If Since you were first diagnosed with a mental health condition, have you ever kicked, bitten, or choked this specific family member? Yes Is Selected

Q184 In the past 6 months how many times have you kicked, bitten, or choked him/her?
- 0 (0)
- 1 (1)
- 2 to 4 (2)
- 5 to 9 (3)
- 10 to 19 (4)
- 20 or more (5)

Q185 Since you were first diagnosed with a mental health condition, have you ever hit this family member with a fist or object or beaten him/her up?
- Yes (1)
- No (0)
Answer If Since you were first diagnosed with a mental health condition, have you ever hit this specific family member with a fist or object or beaten him/her up? Yes Is Selected

Q186 In the past 6 months how many times have you hit him/her with a fist or object or beaten him/her up?
- 0 (0)
- 1 (1)
- 2 to 4 (2)
- 5 to 9 (3)
- 10 to 19 (4)
- 20 or more (5)

Q187 Since you were first diagnosed with a mental health condition, has this family member ever received an injury from violence you committed against him/her such as a bruise, cut, broken bone or tooth, or a wound?
- Yes (1)
- No (0)

Answer If Since you were first diagnosed with a mental health condition, has this specific family member ever received an injury from violence you committed against him/her such as a bruise, cut, broken bone... Yes Is Selected

Q188 In the past 6 months how many times has s/he received an injury from violence you committed against him/her such as a bruise, cut, broken bone or tooth, or a wound?
- 0 (0)
- 1 (1)
- 2 to 4 (2)
- 5 to 9 (3)
- 10 to 19 (4)
- 20 or more (5)

Q189 Since you were first diagnosed with a mental health condition, have you ever used a knife or gun at this family member?
- Yes (1)
- No (0)

Answer If Since you were first diagnosed with a mental health condition, have you ever used a knife or gun at this family member? Yes Is Selected

Q190 In the past 6 months how often have you used a knife or gun at him/her?
- 0 (0)
- 1 (1)
- 2 to 4 (2)
- 5 to 9 (3)
- 10 to 19 (4)
- 20 or more (5)
Q167 Since you were first diagnosed with a mental health condition, has this family member ever informed the police, pressed charges, or filed a restraining/protective order against you as a result of violence or threats you committed against him/her?

- Yes (1)
- No (0)

Answer If Since you were first diagnosed with a mental health condition, has this specific family member ever informed the police, pressed charges, or filed a protective order against you as a result of violence... Yes Is Selected

Q168 In the past 6 months how many times has s/he informed the police, pressed charges, or filed a restraining/protective order against you as a result of violence or threats you committed against him/her?

- 0 (0)
- 1 (1)
- 2 to 4 (2)
- 5 to 9 (3)
- 10 to 19 (4)
- 20 or more (5)

Q274 After responding to this question please submit your responses by clicking the forward arrow at the bottom of the page. If you are interested in being entered in the lottery for an electronic gift card, please enter a valid email address below and enter whether you prefer an Amazon.com or Walmart electronic gift card. Once the survey has closed, electronic gift cards will be sent to those randomly selected either directly from Walmart.com or Amazon.com or from tlabrum@sp2.upenn.edu.


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