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Original research

Adverse Childhood Experiences and Non-Suicidal Self-Injury as mediated by Pathological Personality Traits

Marc Eric S. Reyes[1]✉, Roger D. Davis[2], Ariane Melisa D. Rojales[1]
Christian Paulo R. Zamora[1], Denielle F. Germodo[1], Lea Rizza V. Lanuza[1]
Ann Nicole R. Manahan[1]

[1]University of Santo Tomas
[2]Institute for the Study of Personality

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***Abstract*:** Adverse childhood experiences (ACEs) frequently serve as antecedents to severe negative behaviors, particularly non-suicidal self-injury (NSSI) and the development of pathological personality traits (PPTs) during adolescence. We explored the impact of childhood adversity on non-suicidal self-harm as mediated by pathological personality traits among 782 Filipino adolescents from 18 to 24 years old studying in Metro Manila. Participants completed a battery of tests designed to measure ACEs, NSSI and PPTs. Findings showed that the association between ACEs and NSSI is partially mediated by PPTs. The correlation between ACEs and NSSI remained significant even after controlling for PPTs. This suggests that both ACEs and PPTs may be viewed as proximal causes of NSSI, and that clinical interventions for NSSIs should focus on both the continuing trauma of ACEs and the influence of PPTs.

Keywords: *Adverse childhood experiences, non-suicidal self-injury, pathological personality traits, Filipino adolescents, mediation model analysis*

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Adverse childhood experiences (ACEs) refer to the early life experiences that are considered to be extremely intense and stressful. Such experiences include several types of abuse, neglect, violence, other kinds of serious household dysfunction, including alcohol and substance abuse, and parental, peer, community and collective violence (World Health Organization, 2012). The Centers for Disease Control and Prevention (2012) have suggested that childhood adversity does not directly lead to negative outcomes, but instead greatly increases the risk of developing short- and long-term negative physical and mental health problems.

✉Dr. Marc Eric S. Reyes, Address: Department of Psychology, University of Santo Tomas, Manila, Philippines, Email address: msreyes@ust.edu.ph

There is a growing interest in understanding the prevalence of ACEs. In the United States, the 2016 National Survey of Children's Health (NSCH) data was used to report the prevalence of eight specific ACEs, as reported by a parent or guardian (Sacks & Murphey, 2018). Nationally, the study reported that the most common ACEs were economic difficulties and divorce or separation of a parent or a guardian. The study reported that about 45 percent of children in the United States have experienced at least one ACE. One in ten children placed in a category of especially high risk had been exposed to three or more ACEs (Sacks & Murphey, 2018). A community survey conducted in Albania found that the exposure to ACEs for children in their sample (mean age = 21.2 ± 2.3 years) was high (Qirjako, Burazeri, Sethi, & Miho, 2013). Among young adults in the same study (N=1,437), almost half reported

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two or more ACEs, while 14% reported at least four ACEs (Qirjako et al., 2013). Bellis et al. (2015) reported in their Welsh Adverse Childhood Experiences Study (N = 2,028) that the prevalence of particular ACEs ranged from 4.6% for living with a household member who uses drugs to 22.8% for more than one episode of verbal abuse. Nearly half (46.5%) had at least one ACE. Findings from these two population-based studies support the general conclusion that nearly half of children will be exposed to at least one ACE.

Children who experience ACEs later exhibit changes in emotional expression, emotional awareness and the use of specific types of maladaptive emotion regulation strategies (McLaughlin, 2017). Such changes in emotional processing mediate the association between ACEs and the later development of internalizing psychopathologies (McLaughlin &Hatzenbuehler, 2009; McLaughlin, Hatzenbuehler, & Hilt, 2009). ACEs are consistently associated with the development of psychological disorders in childhood, adolescence, and adulthood (Green et al., 2010; Kessler, Davis, & Kendler, 1997; McLaughlin et al., 2012). As such children develop, they are more likely to suffer from physical and mental health problems. Mental health problems include anxiety and mood disorders (Kaufman et al., 2004; Fletcher, 2009; Widom et al., 2012), comorbid post-traumatic stress disorder and depressive episodes (Kilpatrick et al., 2003), substance and alcohol use disorders (Douglas et al., 2010; Dube, 2001), Major Depressive Disorder (MDD), Borderline Personality Disorder (BPD) (Pietrek et al., 2013), Bipolar Disorders (Mayo Clinic Staff, 2010), and risky behaviors (Felitti et al., 1998, Widom et al., 2012) like suicidality (Dube et al., 2001) and early smoking initiation (Edwards et al., 2007).

Furthermore, ACEs contribute to the development of pathological personality traits and personality disorders. Personality development is significantly influenced by early-life experience, especially adversity and maltreatment (Congdon et al., 2012). Possible lifelong personality consequences include high levels of depressive symptoms and self-criticism (Baetens et al., 2015), low self-esteem, high levels of aggression, and impulsivity (Di Pierro, Sarno, Perego, Gallucci, & Madeddu, 2012). Specific subtypes of adverse childhood experiences (e.g., physical abuse, sexual abuse, emotional neglect, verbal abuse) are each related to increased risk for particular personality disorders (Nederlof, Van der Ham, & Dingemans, 2010; Zhang et al., 2012). As the number of subtypes of childhood maltreatment an individual is exposed to increases, the risk of having one or more personality disorders increases. Adverse childhood experiences are found to be strongly correlated with Cluster B (antisocial, borderline, histrionic, narcissistic) personality disorders. Particularly, higher levels of abuse (emotional and sexual) and neglect (emotional and physical) increases the risk of Borderline Personality Disorder (BPD) (Zhang et al., 2012). Moreover, higher levels of physical and sexual abuse have been positively related with dissocial behaviors typically associated with Antisocial Personality Disorder (Nederlof, Van der Ham, & Dingemans, 2010; Zhang et al., 2012).

Non-suicidal self-injury (NSSI) manifests as direct and deliberate (intentional, not accidental) bodily harm in the absence of suicidal intent (Nock & Favazza, 2009). NSSI may be viewed as a direct cause of harm, as contrasted with smoking and drug abuse, which typically result in injury over the long-term (Armiento, 2015). There are different and multiple methods of self-injury. The most commonly used methods include cutting, scratching of the skin, head banging, and biting (Gratz, Conrad & Roemer, 2002; Heath, Toste, Nedecheva & Charlesbois, 2008; Klonsky & Olino, 2008).

NSSI most commonly occurs during adolescence. Epidemiological research shows prevalence rates of 13%–45% in adolescents (Ross & Heath, 2002; Brunner et al., 2007; Lloyd-Richardson et al., 2007; Plener et al., 2009; Nock, 2010). According to Lovell & Clifford (2016), 1 in 6 adolescents have tried to self-harm at least once. These adolescents attempt to injure themselves without conscious suicidal intent. Instead, they resort to NSSI as a means of coping with extreme emotions and negative states such as anger and depression (Nock, 2010). Recent studies have stated that NSSI usually occurs in adolescents and young adults, and the age onset is reported at between 12 to 14 years (Cipriano, Cella & Cotrufo, 2017). Community studies conducted in the United States have reported that one-third to one-half of the adolescents have tried NSSI at some point in their lives (Yates, Luthar & Tracy, 2008). Evans, Hawton, and Rodham (2004) asserted that these adolescents are often described as impetuous, that is, engaging in self-harm without forethought. Gratz (2001) found that 35% of a sample of young adults had a history of self-harm, 15% were reported to have tried NSSI more than 10 times, and 9% used some type of NSSI more than a hundred times (Gratz, 2001). As such, NSSI is now recognized as a public health concern worldwide (Skegg, 2005).

Functional accounts of NSSIs generally emphasize the regulation of negative affect states, though some also recognize an interpersonal component. According to Klonsky (2007), affect-based NSSIs either reduce negative affect or increase a desired feeling that might compete with the negative affect. Nock and Mendes (2008) found that people who

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engage in NSSI have higher physiological arousal levels after being subjected to stressful stimuli than those who don't engage in NSSI. Kiekens et al. (2015) concluded that people with a depressive reaction pattern are at risk of engaging in NSSI to mitigate their increased stress levels. Lloyd-Richardson et al. (2007) noted that the most frequent explanations for engaging in NSSI are seeking reactions from someone else, to try and get a hold on one's current predicament, and to end horrible feelings. Suyemoto (1998) regards NSSI as diminishing feelings of dissociation or unreality (i.e. self-mutilator either wants to feel numb or escape numbness). Further, the anti-suicide function of NSSI is described as a coping mechanism to avoid suicide or complete destruction by channeling negative affect into destructive urges, particularly NSSI, which is directly contrasted with an actual suicide attempt.

ACEs have been strongly associated with NSSI. Wan, Chen, Sun & Tao (2015) found that among Mainland Chinese adolescents, childhood adversity significantly increased self-harming behaviors, suicide attempts, and NSSI. According to Lang and Sharma-Patel (2011), childhood trauma disrupts the ability to properly regulate or manage negative emotional states. Essentially, self-injury becomes a regulatory pathway for coping with extreme distress that affects cognitive and affective processing, integration of thinking and feeling, and development of the capacity to understand and regulate negative affect (Yates, 2009; Lang & Sharma-Patel, 2011).

While ACEs influence the development of both PPTs and NSSI, it is not clear whether ACEs are best viewed as causing NSSI directly, or whether ACEs may create PPTs, which then increase the probability of NSSI, a mediation model. The current study explored the impact of ACEs on NSSI as mediated by PPTs among Filipino adolescents studying in Metro Manila. Understanding the strength of these associations and the direction of influence between the three variables could help researchers to identify appropriate steps to take in order to better treat the negative consequences of ACEs.

Method

Research Design

The present research was designed as a mediation study which contrasts the strength of association between two models. The first model looks at the strength of association between ACEs and NSSI. The second model looks at ACEs and NSSI as mediated by the pathological personality traits. The models are then compared to determine the extent to which the mediation may be said to be partial or total.

Participants

A total of 782 Filipino college students (M = 250; F = 532), with ages ranging from 18 to 24 (M = 19.53; SD = 1.22), studying in Metro Manila, who have not attempted suicide participated in the study. Convenient sampling was used to gather the participants. A total of 129 college students were excluded from the final sample due to invalid data (e.g. incomplete responses in the questionnaires, attempted suicide). All the participants signed an informed consent form prior to the completion of the three research measures. Participation was voluntarily and without compensation.

Measures

Adverse Childhood Experiences International Questionnaire (ACE-IQ). This is a 43-item questionnaire that is intended to measure childhood adversities such as familial dysfunction, neglect, emotional and sexual abuse, peer violence, and exposure to war/collective violence. Sample statements include "Did you see or hear a parent or household member in your home being yelled at, screamed at, sworn at, insulted or humiliated?", "Did someone make you touch their body in a sexual way when you did not want them to?", "Were you beaten up by soldiers, police, militia, or gangs?". Subjects check a box indicating the frequency with which the event occurred. Psychometric properties of the ACE-IQ were evaluated in international field-testing from 2009 to 2011 (World Health Organization, 2012). In 2015, a validation study for ACE-IQ and Childhood Trauma Questionnaire (CTQ) was conducted using 253 prison inmates in Nigeria (Kazeem, 2015). Results showed the ACE-IQ and CTQ to have concurrent validity (r = .72, $p < .01$). The author concluded that the ACE-IQ is a reliable (α = .80) and valid index for measuring and assessing ACEs. In the present study, the ACE-IQ had a reliability measure of .77.

Self-Harm Inventory (SHI). The SHI is a one-page, 22-item, yes-or-no questionnaire that assesses lifetime history of self-harm behavior. All items are preceded by the statement "Have you ever intentionally, or on purpose…" Example topics include "overdosed?", "cut yourself on purpose?", "burned yourself on purpose?", "hit yourself?", "prevented wounds from healing?", and "driven recklessly?" One item in particular asks if the respondent has "attempted suicide?" A positive response to this item excluded respondents from the study. Total scores range from 0 to 22, with higher scores indicating a history of engaging in

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greater range of self-harm behaviors. The SHI was highly correlated (r = .57, p < .01) with the Borderline Personality scale of the Personality Diagnostic Questionnaire-Revised (PDQ-R). The overall accuracy of SHI in correctly classifying the research participants diagnosed as having Borderline Personality Disorder (BPD) with PDQ-R was 87.9% (Kappa = .51) (Sansone, Wiederman, & Sansone, 1998). The Cronbach's alpha of the SHI in the current study was .74.

The Personality Inventory for DSM-5 - Brief Form Adult (PID-5-BF). The PID-5-BF is a 25-item scale designed to assess pathological traits; it has five domain scales: (1) Negative Affectivity (e.g. "I worry about almost everything"), (2) Disinhibition (e.g. "I feel like I act totally on impulse"), (3) Antagonism (e.g. "I crave attention"), (4) Psychoticism (e.g. "My thoughts often don't make sense to others"), and (5) Detachment (e.g. "I often feel like nothing I do really matters"). Internal consistency for the five domain scales have been reported to range from α = .70 to .78 (Anderson, Sellbom, & Salekin, 2016). The PID-5-BF has been shown to have a replicable factor structure, convergence with existing personality instruments, and expected associations with broadly conceptualized clinical constructs (Al-Dajani, Gralnick, & Bagby, 2015). The PID-5-BF's reliability coefficients in the present study are: α = .74 (Negative Affectivity), α = .73 (Disinhibition), α = .71 (Antagonism), α = .73 (Psychoticism), and α = .64 (Detachment).

Procedure

A research proposal was submitted to the University of Santo Tomas College of Science Ethics Review Committee in order to secure the safety, rights, and well-being of the participants. Participants completed the informed consent form and were then instructed on how to answer the survey form. Mental health referrals were made for respondents who reported significant negative feelings after accomplishing the questionnaire. Test administration lasted approximately 20-30 minutes. Data were analyzed with IBM SPSS Statistics 20. Mediation effects were evaluated with the Sobel test using an online calculator (Preacher & Hayes, 2004).

Results

Socio-demographics

Table 1 presents the socio-demographic profile of the 782 Filipino college students who participated in the current study.

Table 1 – Socio-demographic profile of the Filipino college students in the current study, n=782

	N	%
Gender		
Male	250	31.97
Female	532	68.03
Age		
18 years old	147	18.80
19 years old	276	35.29
20 years old	245	31.33
21 years old	59	7.54
22 years old	32	4.09
23 years old	14	1.79
24 years old	9	1.15
Religion		
Roman Catholic	578	73.91
Christian	68	8.70
Iglesia Ni Cristo	16	2.05
Islam	7	0.90
Others	113	14.45
Region of Origin		
NCR	316	40.41
Region IV-A	251	32.10
Region III	80	10.23
Others	41	5.24
None Specified	94	12.02

Nature and extent of ACE and NSSI

Among the 782 respondents, 30.18% (n=236) did not experience any form of ACE, 28.01% (n=219) experienced exactly one type of ACE, 16.37% of the sample (n=128) experienced exactly two types of ACEs, 11.64% of the sample (n=91) experienced exactly three types of ACEs, and 13.81% of the sample (n=108) experienced four or more types of ACEs.

The categories of ACEs reported from most frequently to least frequently were experiencing a household member treated violently (30.56%, n=239), emotional neglect (27.11%, n=212), having only one or no parents, parental separation or divorce (22.25%, n=174), sexual abuse (13.94%, n=109), collective violence (12.53%, n=98), emotional abuse (11.76%, n=92), living with someone who was either chronically depressed, mentally ill, institutionalized, or suicidal (9.21%, n=72), bullying (9.08%, n=71), living with an alcohol and/or substance abuser in their household (7.67%, n=60), community violence (6.65%, n=52), physical abuse (5.12%, n=40), living with a household member who was incarcerated (3.07%, n=24), and physical neglect (2.81%, n=22).

A total of 162 out of 782 participants (20.72%) obtained or exceeded the cut-off score of 5 in SHI, indicating that they have engaged in non-suicidal self-injury. The top five most frequently used

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methods of self-harm were torturing oneself with self-defeating thoughts (34.40%, n=269), hitting oneself (28.01%, n=219), banging one's head on purpose (23.91%, n=187), alcohol abuse (18.67%, n=146), and scratching oneself on purpose (14.96%, n=117).

We did not attempt to classify the frequency of subjects experiencing PPTs, since cut off scores for the PID-5-BF were not available.

The influence of ACEs on the development of NSSI and PPTs can be seen in Table 2, which cross-indexes ACE scores with the mean NSSI and PPT scores. As shown, both NSSI and PPT scores increase as ACE scores increase.

Table 2 – Mean Scores of NSSI and PPT

	ACE = 0	ACE = 1 or 2	ACE = 3 or more
Mean NSSI Score	1.44	2.09	3.45
Mean PPT Score	0.91	1.08	1.25

Correlation and Regression analysis

Table 3 presents the Pearson's correlation coefficients for all variables in the study. All correlations were significant.

Table 3 – Summary of Correlations, Means, and Standard Deviations for Scores on Adverse Childhood Experiences, Non-Suicidal Self-Injury and Pathological Personality Traits

	1	2	3	*M*	*SD*
1.Non-Suicidal Self-Injury (NSSI)	-			2.24	2.52
2. Pathological Personality Traits (PPT)	.36**	-		1.07	.47
3. Adverse Childhood Experiences (ACE)	.32**	.28**	-	1.62	1.65

Note. N = 782; **p< .01, one-tailed.

Table 4 on the other hand, shows a simple linear regression analysis that was conducted individually for NSSI and PPT to determine if adverse childhood experiences predict the risk of NSSI onset and the likelihood of maladaptive personality development. ACEs explained 10% of the variance in NSSI, (R^2 = 0.10, F(1, 780) = 86.33, p< .01) and 8% of the variance in PPTs, (R^2 = 0.08, F(1, 780) = 66.50, p< .01). To be more specific, ACEs significantly predicted the onset of NSSI (B = .48, p< .01) and maladaptive personality development (B = .08, p< .01). Furthermore, we also analyzed the predictive values of ACEs and PPTs as simultaneous predictors of NSSI which will be discussed in the following mediation analysis section.

Mediation analysis

Regression analysis was used to investigate the hypothesis that PPTs mediates the effect of ACEs on NSSI behaviors. If the relationship is total mediation, then the correlation between ACEs and NSSI after controlling for PPTs would drop to zero. If the relationship is partial mediation, then the correlation between ACEs and NSSI would drop, but remain significant.

As demonstrated in Figure 1, ACEs were significant predictors of the development of pathological personality traits, B = .08, p < .05, and that pathological personality traits were significant predictors of NSSI behaviors, B = 1.57, p < .05. ACEs remained a significant predictor of NSSI behaviors after controlling for PPTs, B = .36, p < 0.05, consistent with partial mediation. Approximately 18% of the variance in NSSI was accounted for by the predictors (R^2 = 0.18, F(2, 779) = 83.56, p < .05). The mediation effect was tested using the Sobel test. The result indicated the mediation effect was significant, z = 5.80, SE = .021, p < .05. The effects of ACEs on NSSI was significantly reduced, but not eliminated, after the inclusion of the mediator variable, PPTs.

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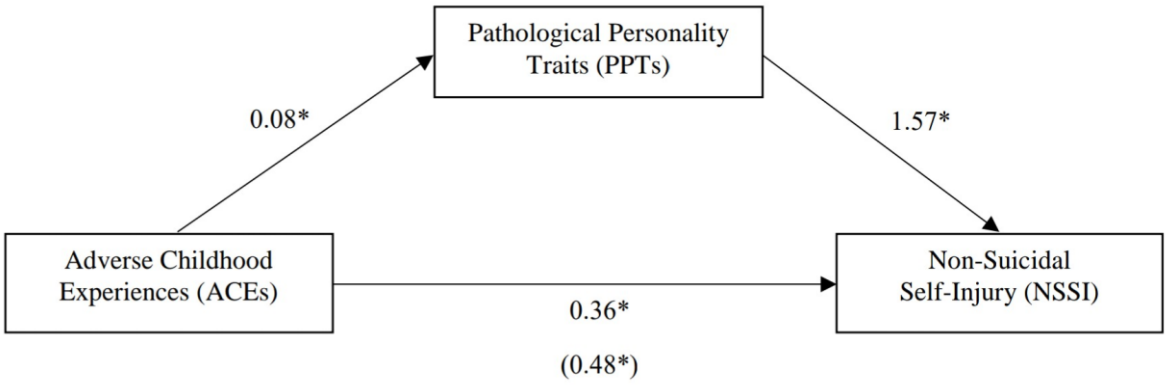
Table 4 – Simple regression analyses for Adverse Childhood Experiences, Non-Suicidal Self-Injury and Pathological Personality Traits

	Adverse Childhood Experiences (predictor)			Pathological Personality Traits (predictor)		
Dependent Variables	*B*	*SE B*	*β*	*B*	*SE B*	*B*
Pathological Personality Traits	.08	.01	.28**			
Non-Suicidal Self-Injury	.48	.05	.32**			
Non-Suicidal Self-Injury [a]	.36	.05	.24**	1.57	.18	.29*

Note. [a]R^2 = .18; beta coefficients for the association between PPT (mediator) and NSSI (DV) were calculated (when ACE is also a predictor of NSSI).
*p< 0.05. ** p< 0.01.

Figure 1 – Mediation model of the pathway between ACEs, PPTs, NSSI. Beta-coefficients and associated p-values are presented in the diagram. Data in parenthesis is the path prior to the proposed mediator.



Discussion

The correlations reported in Table 3 are significant for each pair of variables in our study. That is, ACE scores predict PPT scores, ACE scores predict NSSI scores, and PPT scores predict NSSI scores. These findings are broadly consistent with the existing literature, as documented in the introduction of this paper. The ordering of the variables reflects development. That is, ACEs are assumed to lead to the development of PPTs, and both are assumed to lead to NSSI.

The purpose of our study, however, was not to document the pairwise associations between ACEs, PPTs, and NSSI, but instead to explore whether the relationship between ACEs and NSSI was totally or partially mediated by PPTs. The distinction is important for theorizing about the relationship between these variables over the course of development. In a total mediation model, PPTs would arise as intermediate structures that then influence NSSI behaviors directly. In other words, ACEs would be considered the distal cause, and PPTs would be considered the proximal cause of NSSI behavior. Effective interventions would focus on the PPTs. ACEs would be too remote to serve as effective intervention targets. For example, emotional lability is considered to be a trait that can precede cutting. In the total mediation model, interventions would focus on emotional lability, not on the ACE implicated in its development. In a partial mediation model, PPTs develop as a result of ACEs, and then predict NSSI, but ACEs still predict NSSI beyond what is afforded by PPTs alone. That is, the relationship between ACEs and NSSIs remain significant even after PPTs are considered. Presumably, the trauma caused by the ACEs remains unresolved, and may possibly continue to have an effect on present functioning, beyond any personality characteristics the ACE might help create. Indeed, our results did seem to assume a

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causal relationship between ACEs and NSSI. The causality in this correlation could go either way but we really doubt that NSSI causes ACEs.

Our results support the partial mediation model. We conclude that clinical interventions for NSSI should be concerned with both ACEs and PPTs as causes of NSSI, with their importance varying depending on the individual. In other words, a clinician who observes NSSI in a patient should be motivated to assess the patient for both ACEs and PPTs. Neither is a necessary or sufficient cause of NSSI. Some patients are likely to experience trauma as a result of their ACEs, do not develop PPTs, yet go on to exhibit NSSI. Some patients experience trauma as a result of ACEs, do develop PPTs, and go on to exhibit NSSI. Some patients exhibit both ACEs and PPTs to various degrees.

The findings of the current study are broadly consistent with previous studies about the relationships between ACEs, PPTs, and NSSIs. To date, most of these studies have considered only two of the three variables at a time. Such studies implicitly invite us to believe that ACEs are the sole cause of NSSI, or that PPTs are the sole cause of NSSI, without painting the larger picture. Instead, we chose to test two possible developmental pathways, namely total and partial mediation of the relationship between ACEs and NSSI by PPTs. The latter model was supported by our data.

While the partial model supported in our study is more complex, we emphasize that each causal link in the model is supported by a body of existing research. The ACE to NSSI link was supported by Yates (2009), who reported that 79% of the individuals with NSSI also experienced an inauspicious childhood. Kaess et al. (2012) found a significant association between NSSI and a variety of ACEs. Exposure to persistent severe stressors during childhood predicts health problems (Shonkoff, Boyce, & McEwen, 2009), and adverse forms of risk taking (Anda et al., 2006; Middlebrooks & Audage, 2008). Early stressors such as physical and emotional abuse, emotional neglect, parental substance use, and exposure to violence in the household and in the community, were linked to later adverse adolescent outcomes including criminal acts, drug use, addiction, self-harm, and suicide. Anda et al. (2006) study also suggested that female adolescents who were sexually abused have a higher tendency to engage first intercourse at an earlier age and unintended pregnancy.

The ACE to PPT link was supported by Fletcher and Schurer (2017), who established that child maltreatment impacts personality development. One of the many pathways through which adverse childhood experiences affect the childhood personality is the impact of experiences on the brain development (Fletcher & Schurer, 2017). The prefrontal cortex aids in the observation and regulation of emotions and behavior and is associated with executive function. The amygdala is responsible in the forming and storing of memories associated with emotional events and is related to emotional stability. Battle, Shea, Johnson, Zlotnick, and Zanarini (2004) found that subjects with PPTs were more likely to have experienced childhood maltreatment. Katon, Sullivan, and Walker (2001), claimed that individuals with PPTs often have less power in handling and dealing with life problems. Such problems include attachment difficulties in which individuals lose trust and fear the people around them, the formation of negative self-image, lack of self-worth, and feelings of incompetence (Hughes, Lowey, Quigg, & Bellis, 2016).

Finally, pathological personality traits can predict the presence and severity of NSSI. Cawood and Huprich (2011) found that individuals who were highly emotional tended to have a decreased ability to tolerate distress, and thus, they were more likely to resort to NSSI as a means of managing and controlling overwhelming and stressful experiences. Martin, Thomas, Andrews, Hasking and Scott (2015) found that subjects who were psychologically distressed or reported psychotic experiences were at higher risks of developing NSSI. Di Pierro et al. (2012) argue that a positive association exists between impulsivity and presence of NSSI.

Limitations and Future Directions

The current research and its exploration of pathological personality traits as a mediator between adverse childhood experiences and non-suicidal self-injury is the first such study in the Philippines. Nevertheless, the results should be considered within the context of their limitations. One important limitation is that we did not identify which type of child maltreatment directly predicted and was related to non-suicidal self-injury and personality development. Second, we did not identify the differences between genders in terms of the prevalence of NSSI, nor did we consider gender to be a mediating variable. Lastly, the study did not explore the functions NSSI served for Filipino adolescents who resort to NSSI.

Further research could include a broader range of ages and expand the range of participants to other regions of the Philippines. With a larger sample, a more fine-grained measure of personality, specific types of ACEs might be found to significantly predict several different PPTs and PDs (particularly BPD), and in turn, different non-suicidal self-harming behaviors. Moreover, gender would be an important variable to explore in future studies as a

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moderator variable that might inform understanding of when the relationships between ACEs, NSSI and PPTs will occur.

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