

The Role of Unmet Needs in Self-Harming Behaviours

By

Allisha Patterson

A thesis submitted to the Graduate Program in Psychology
in conformity with the requirements for the
Degree of Doctor of Philosophy

Queen's University
Kingston, Ontario, Canada

July, 2015

Copyright © Allisha Patterson, 2015

Abstract

Suicide and self-mutilation are widespread societal issues, making them an important area of research. The interpersonal theory of suicide (ITS) and Shneidman's theory of psychache have each garnered substantial support in suicide research; however, to date, there have been no studies that combine the theories in hopes of creating a better model of suicide. There has also been very limited research that has applied these theories to self-mutilation, a behaviour highly correlated with suicide. It is expected that these two theories are compatible given that they both focus on unmet needs which create an undesirable state, and they both suggest that an additional factor is necessary for unmet needs to create suicidality. The current research also contributes theoretically to the literature by investigating previously unexplored possible antecedents to suicide and self-mutilation, namely adverse childhood experiences and early maladaptive schemas (unmet needs from childhood that influence an individual's interpretation of the world). Data were collected from two distinct populations: 428 university undergraduates and a community sample of 533 individuals. Participants completed questionnaires assessing the criterion measures of self-mutilation and suicidality and the psychological predictors of psychache, thwarted belongingness, perceived burdensomeness, and acquired capability for suicide. Analyses revealed that, for both the university and community samples, the ITS model (interaction of thwarted belonging, perceived burdensomeness and acquired capability) and psychache each added unique variance to the prediction of suicide ideation, motivation, preparation, and non-suicidal self-injury. A combined model, however, was not better able to predict a past suicide attempt. Further, contrary to expectation, the ITS-self-harm relationship was not mediated by psychache. Explanations for these findings are provided. Overall, these results provide important theoretical and practical contributions to the literature suggesting the utility of a new, blended model of suicide. Limitations and future directions are discussed.

Acknowledgements

First, I would like to thank my supervisor, Dr. Ronald Holden for all his guidance. His advice and suggestions on this thesis were always appreciated. I have enjoyed our many discussions about life in Kingston and travelling the world. I have felt spoiled by you and Cynthia over the years.

I would also like to thank my committee members, Dr. Katherine Harkness and Dr. Patricia Minnes, for their invaluable comments and suggestions.

Thank you also to my mom, dad, and sister for their endless support and encouragement along the lengthy PhD road. Their belief in me was critically important to my success. Thank you also to my close friends and lab mates who provided valuable guidance along the way.

Lastly, Jon I could not have done this without you. Thank you for all your love and encouragement. Your willingness to join me on adventures across the country in order to complete my schooling has made finishing my PhD possible. Thank you and I love you.

Table of Contents

ABSTRACT	II
ACKNOWLEDGEMENTS	III
TABLE OF CONTENTS	IV
LIST OF TABLES	VI
LIST OF FIGURES	VIII
CHAPTER 1: INTRODUCTION	1
Similarities and Differences between Self-Mutilation and Suicide	4
Theories of Self-Mutilation	5
Theories of Suicide	6
Purpose of the Current Study	7
Psychache Theory of Suicide	9
Interpersonal Theory of Suicide	12
A Blended Model	16
Unmet Needs	22
Adverse Childhood Experiences	23
Early Maladaptive Schemas	24
Application of Adverse Childhood Experiences and EMS to Blended Model	27
Study Importance	31
Current Objective	31
CHAPTER 2: METHODS	33
Participants	33
Measures	39
Psychache Scale	39
Beck Scale for Suicide Ideation (BSS)	39
Young Schema Questionnaire (YSQ-SF)	40
Interpersonal Needs Questionnaire (INQ)	41
The Deliberate Self-Harm Inventory (DSHI)	41
Acquired Capability for Suicide Scale (ACSS)	42
Childhood Trauma Questionnaire (CTQ)	42
Procedure	43
Data Analytic Strategy	44
CHAPTER 3: RESULTS	47
Preliminary Analyses	47
Correlations Among Measures of Suicidality	57
Multiple Regression & Mediation Analyses	62
CHAPTER 4: DISCUSSION	71

Findings	72
Theoretical Implications	75
Practical Implications	80
Assessment.....	80
Intervention	82
Limitations and Future Directions.....	83
CHAPTER 5: CONCLUSIONS	88
REFERENCES	90
APPENDICES.....	109

List of Tables

Chapter 1

Table 1: Definitions of Terms Related to Suicide	3
--	---

Chapter 2

Table 2: Comparison of University and Community Participant Characteristics.....	38
--	----

Chapter 3

Table 3: Means, Standard Deviations, and Reliabilities for the University & Community Sample.....	50
---	----

Table 4: Means and Standard Deviations for Suicide-Attempters Versus Non-Attempters and Self-Mutilators Versus Non-Mutilators – University Sample.....	51
--	----

Table 5: Means and Standard Deviations for Suicide-Attempters Versus Non-Attempters and Self-Mutilators Versus Non-Mutilators – Community Sample.....	52
---	----

Table 6: Means, Standard Deviations, and Effect Sizes of Self-Mutilators and Suicide-Attempters Among the Community Sample	53
--	----

Table 7: Means and Standard Deviations for University Suicide-Attempters Versus Community Suicide-Attempters and University Self-Mutilators Versus Community Self-Mutilators.....	54
---	----

Table 8: Means, Standard Deviations, and Reliabilities of the University and Community Sample on the CTQ.....	55
---	----

Table 9: Means, Standard Deviations, and Reliabilities of the University and Community Sample on the YSQ–SF.....	56
--	----

Table 10: Intercorrelations Among Measures of Self-harm - University Sample.....	59
--	----

Table 11: Intercorrelations Among Measures of Self-harm - Community Sample.....	60
---	----

Table 12: Intercorrelations Among YSQ-SF and Joiner’s Interpersonal Theory of Suicide
 - University & Community.....61

Table 13: Regression Coefficients for Predicting perceived burdensomeness, thwarted
 belongingness, and acquired capability from the CTQ.....68

Table 14: Regression Coefficients for Predicting perceived burdensomeness, thwarted
 belongingness, and acquired capability from the YSQ-SF.....69

Table 15: Regression Coefficients for Psychache and ITS in Predicting Self-Harm
 Among the University & Community Sample70

Appendix

Table 16: Regression Coefficients for Predicting Suicidality (University).....118

Table 17: Regression Coefficients for Predicting Suicidality (Community).....119

List of Figures

Chapter 1

Figure 1: Blended Model of Suicide.....19

Figure 2: Blended Model of Self-Mutilation.....21

Figure 3: Complete Blended Model of Suicide.....29

Figure 4: Complete Blended Model of Self-Mutilation.....30

Chapter 3

Figure 5: Direct & Indirect Mediation Paths or Criterion Variables of Burdensomeness
(University and Community Sample).....64

Figure 6: Direct & Indirect Mediation Paths or Criterion Variables of Belongingness
(University and Community Sample).....65

Chapter 4

Figure 7: Amended Model of Suicide.....78

Figure 8: Amended Model of Self-Mutilation.....79

CHAPTER 1

The Role of Unmet Needs in Self-Harming Behaviours

Self-harm (which encompasses both self-mutilation and suicide) is a major public health issue. In fact, prevalence estimates suggest that 4% of adults have engaged in self-mutilation (Briere & Gill, 1998; Klonsky, Oltmanns, & Turkheimer, 2003) and that worldwide, approximately one million individuals die by suicide each year (World Health Organization, 2008). Given these sobering statistics, research allowing for a better understanding of the predictors of self-harm behavior is extremely important. The current research provides a theoretical contribution to the self-harm literature base by exploring two well-established theories of self-harm.

Self-mutilation and suicide have been found to be related, yet distinct constructs (O'Carroll, Berman, Marris, & Moscicki, 1996; Stanley, Winchel, Molcho, Simeon, & Stanley, 1992; See Table 1 for a list of definitions relating to self-harm). Although death by suicide is obviously much more final, both self-mutilation and suicide relate to serious pain and suffering and thus both warrant attention.

In Canada in 2011, there were 3,728 deaths by suicide (10.1 per 100,000; Statistics Canada, 2014). In the United States, suicide is the 11th leading cause of death (National Institute of Mental Health, 2009), representing approximately 84 deaths by suicide each day (Kessler, Borges, & Walters, 1999). Although this number is compelling enough on its own, it is important to note that for every death by suicide there are an estimated 8 to 25 attempts (Moscicki, 2001).

Although it is a distinctly different phenomenon (as will be discussed in the following section), self-mutilation is related to suicide with approximately 55% of self-mutilators in the community reporting a prior suicide attempt (Warm, Murray, & Fox, 2003). Self-mutilation is defined as the deliberate destruction of body tissue without conscious suicidal intent but with the

intent to cause damage to the body (Favazza, 1998) resulting in injury severe enough for tissue damage to occur (Gratz, 2003). A meta-analysis of NSSI prevalence rates found that 17% of adolescents, 13% of young adults, and 6% of adults engage in self-mutilation (Swannell, Martin, Page, Hasking, & St John, 2014). Among an undergraduate student sample the prevalence was 15% (Gratz, 2001) while among a clinical sample, 21% of individuals reported engaging in self-mutilation in the previous 6 months (Briere & Gill, 1998). With such high rates of both suicide and self-mutilation across populations, prevention is an important public health issue.

Table 1

Definitions of Terms Related to Suicide

Term	Definition
Suicidality	General term related to all manifestations that indicate one's tendency to suicide, including thoughts and actions.
Suicide Ideation	Term related to having thoughts about suicide. These thoughts can vary in severity and may or may not involve thinking about an actual plan to commit suicide.
Suicide Intent	An individual's intensity or strength of their wish to die during a suicide attempt.
Suicide Motivation	Passive component of suicidal ideation, including one's attitude towards living or dying, and the frequency and duration of thoughts of suicide.
Suicide Preparation	A more active component of suicidal ideation, involving carrying out steps to a suicide attempt such as making a plan or formulating a suicide note.
Self-Mutilation/Non-suicidal self-injury (NSSI)	The deliberate, direct destruction of body tissue without conscious suicidal intent, but resulting in injury severe enough for tissue damage to occur. This does not include indirect self-destructive behaviour such as substance use and also excludes body modifications such as tattooing or piercing which are related to perceived beautification. Research has shown that self-mutilation is surprisingly common.
Self-Harm	A general term that refers to any form of intentional harm towards the self. This would encompass both suicide and self-mutilation.

Similarities & Differences Between Self-Mutilation and Suicide

A number of studies suggest that self-mutilation and suicide are related constructs. For example, Warm, Murray, and Fox (2003) found self-mutilation to be correlated with suicidal ideation/suicide attempts, and Ryan, Clemmets, and Nelson (1997) found that people who self-mutilate are 18 times more likely than the general population to eventually die by suicide.

However, although there is substantial support for self-mutilation and suicide being related, there is also a significant amount of research that suggests that suicide and self-mutilation are distinct constructs. Most self-mutilators report that, when performing an act of self-mutilation, they are not attempting to commit suicide (Pattison & Kahan, 1983). Further, most who self-injure report having no suicidal thoughts prior to, or during, the act of self-injury and instead see self-mutilation as a coping strategy. In fact, a different method is generally used when attempting suicide versus engaging in self-mutilation (Stanley, Gameroff, Venezia, & Mann, 2001).

Suicide and self-mutilation have been found to differ primarily in regard to the intended outcome. Suicide is undertaken to end suffering while non-suicidal self-injury (NSSI) is generally intended to cope with suffering (Joiner, Ribeiro, & Silva, 2012). NSSI may promote coping in the following ways: To relieve anxiety, to release anger, to relieve unpleasant thoughts and feelings, to release tension, to relieve feelings of guilt, loneliness, alienation, self-hatred, depression, to externalize or provide escape from emotional pain, to provide a sense of security or control, for self-punishment, to set boundaries with others, to terminate depersonalization and derealization, to end flashbacks, and to stop racing thoughts (Gratz, 2003).

As a whole, these findings suggest that, although related, there is something distinctly different regarding both intent and lethality (imminent possibility of suicide) between suicide and

an act of self-mutilation (Penn, Esposito, Schaeffer, Fritz, & Spirito, 2003). Thus, the current research explores these constructs separately.

Theories of self-mutilation

Arguably the most widely used model of self-mutilation is Linehan's (1993) biosocial model of non-suicidal self-injury. This theory suggests that it is the interaction between biological predisposition (i.e., a tendency to be emotionally reactive and intense) and invalidating childhood relationships that contributes to deficits in regulating emotions and which in turn increases risk for NSSI. Invalidating environments are those where the child's experiences are not acknowledged or validated (e.g., the child is ignored, not taken seriously, or blamed for his/her emotional reaction or preferences). These experiences of being discredited, invalidated, or rejected create an environment where the child fails to learn how to appropriately manage negative emotions (Calkins & Hill, 2007). As a result, the child is vulnerable to coping with distress through NSSI. The relationship between invalidating environments and NSSI has been found across multiple samples (Bureau, Martin, Frevnet, Poirer, Lafontaine, & Cloutier, 2010; Gratz, 2006; Gratz et al., 2002; Wedig & Nock, 2007).

Another well supported model of self-mutilation that also explores the role of emotion regulation is the affect-regulation model of self-injury (Klonsky, 2007) that suggests that self-injury is used as a means of alleviating acute negative affect (Favazza, 1992; Gratz, 2003; Haines, Williams, & Brain, 1995). The affect-regulation model has been supported by the work of a number of academics including Gratz (2000) who found that the most frequently reported function of self-mutilation (reported among 76% of participants) was to relieve unwanted feelings. Participants noted that self-mutilation provided an escape, a way to stop feeling anxiety and sadness, and generally a way to divert attention away from painful internal experiences. The

experience of internal pain as cited by Gratz (2000) appears to be similar to the construct of psychological pain or psychache as discussed by Shneidman (1985) and Joiner (2005) in the following sections.

Theories of Suicide

One of the most cited theories of suicide is that proposed by Emile Durkheim (1951) in *Le Suicide*. As a sociologist, Durkheim proposed that suicide is the result of a variety of different societal factors. He posited four different types of suicide: 1) Altruistic (person sacrifices his/her life for the benefit of others); 2) Anomic (norms and values are disrupted by rapid social change leading to uncertainty regarding appropriate behaviour); 3) Fatalistic (society restricts the individual too much); and 4) Egoistic (insufficient integration into society). In modern society, egoistic suicide would explain most suicides.

Contrary to Durkheim, who put the onus for suicide on society, Freud put the locus of control in humans' unconscious mind (Friedman, 1967). Freud (1920 as cited in Stillion & McDowell, 1996) believed there are 2 major forces in a person, Eros (life instinct) and Thanatos (death instinct). Among healthy individuals, Thanatos, or the innate drive to return to an inorganic state, is controllable and is directed outwards; however, when an individual feels stagnant, depressed, or hopeless, Thanatos may envelop Eros and hostility is turned inwards, possibly resulting in the individual taking their own life.

Beck's hopelessness theory of suicide (Beck, Kovacs, & Weissman, 1975) suggests that it is the hopeless element of depression, known as hopelessness depression that is responsible for suicide. The hopelessness theory of depression specifies a combination of factors which together culminate in suicide. These factors are (1) cognitive distortions that misconstrue experiences in a negative way leading the individual to believe that a desirable outcome will not occur and/or that

a negative outcome will occur; and (2) the catalytic agent which is hopelessness, or the belief that the individual is helpless in changing the outcome.

Shneidman (1985) also suggests that hopelessness plays a role in suicide but suggests that suicide is also marked by ambivalence toward life *and* death. In building upon the research of Durkheim, Shneidman (1968 as cited in Shneidman, 1985) proposed three types of suicide: 1) egotic (result of intra-psychoic debate, primarily psychological in nature); 2) dyadic (death relates primarily to deep unfulfilled needs pertaining to the significant other); or 3) ageneratic (loss of belonging to a whole line of generations, primarily sociological in nature). Shneidman (1985) later identified that classifying suicide in these ways is not useful and subsequently collapsed these three types of suicide into one – the egotic suicide. This type of suicide is the result of perturbation, increased self-hatred, a tunneling of thought processes (seeing suicide as the only solution), and insight that it is possible to stop the suffering through death.

Although he does not necessarily disagree with the theory proposed by Shneidman (1985), agreeing that psychological pain is important, Joiner (2005) suggested that this explanation is too vague to be useful for predictive purposes as it does not offer a complete motivational picture. Therefore, Joiner proposed three motivational aspects which contribute to suicide: a sense of being a burden to others, a sense of alienation or isolation, and a sense of fearlessness about death. It is the theories of Shneidman and Joiner, and the commonalities between them, which are the foundation of the current research and which will be discussed in more detail later on.

Purpose of the Current Study

Shneidman's (1993) theory of psychache and Joiner's (2005) interpersonal theory of suicide (ITS) are arguably two of the most supported theories of suicide, both of which share a

common thread, namely thwarted needs (something you desire but do not currently possess). Although there has been a significant amount of research establishing a relationship between each of these theories and suicidality, there has been no research to date that has combined the crucial components from each of these theories into a new model better able to predict suicide. The current research makes a theoretical contribution to the literature by determining if suicide is best predicted by a combination of the theories proposed by Shneidman and Joiner.

The second purpose of the current research is to explore the utility of a combined model in the prediction of self-mutilation. A global model that can differentiate between the different facets of self-harm (i.e., NSSI and suicide) would be clinically very useful. To date, there is only very limited research examining the relationship between NSSI and the theories of Shneidman (1993) and Joiner (2005). However, given the purpose of self-mutilation [to stop painful internal experiences (Gratz, 2000)] and the similarity to suicide, it is believed that these theories will also apply to self-mutilation. It is also expected that both the interpersonal theory of suicide and the theory of psychache will predict self-mutilation given the strong literature support surrounding these theories' ability to predict suicidality (a predictor of self-mutilation; Ryan, Clemmets, & Nelson, 1997; Warm et al., 2003).

Finally, the current research attempts to make a theoretical contribution by exploring other types of unmet needs, namely those unmet in childhood that serve as the precursors for an individual's view of him/herself, others, and the world around them. Unlike established theories of suicide that focus on current unmet needs, childhood unmet needs create schemas (also known as early maladaptive schemas [EMS]) that shape the way we interpret the world around us. These EMS may influence self-harm given their significant ability to shape the way we interpret ourselves and the world around us.

Psychache Theory of Suicide

Psychache is a concept developed by Shneidman (1993) to be predictive of suicide. He defined psychache as the “hurt, anguish, soreness, aching, psychological pain in the psyche, the mind. It is intrinsically psychological – the pain of excessively felt shame, or guilt, or humiliation, or loneliness, or fear, or angst, or dread of growing old or of dying badly...” (p. 145). He asserted that psychache is a more important predictor of suicide than depression and that depression is only relevant to suicide in terms of its relationship to psychological pain. Although Shneidman (1985) proposed that everyone who dies by suicide experiences psychache, only a small proportion of people who experience psychache die by suicide. Thus, psychache is not sufficient to cause death. Shneidman posited that another factor, lethality, contributes to risk for suicide and must also be present for someone to die by suicide. Shneidman did not however specify the components of lethality nor what contributes to higher levels of lethality. He only suggested that suicide occurs when an individual’s psychological pain reaches the point of being unbearable and the individual believes they can no longer cope. Suicide is believed to be a method to stop the suffering (Shneidman, 1999).

Shneidman (1993) suggested that psychache is caused by unfulfilled psychological needs considered important by the individual. Shneidman (2001) identified seven psychological needs most frequently associated with suicide: (1) achievement: the need to accomplish something difficult or challenging, (2) affiliation: the need to be near or join with a friend or loved person, (3) autonomy: the need to be independent and free from restraint, (4) counteraction: the need to make up for failure by restriving, (5) infavoidance: the need to avoid humiliation or embarrassment, (6) order: the need to put things or ideas in order, or to achieve balance and precision, and (7) succorance: the need to be supported, loved, and cared for.

Shneidman (1993) believed that unmet needs are linked to suicide in their ability to cause psychache. Not all needs are required in order for suicide to occur and the specific needs which are causing the psychache will depend on what the individual believes to be important. To create psychache, it is not only important that the need is unmet, but that the need must also be significant to that individual. In other words, based on the Self Discrepancy Theory, it is the discrepancy between the actual and ideal/ought self that creates psychache. To mitigate suicide, the unfulfilled needs, which are causing the psychache, must be addressed and reduced or eliminated completely. According to Shneidman (1999), a reduction in psychache will generally decrease or eradicate the lethality (imminent possibility of suicide) within the individual.

Shneidman's (1993) theory of psychache has been supported by the work of a number of academics. Holden et al. (2001) found that, across a spectrum of suicidal behaviours (e.g., ideation, attempts, believed likelihood of future attempts, and self-injurious behaviour) psychache was the most important predictor over and above hopelessness and depression. DeLisle and Holden (2009) found that among undergraduate students, the higher the level of psychache, the greater the risk for suicide as measured by proxies such as previous suicide attempts and current suicide ideation. Similarly, Patterson and Holden (2012) found that among a homeless population, psychache was the most proximal cause of suicide with unique statistical predictive power in the prediction of suicide ideation, motivation, preparation, and attempt history better than depression, hopelessness, and life meaning. Finally, the importance of psychache appears to be maintained over time with changes in psychache and suicidality co-varying over time (Troister & Holden, 2012)

Combined, the aforementioned research demonstrates the importance of psychache in the prediction of suicidality. Further, these results suggest that psychache appears to be a more

proximal predictor of suicide ideation and acts as a mediator of other, more distal, risk factors (e.g., depression, hopelessness, life-meaning). Although the research has established a strong relationship between psychache and suicide, researchers still do not clearly understand the causes of psychache. In order to better help prevent suicide, research that can help us understand a variable that is strongly linked to the prediction of suicide would be helpful.

Application to Self-Mutilation. Although there has been substantial support for the relationship between psychache and suicide ideation, there has been little research on the relationship between psychache and self-mutilation. Given that suicide and self-harm are related constructs, and given the significant relationship that has been established between psychache and suicidality (Patterson & Holden, 2012; Troister & Holden, 2012), it is expected that there also exists a positive relationship between psychache and self-mutilation. A significant relationship is also expected because the common cited purpose of self-mutilation is to reduce unwanted painful internal experiences (Gratz, 2000), a construct that is likely akin to psychache (Holden & Kroner, 2003).

The only study that has looked specifically at the relationship between self-injury and psychache found that psychache was a preeminent predictor of self-mutilation, over and above both hopelessness and depression (Holden, Mehta, Cunningham, and McLeod, 2001). Although the aforementioned study appears to be the only one that explores psychache directly, other studies have looked at the broader concept of internal based reasons (an unbearable internal state of pain - a construct similar to psychache [Holden & Kroner, 2003]) and how these relate to self-mutilation. Gillis (2007) found that hopelessness and depression did not predict self-mutilation but that internal-based reasons did. This finding makes sense in light of the research by Laye-Gindhu and Schonert-Reichl (2004) who found that motivations for self-injury are internal (e.g.,

to release anger and tension, to regain control or to punish oneself) rather than external.

Although the emotional pain of an individual engaging in NSSI is intense, it is generally lower than the level reached during a suicidal crisis (Walsh, 2007).

Interpersonal Theory of Suicide

Although Shneidman (2001) contends that suicide is the result of seven unmet needs relating to a variety of psychological factors, Joiner (2005) in his Interpersonal Theory of Suicide (ITS) suggests suicide is the result of two unmet needs, thwarted belongingness (weak interpersonal connection) and perceived burdensomeness (a lack of social competence; Ryan & Deci, 2000). However, a desire to die is not sufficient to bring about suicide therefore, in order for suicide to occur the individual needs to have the capability to enact the lethal act. The capability to inflict self-harm is believed to be acquired, over time, through habituation to pain as a result of repeated exposure to painful events (Van Orden et al., 2010). It is the interaction of these unmet needs and acquired capability that create suicidality (T. Joiner, personal communication, June 2, 2013).

Belongingness. Thwarted belongingness is a mental state that results when the fundamental need for connectedness or the need to belong is unmet (Leary, Terdal, Tambor, & Downs, 1995). Over the years, a lack of social support/inclusion has repeatedly been shown to be a strong predictor of suicide. For example, living alone (Heikkinen, Aro, & Lönnqvist, 1994), loneliness (Koivumaa-Honkanen et al., 2001), and low social support (Qin & Nordentoft, 2005; Sourander et al., 2009; Turvey et al., 2002) have all been shown in the literature to relate to suicide likely because they are all indicators that the need to belong has been thwarted.

Research has shown that a lack of attachment or belonging can have a negative impact on health, adjustment, self-regulation, and overall well-being (Baumeister, DeWall, Ciarocco, &

Twenge, 2005; Baumeister & Leary, 1995). In fact, research by Lubell (2001) shows that social isolation, regardless of gender, uniformly increases risk for suicide. This finding is supported by the research of Trout (1980), demonstrating that individuals who die by suicide are often socially isolated before their death.

Burdensomeness. Burdensomeness is a state characterized by thoughts that others would “be better off if I was gone.” It is believed to develop when the individual believes they are not fulfilling certain roles or obligations (e.g., employment, family) and/or others are necessary to their survival (e.g., disability, functional impairment). As a whole, burdensomeness is created when an individual’s need for social competence is unmet (Ryan & Deci, 2000). Indicators of perceived burdensomeness, as noted in Van Orden et al. (2010), include a sense of expendability or being unwanted, a belief that one is a burden on family, distress created by homelessness, incarceration, unemployment, or physical illness, low self-esteem, self-blame, shame, and physical agitation created by unbearable self-hatred.

Research has found that perceived burdensomeness is an important predictor of suicidality. In fact, burdensomeness has been found to mediate the relationship between depression and suicide ideation among older adults. More specifically, Jahn, Cukrowicz, Linton, and Prabhu (2011) found that 68% of the effect of depressive symptoms on suicide ideation was mediated by perceived burdensomeness. A relationship between perceived burdensomeness and suicidality was also found among an adult (DeCatanzaro, 1995) and adolescent population (Woznica, & Shapiro, 1990). These results suggest the importance of burdensomeness in the prediction of suicide.

Acquired capability. Acquired capability, as Joiner (2005) describes it, is a condition involving a heightened degree of desensitization to death and pain insensitivity to such a degree

that individuals overcome the reflexes for self-preservation (i.e., they acquire the capability to inflict self-harm). Joiner suggests that this reduction in self-preservation is the result of habituation to painful events. The events that habituate an individual to pain include exposure to both physically painful and/or psychologically provocative/fear inducing scenarios (e.g., fighting, abuse, accidental injury, skydiving, etc.; Van Orden, Witte, Gordon, Bender, & Joiner, 2008). It is through exposure to these experiences that an individual slowly becomes habituated to threat, reducing the innate 'alarm' response to dangerous or life-threatening events including the fear and pain associated with suicide.

The habituation to pain resulting in the capability to enact lethal self-harm can be explained by basic research on motivation. It has been theorized in the opponent-process theory that with repetition the effects of provocative stimuli diminish, while the opponent effects are amplified and strengthened (Solomon, 1980). In other words, initially an individual may experience fear and anxiety when considering suicide, however, through repeated thoughts and actions (e.g., repeated suicide attempts) the anxiety will be reduced and the opponent process of relief and calm will increase. As Joiner (2005) states, the most effective and efficient path to the acquired capability for suicide is practice.

The acquired capability component of the interpersonal theory of suicide is supported in the literature. Orbach et al. (1996) found that suicidal individuals showed an overall higher tolerance for pain and a less intense appraisal of pain than individuals who were not suicidal. Van Orden et al. (2008) also found that self-reported desensitization to death and pain insensitivity were related to a greater number of past suicide attempts and exposure to painful and provocative life events. Smith, Cukrowicz, Poindexter, Hobson, and Cohen (2010) found that suicide attempters, especially those with multiple attempts, rated themselves as more fearless

and insensitive to pain than suicide ideators. Further, they found that suicide attempters had a greater history of painful and provocative life events than ideators and controls. As predicted, it was the painful and provocative life events, rather than general negative life events, that were associated with suicide attempts.

In sum, according to the interpersonal theory of suicide, suicide occurs when the desire for death (created through feelings of burdensomeness and thwarted belongingness) and capability for death come together. An individual may have the capability to commit suicide yet not have the desire for death, and as a result they will not commit suicide. Individuals may also have the desire for death but may not have the capability to commit the act, and as a result there is no suicide. It is the interaction between thwarted belongingness, perceived burdensomeness, and the capability that together interact to put these individuals at greatest risk for death by suicide (T. Joiner, personal communication, June 2, 2013).

Support for the interactive nature of Joiner's interpersonal theory of suicide is found in the research of Van Orden et al. (2008) who found that the interaction of thwarted belongingness and perceived burdensomeness predicted current suicidal ideation among a sample of undergraduate students. They also found greater levels of acquired capability among individuals with greater numbers of past attempts and painful and provocative experiences significantly predicted acquired capability scores. Finally, they found that the interaction of acquired capability and perceived burdensomeness predicted clinician-rated risk for suicidal behaviour (belongingness was not assessed because the data were unavailable). As a whole, these findings support the utility of the ITS in predicting suicidality.

Joiner et al. (2009) also explored the proposed three-way interaction and found that among a sample of adolescents struggling with depression, low social connection/belonging and

feelings of burdensomeness predicted current suicidal ideation (with the effect of depression removed). Further, they found a three-way interaction among measures of low belonging, high perceived burdensomeness, and lifetime suicide attempts (viewed as a strong predictor of the level of acquired capability) in the prediction of a current suicide attempt (vs. only ideation), again controlling for depression.

Application to Self-mutilation. Currently, the ITS has not been applied specifically to NSSI. However, a recent article by Joiner, Ribeiro, and Silva (2012) suggests that there is likely some applicability of the ITS to self-mutilation, specifically the acquired capability component of the model. They cite research that suggests individuals who engage in NSSI often report experiencing little or no pain while doing so (Schmahl et al., 2006), and that individuals who self-mutilate have higher pain thresholds than non-self-mutilators (Bohus et al., 2000; Kemperman, Russ, & Shearin, 1997). Additional research suggests that NSSI increases pain tolerance and is therefore likely to contribute to the development of acquired capability (Franklin et al., 2011). Thus, research which explores the applicability of NSSI to ITS, as the current research does, is timely.

A Blended Model

Application to Suicide. Although both of the aforementioned theories have garnered substantial support, neither is able to fully explain suicide. Both theories postulate that unmet needs are at the core of suicidality (although they do not necessarily agree on which unmet needs). Shneidman (1993) suggests that these unmet needs create unbearable psychological pain or psychache. Joiner (2005) does not specify the consequences of unmet needs other than to say specific unmet needs create a desire for death. Although not made explicit, a desire for death suggests the individual is unable/unwilling to cope with the pain any longer. Thus, perhaps desire

for death, as described by Joiner (2005), is similar to the unbearable psychological pain as described by Shneidman (1993).

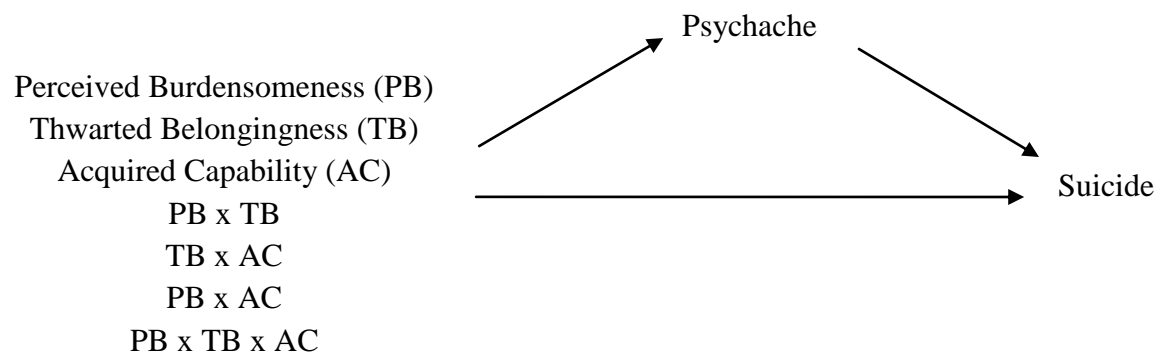
In terms of the actual impetus for an act of suicide, Shneidman (1993) suggests that motivation for suicide occurs when psychache becomes unbearable, and a factor known as lethality surpasses a certain level. Joiner (2005) does not specifically state what creates motivation for death (above and beyond experiencing unmet needs), but suggests that the individual must have the capability to violate the instinct for self-preservation, allowing himself/herself to inflict the necessary pain required to commit suicide (acquired capability). Neither model is in conflict when it comes to explaining the impetus for suicide, as both suggest that desire for death is not enough and that some other factor (i.e., lethality or acquired capability) is necessary in order for suicide to occur.

Although a blended model is contrary to Shneidman's theory of psychache (he would suggest that there is full mediation of suicide by psychache), I propose that combining the theories will increase predictive power. Both theories relate to unmet needs and both require some factor in addition to these unmet needs in order to bring about an act of suicide. Overall, I suggest that the unmet needs as described by Joiner (thwarted belongingness and perceived burdensomeness) and the acquired capability will only result in suicide when the individual experiences psychache (as a result of these unmet needs). Shneidman (1993) suggests that it is psychache which is the most proximal predictor of suicide. This is based on his theory that psychache occurs closest to suicide and self-mutilation in his model. Overall, a combined theory suggests that Joiner's unmet needs (i.e., thwarted belonging and perceived burdensomeness), acquired capability, and psychache are all necessary for suicide. Figure 1 provides a visual representation of the proposed blended model.

The decision to include the unmet needs proposed by Joiner (2005) and not Shneidman (1993) in the suggested model is based on the fact that there is significantly greater research support for the relationship between perceived burdensomeness and thwarted belongingness in predicting self-harm (Jahn et al., 2011; Lubell, 2001; Trout, 1980; Van Orden et al., 2008) than there is for Shneidman's proposed unmet needs. There has been only very limited research, with modest support, for the needs proposed by Shneidman (Munchua, 2003). Similarly, although Shneidman described lethality as being an important factor for understanding suicide, his operationalization of lethality is much less clear than Joiner's (2005) explanation of acquired capability. Therefore, acquired capability and not lethality is included in the model.

Figure 1

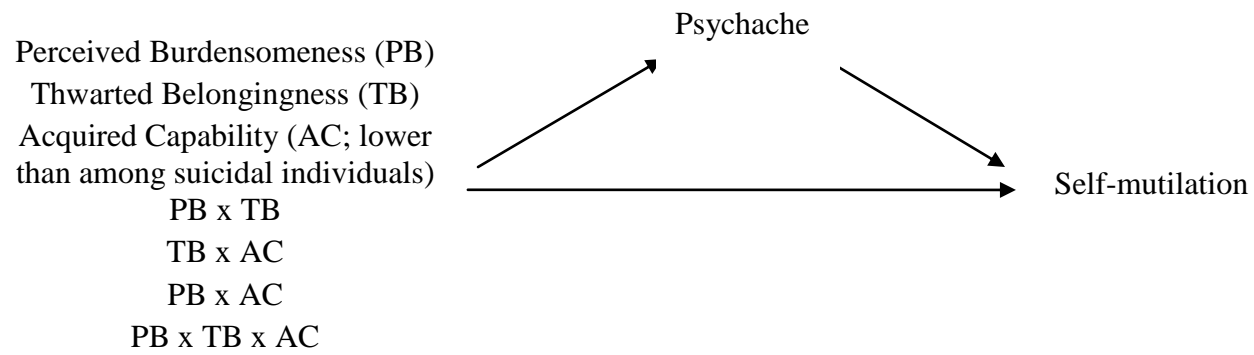
Blended Model of Suicide



Application to Self-mutilation. There has been less research exploring each theory's relationship to self-mutilation, and no research that has compared these theories on their ability to predict self-mutilation. However, given the relationship between suicide and self-mutilation (Warm, Murray, & Fox, 2003), I predict that each theory will provide important elements that will help in explaining self-mutilation. Models of NSSI suggest that self-mutilation is used as a means of alleviating acute negative affect (Klonsky, 2007) and as a way of diverting attention away from painful internal experiences. (Gratz, 2000). Therefore, based on Shneidman's past hypotheses, I would predict that self-mutilation occurs when unmet needs create psychache and this psychache surpasses the threshold of tolerability. However, unlike individuals who are suicidal, these individuals have not, and may never, acquire the capability (as hypothesized by Joiner [2005]) or the lethality (as hypothesized by Shneidman [1993]) to commit suicide. Figure 2 provides a visual representation of the proposed blended model.

Figure 2

Blended Model of Self-Mutilation



Unmet Needs

Unmet needs are essential components of both Shneidman's (1993) and Joiner's (2005) theory of suicide. Needs by definition are something you desire but do not currently possess. Research by Higgins (1987) has attempted to better understand unmet needs by examining the relationship between the perception of the current self and the ideal self. He created the self-discrepancy theory (SDT; Higgins, 1987) which suggests that there are three domains to the self: 1) the actual self (what you believe you actually possess); 2) the ideal self (what you would ideally like to possess); and 3) the ought self (what you believe you should possess). According to the SDT, individuals strive to reach a state where the actual self and the ideal/ought self are congruent. When discrepancies exist, psychological difficulties and emotional distress can occur. Consistent with the SDT, Strauman and Higgins (1988) found that discrepancies between an individual's perceptions of their actual versus their ideal self are related to depression and discrepancies between an individual's actual versus ought self are related to anxiety.

The utility of the SDT in understanding self-harm is provided by the investigations of a number of researchers. Cornette, Strauman, Abramson, and Busch (2009) found that individuals who perceived discrepancies between their actual and ideal selves and who did not anticipate future congruence were found to score higher on measures of both hopelessness and suicidal ideation. Orbach, Mikulincer, Cohen, and Stein (1998) found that psychiatric inpatients showed higher discrepancies than controls between their actual and ideal selves and between their actual and ought selves. Further, suicidal inpatients demonstrated higher discrepancies between their actual and ideal self than did controls. As a whole, this research suggests that discrepancy between the actual self and the ideal or ought self results in psychological distress and, potentially, suicide. Following from this research, the current study attempts to explore the utility

of self-discrepancy/unmet needs in the prediction of self-harm. Given the established utility of unmet needs in the prediction of self-harm, the current research aims to explore other unmet needs namely those unmet during childhood.

Adverse Childhood experiences

Childhood experiences of neglect, abuse, and loss which occur as a result of the unmet need for safety, protection, nurturance, and love are strongly related to self-harm behaviours. In fact, the vast majority of people who self-harm have a history of child and/or adult sexual abuse as well as abandonment and neglect (Everett & Gallop 2000; Vivekananda 2000). In terms of suicide, abused or neglected children and adolescents were found to have an eight-fold increase in suicide attempts (Zoroglu et al., 2003). This is supported by the research of Dube et al. (2001) who found that the risk of a suicide attempt was increased two to five times by any adverse childhood experience, regardless of type. The specific risk or Odds Ratio (OR) associated with each adverse experience is as follows: Emotional abuse (OR = 5.0), physical abuse (OR = 3.4), sexual abuse (OR = 3.4), battered mother (OR = 2.6), substance abuse in home (OR = 2.1), mentally ill household member (OR = 3.3), parents separated/divorced (OR = 1.9), and incarcerated family member (OR = 2.5).

Childhood risk factors for self-mutilation include childhood sexual or physical abuse, physical abuse, neglect, separation and loss, and a lack of secure attachment (Gratz, Conrad, & Roemer, 2002). Dube et al. (1997) found that both emotional and physical neglect predict self-mutilation, however, emotional neglect is more robust. Physical abuse has also been explored, however the results suggest that the relationship between physical abuse and self-injury may be moderated by gender (with a significant relationship between physical abuse and self-harm for men and not women; Gratz et al.). Childhood sexual abuse has received the most research

attention and the results demonstrate a rather strong relationship between childhood sexual abuse and self-injury in adulthood (Gratz et al.; Zlotnick et al., 1996). In fact, research has shown that childhood sexual abuse is a better predictor of self-mutilation than other forms of childhood trauma (van der Kolk, Perry, & Herman, 1991). As a whole, early negative childhood experiences appear to be strongly related to vulnerability for self-harm.

Early Maladaptive Schemas

The experience of adverse childhood experiences is a rather clear way of determining that an individual has not had their needs met, but how does this trauma manifest itself within the individual to bring about risk for self-harm later on? One possible explanation is that these unmet needs during childhood create pervasive maladaptive schemas which lead to vulnerabilities for psychopathology (e.g., depression) and self-harm.

Our understanding of schemas has been greatly enhanced by the work of Aaron Beck (1967). He suggested that a schema is a structure for screening, coding, and assessing incoming stimuli in an individual's environment. He proposed that schemas are not innate but develop over time from experiences. Schemas begin to develop early in a child's life and are relatively persistent. They are created generally without awareness within an individual by the grouping of similar experiences which have taught him/her something about the way they, others, or the world 'works'. By grouping similar experiences together, an individual is able to simplify and organize their complex life drawing meaning from the variety of experiences they encounter. Beck (1967) described schemas as providing a road map for the interpretation of incoming stimuli and their subsequent behaviour.

Every individual has self-schemas, schemas about others, as well as schemas about the world. Schemas can be positive or negative and influence the way an individual perceives and

responds to the world around them. For example, a child who is repeatedly the victim and/or witness to violence will likely develop schemas such as “I am no good (self),” “others cannot be trusted (others)” and “the world is an unsafe place (world).” These deeply entrenched schemas will permeate all areas of the individual’s life (e.g., future relationships, life decisions, etc.; Young, Klosko, & Weishaar, 2003).

Schemas are self-fulfilling because they determine what an individual will notice, attend to, and remember (Hastie, 1981 as cited in Padesky, 1994). Once a schema has been incorporated into an individual’s belief system, contradictory evidence is distorted, ignored, or discounted (generally non-consciously) in order to maintain the schema (Padesky). For example, if a person has a schema that others cannot be trusted, they will tend to attend to those situations which support their maladaptive schema (e.g., a friend lying to them), thus strengthening and maintaining the well-established schema, and ignore or distort situations that are contrary to their schema (e.g., when friends are honest; Vlierberghe, Braet, Bosmans, Rosseel, & Bögels, 2010). In other words, information consistent with a person’s schemas are attended to and magnified while information inconsistent with them is minimized. This strong maintenance cycle, often beginning at a young age, makes altering schemas difficult (Beck, David, & Freeman, 2015; Padesky)

Although Beck made significant contributions in the area of schemas, Young (1990) was the developer of the construct of early maladaptive schemas (EMS). Similar to Beck, Young contends that schemas are pervasive, broad and enduring cognitive patterns which form the core of the self-concept. He also believes that EMS are caused by unmet emotional needs in childhood. Young identified five core emotional needs including, 1) secure attachments to others (includes safety, stability, nurturance, and acceptance); 2) autonomy, competence, and sense of

identity; 3) freedom to express valid needs and emotions; 4) spontaneity and play; and 5) realistic limits and self-control (Young, Klosko, & Weishaar, 2003).

Maladaptive schemas do not necessarily represent unmet needs in the same way that psychache and interpersonal needs do. Maladaptive schemas are ways of thinking created from unmet needs (e.g., neglect, abuse, etc.), and although these schemas may be maladaptive, generally the person is not concerned with modifying these schemas. Most individuals with EMS do not necessarily have a desire for something different because these EMS are extremely intertwined with an individual's core concept making it difficult, without help, to have perspective that these schemas are problematic (Young, 1990). Although EMS may not directly relate to self-harm, perhaps they create vulnerabilities for experiencing later unmet needs that are more directly related to self-harm (i.e., thwarted belongingness and feelings of burdensomeness).

Application to Suicide. To my knowledge, there is only one study that has examined a potential relationship between EMS and suicidality. Dale, Power, Kane, Stewart, and Murray (2010) found that the EMS of social alienation mediated the relationship between parental bonding and suicidal behaviour. The importance of the social alienation schema is logical given the importance of perceived social support in reducing suicidality (Arria et al., 2009; Kaslow et al., 2005) and given the importance of social connectedness as reported by the interpersonal theory of suicide (Joiner, 2005). Although the research is limited, this study suggests that EMS may be important in understanding suicide.

Application to Self-mutilation. Based on the plethora of research demonstrating a relationship between early trauma and self-mutilation, and given that EMS develop as a result of negative childhood experiences, it is suspected that those who engage in self-injury suffer from strong early maladaptive schemas (EMS). However, there is only limited research that has

examined the relationship between EMS and self-mutilation. Saldias, Power, Gillanders, Campbell, and Blake (2013) found that maladaptive schema modes were significantly associated with an earlier age of onset, longer duration, and higher number of methods of NSSI. Castille, Prout, Marczyk, Shmidheiser, Yoder, and Howlett (2007) found that the EMS of Social Isolation/Alienation and Insufficient Self-Control/Self-Discipline (factors that appear to be similar to belongingness and burdensomeness) differentiated self-mutilators from non-mutilators. These findings on the importance of social connection make sense in light of Joiner's (2005) interpersonal theory.

Application of Adverse Childhood Experiences and EMS to Blended Model

I propose that adverse childhood experiences are important in the model of self-harm both directly by increasing acquired capability for self-harm but also indirectly through the development of early maladaptive schemas. EMS are pervasive schemas, created from unmet emotional needs in childhood, that influence a person's perception of the world (Young, 1990). For example, a child who was neglected did not have his/her need for secure attachments to others (suggested by Young) met. He/she subsequently developed maladaptive schemas around relationships and attachment to others which influenced his/her future interpretation of the world. I suggest that this EMS predisposes this individual by influencing what they notice and attend to, to feelings of perceived burdensomeness and lack of belonging later in life. Although I predict that EMS as a whole will be related to self-harm behaviours, I also expect, based on the research of Castille et al. (2007), that the specific EMS of Social Isolation and Insufficient Self-Control will be the EMS most closely related to self-harm behaviours. Perceived burdensomeness and thwarted belongingness then interact with acquired capability to cause self-harm, a relationship

that is believed, based on the work of Shneidman (1993), to be mediated by psychache (see Figures 3 & 4 for the complete model).

Figure 3

Complete Blended Model of Suicide

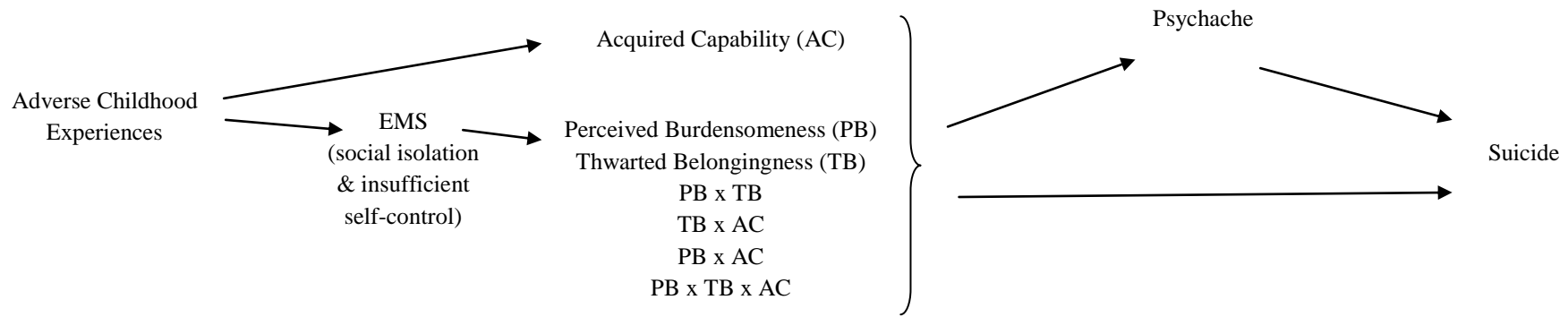
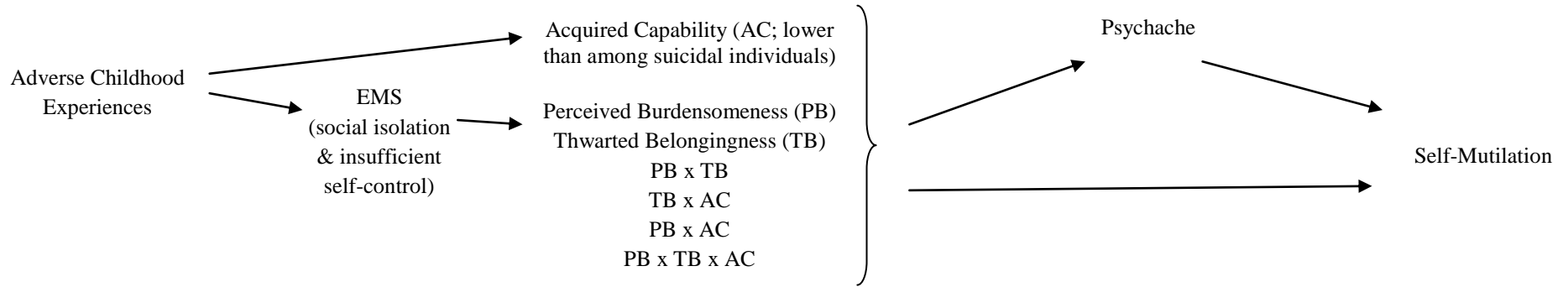


Figure 4

Complete Blended Model of Self-Mutilation



Study Importance

Theoretically, although both the interpersonal theory of suicide and Shneidman's theory of psychache have garnered substantial support in the literature, neither theory is able to fully explain suicide. The current study aims to combine these two theories in hopes of creating a superior model for explaining self-harm. Establishing a better model would allow policy makers and mental health workers to better direct research and resources to more precisely address self-harm. Practically, the more that is understood about self-harm, the better equipped society is to predict, and potentially prevent, suicide and self-mutilation. This is especially true when researching predictors that tend to be state-like in nature and more amenable to change (e.g., unmet needs). EMS, although more trait like in nature, (often requiring more effort and time to change) have been shown to be amenable to change as well (Giesen-Bloo et al., 2006; Nordahl et al., 2005). Anything that may help to reduce self-harm is a worthy undertaking.

Current Objective

Currently, two of the predominant theories proposed to explain suicide are Shneidman's (1993) psychache theory of suicide and Joiner's (2005) interpersonal theory of suicide. Shneidman suggests there are seven needs that, when unmet, result in psychache and, with enough lethality, create suicide. Joiner suggests there are two unmet needs and the acquired capability that interact to create suicidality. These theories are not incompatible, share many similarities, and have both been shown to have merit in predicting suicide. The goal of the current research is to determine whether a new model that combines the key elements of the ITS and psychache theory is better able to predict suicide.

Given the relationship between suicide and NSSI, it is also expected that a combined model will do well at predicting self-mutilation (O'Carroll et al., 1996; Stanley et al., 1992).

However, to date, the application of these theories to NSSI is limited. Overall, the current research will allow us to better conceptualize and predict self-harm.

The final aim of the current research is to explore the relationship between self-harm and other types of unmet needs. This will be done both by assessing early adverse experiences and by exploring Early Maladaptive Schemas. EMS have received little attention in the self-harm literature to date which is surprising given the strong relationship between EMS and clinical depression, a significant risk factor for self-harm. Unlike psychache and interpersonal needs, EMS, also created by unmet needs, do not necessarily create a desire for something different. Thus, although I predict that it is unmet needs with a desire for something different that create an impetus for suicide (e.g., thwarted belongingness, perceived burdensomeness, and psychache), I expect that EMS will relate to self-harm by creating vulnerability for experiencing a lack of belonging and a sense of burdensomeness. More specifically, I predict, based on the research of Castille et al. (2007), the specific EMS of Social Isolation and Insufficient Self-Control to be the EMS most relevant to self-harm behaviours. The specific hypotheses are as follows:

1. Based on Joiner's (2005) interpersonal theory of suicide, I expect a replication of previous research that found the interaction between thwarted belongingness, perceived burdensomeness, and acquired capability to predict the suicide criterion variables of suicide motivation, suicide preparation, total ideation, past suicide attempt, and self-mutilation (Bryan et al., 2012; Van Orden et al., 2008; Van Orden et al., 2009).
2. Based on Shneidman's (1993) theory of suicide, I expect psychache to add predictive power in explaining the variability of the self-harm criterion variables over and above that provided by ITS. However, I do not expect ITS to add predictive power over and

above that provided by psychache. In other words, I expect the relationship between ITS and the criterion variables to be mediated by psychache.

3. Given that suicide and self-harm are related (O'Carroll et al., 1996; Stanley et al., 1992) and given the significant relationship between psychache and suicidality, it is expected that that Joiner's (2005) interpersonal theory of suicide will extend to the prediction of self-mutilation. More specifically, it is expected that the interaction between thwarted belongingness, perceived burdensomeness, and acquired capability will predict NSSI. However, given the research of Shneidman (1993), I also expect this relationship to be mediated by psychache.
4. Unmet needs are an important element in explaining self-harm behaviours (Joiner, 2005; Shneidman, 1993). However, there is a dearth of research exploring early unmet needs. Given the relationship between early history of trauma and self-harming behaviours (Dube et al., 2001), it is expected that early unmet needs are an important component in a model of self-harm. Therefore, I expect that adverse experiences will be directly associated with acquired capability. Further, adverse experiences will be related to thwarted belongingness and perceived burdensomeness however, this relationship will be mediated by EMS.

CHAPTER 2

Method

Participants

Data were collected from two distinct populations: university undergraduates enrolled in an introductory psychology class at Queen's University and a community sample accessed through Amazon's Mechanical Turk, a crowd-sourcing internet marketplace.

University Sample. A total of 428 university students were recruited at Queen's University in Kingston, Ontario, Canada. Participants were recruited from an introductory psychology class and ranged in age from 17 to 24 years old ($M = 18.39$, $SD = 0.81$). Women outnumbered men approximately 7:1 (375 women versus 52 men). In terms of ethnicity, 68% of individuals self-identified as Euro-Canadian (a further 8% reported his/her ethnicity as Caucasian) and 14% as Asian. The remaining participants comprised other ethnicities. In terms of schooling, all participants were currently attending university, the majority of whom were in their first or second year.

The vast majority of participants did not report regular use of illegal drugs (96%) or alcohol (79%). In terms of mental illness, 14% reported that they had been diagnosed with a mental illness; however, only 4% reported that they were currently receiving counselling and 5% reported taking medication for their mental illness. Eighteen individuals (4%) reported a previous suicide attempt, the majority of which occurred within the last 1–5 years (60%). This attempted suicide rate was slightly higher than that found in previous research with undergraduate populations (3.6% - Flamenbaum, 2009; 2.5% - Troister & Holden, 2010). Of those who attempted suicide, 53% did so by overdose, 18% by cutting/stabbing, and 12% by hanging. The majority reported being quite intent (47%) during their attempt with fewer reporting extreme intent (6%), moderate intent (12%), being somewhat intent (29%), and not very intent (6%). Forty-seven percent of these individuals reported attempting suicide only one time, 29% two times, and the remainder more than two times.

A total of 95 individuals (23%) reported at least one incident of self-mutilation with women outnumbering men by a ratio of approximately 11:1 (87 women versus 8 men; it is important to note that women greatly outnumbered men in this sample, 7:1). No individuals

reported regularly using illicit drugs, but excessive alcohol use was reported by 22% of individuals. Among individuals who self-mutilated, 23% reported mental illness and 12% reported a previous suicide attempt. Among those who self-mutilated, the most reported method of self-mutilation was cutting (54%), followed by severely scratching (34%), using a lighter or match to burn their skin (19%), sticking themselves with sharp objects (18%), banging their head severely (17%), carving words (17%) or pictures (16%) into their skin, preventing wounds from healing (16%), punching to the point of bruising (13%), and severely biting (12%). Dropping acid or bleach onto skin, using sandpaper on skin, or burning skin with a cigarette were much less common.

Community Sample. A total of 533 participants were recruited through the use of Amazon's Mechanical Turk, a crowd-sourcing internet marketplace that has been shown to be a reliable source of representative data (Buhrmester, Kwang, & Gosling, 2011). All participants were American citizens however, based on the work of Cantor, Leenaars, Lester, Slater, Wolanowski, and O'Toole (1996) suggesting similarities in self-harm between Americans and Canadians, I expect results to be generalizable to a Canadian population. Participants ranged in age from 16 to 72 years ($M = 35.21$, $SD = 12.73$) and women slightly outnumbered men (57% women versus 43% men). Sixty-eight percent of individuals reported their ethnicity as European descent (a further 5% reported his/her ethnicity as Caucasian), 9% as African American, and 7% as Asian. The remaining participants identified as other ethnicities. In terms of schooling, 1% of individuals had not completed high school. Forty-three percent of participants were attending or had completed college, 28% had completed a bachelor's degree, and 7% had completed graduate school.

The vast majority of participants did not report regular use of illegal drugs (96%) or alcohol (96%). In terms of mental illness, 32% reported that they have been diagnosed with a mental illness, however, only 8% of the population was currently receiving counseling and 18% was taking medication for their mental illness. Seventy-three individuals (8%) reported a previous suicide attempt. This attempted suicide rate was slightly higher than that found during previous research with other community samples (4% - DeLeo, Cerin, Spathonia, & Burgis, 2005), undergraduate populations (3.6% - Flamenbaum, 2009; 2.5% - Troister & Holden, 2010) but was lower than found among a forensic sample (17% - Holden & Kroner, 2003) or a homeless population (24% - Patterson & Holden, 2012). For 29% of individuals, this suicide attempt occurred within the last 1-5 years, within the last 6-10 years for 22%, and greater than 20 years for 34% of the participants. Of those who attempted suicide, 66% did so by overdose, 16% by cutting/stabbing, 7% by hanging, 6% by gun, and the remaining by drowning or a combination of methods. The majority reported having moderate intent (34%) during their attempt with fewer reporting extreme intent (14%), being quite intent (23%), somewhat intent (11%), and not very intent (18%). Forty-four percent of individuals attempted suicide only one time, 30% attempted two times, 15% attempted three times, and the remainder attempted more than three times.

A total of 128 individuals (24%) reported at least one incidence of self-mutilation with women outnumbering men by a ratio of approximately 2:1 (87 women versus 41 men). Drug and excessive alcohol use was not a large problem among this sample with 4% reporting drug use and 10% reporting excess alcohol use. Among those who reported self-mutilation, mental illness was reported by 59% and a previous suicide attempt was reported by 40%. Overdose was by far the most commonly reported method of attempted suicide (67%). The most reported method of

self-mutilation was cutting (51%), followed by severe scratching (31%), carving words (27%) or pictures into the skin (19%), punching to the point of bruising (25%), preventing wounds from healing (16%), sticking themselves with sharp objects (14%), using a lighter or match to burn their skin (13%), and severe biting (13%). Dropping acid or bleach onto skin, using sandpaper on skin, or burning skin with a cigarette were much less common.

Table 2

Comparison of University and Community Sample Participant Characteristics

	<i>University Sample (n = 428)</i>	<i>Community Sample (n = 533)</i>
Age	17-24 (<i>M</i> = 18.39, <i>SD</i> = 0.81)	16-72 (<i>M</i> = 35.21, <i>SD</i> = 12.73)
Gender	88% Women	57% Women
Ethnicity	76% Caucasian 14% Asian 10% other	73% Caucasian 9% African American 7% Asian
Regular use of illicit drugs	4%	4%
Regular use of alcohol	21%	4%
Diagnosable Mental Illness	14%	32%
Past suicide attempt	4%	8%
Method	53% Overdose 18% Cutting 12% Hanging	66% Overdose 16% cutting 7% hanging
Intent	Extreme (6%) Quite (47%)	Extreme (14%) Quite (23%)
Number of attempts	1 (47%) 2 (29%) 3 or > (24%)	1 (44%) 2 (30%) 3 or > (26%)
Act of NSSI	23%	24%
Method	54% Cutting 34% Scratching 19% Burning	51% Cutting 31% Scratching 25% Punching

Measures

Participants completed a demographic questionnaire that asked participants to indicate their age, sex, whether or not they had been diagnosed with a mental illness, whether or not they had taken medication for a mental illness, whether they had obtained any therapy/treatment in the past, the total number of lifetime suicide attempts, length of time since their latest suicide attempt, and method of most recent attempt. Participants also received the following questionnaires:

Psychache Scale. The Psychache Scale (Holden et al., 2001) is a 13-item self-report scale used to assess psychological pain as defined by Shneidman (1993). Participants are asked to respond on a 5-point Likert-type scale. The scale includes items such as “I seem to ache inside” and “I hurt because I feel empty.” A total psychache score is obtained by summing all 13 questions. Higher scores indicate greater psychache. Holden et al. report strong reliability (alpha coefficient = .92) and validity (demonstrating a medium effect size (Cohen’s $d = .66$)) at distinguishing between previous suicide attempters and nonattempters, when compared to other measures of antecedents to suicide. They also found that this scale significantly distinguishes between suicide ideators and attempters. Good construct validity and internal consistency have also been reported by Mills, Green, and Reddon (2005).

Beck Scale for Suicide Ideation (BSS). The Beck Scale for Suicide Ideation (Beck & Steer, 1993) is a 19-item self-report scale used to measure suicide ideation and intent. The BSS consists of two sections. The Motivation subscale, explores individuals’ feelings towards death including the extent and frequency of suicidal thoughts. The second subscale, known as the Preparation subscale, assesses a more active stage of suicidality (e.g., the actual planning of a suicide attempt). A study of suicide attempters found support for this two-factor model (Holden

& DeLisle, 2005), with alpha reliability coefficients of .85 for the Motivation and .73 for the Preparation subscales. Items are scored 0, 1, or 2 with higher scores indicating greater suicidality. The questionnaire includes such items as “How strong is your wish to live?” and “Do you have any desire to attempt to end your life?” Items on the motivation and preparation subscales are summed and used as indexes of motivation and preparation for suicide. A total score representing total suicide ideation is also calculated by combining the motivation and preparation subscales. Alpha reliability coefficients of the entire scale range from .84 to .93 in psychiatric samples (Beck, Brown, & Steer, 1997; Beck, Kovacs, & Weissman, 1979; Beck, Steer, & Ranieri, 1988). Research has shown high internal consistency and construct validity for this scale (Beck et al., 1979; Holden & Kroner, 2003).

Young Schema Questionnaire (YSQ-SF). To assess early maladaptive schemas, the Young Schema Questionnaire – Short Form was used (Young, 1998). The YSQ-SF is composed of 15 subscales each of which relates to a specific schema. Subscales include: Emotional Deprivation, Abandonment/Instability, Mistrust/Abuse, Defectiveness/Shame, Dependency/Incompetence, Vulnerability to Harm, Failure, Enmeshment, Entitlement, Subjugation, Self-sacrifice, Emotional Inhibition, Unrelenting Standards, Insufficient self-control, and Social Isolation. It is the final two subscales, Insufficient self-control (inability to tolerate frustration while attempting to attain a goal) and Social Isolation (a feeling of being different or socially alienated) that are particularly relevant to the current research. Individuals are asked to respond to 75 questions on a 6-point scales which ask about the extent to which each question describes them. Responses include; 1 = *completely untrue of me*, 2 = *mostly untrue of me*, 3 = *slightly more true than untrue*, 4 = *moderately true of me*, 5 = *mostly true of me*, 6 = *describes me perfectly*. Items on each scale were summed to get total scores for each of the 15

subscales. A total schema score combining all 75 questions was also calculated based on the research of Hagen, Nordahl, Kristiansen, and Morken (2005) and Renner, Lobbestael, Peeters, Arntz, and Huibers (2012). Overall, higher scores indicate greater endorsement of early maladaptive schemas. Research has shown that the YSQ-SF has good discriminative validity (with alpha coefficients of .96 among a clinical sample and .92 among a non-clinical sample), good internal consistency, and a strong factor structure which is stable across clinical samples and across varying degrees of psychopathology (Lee, Taylor, & Dunn, 1999; Stopa, Thorne, Waters, & Preston, 2001; Waller, Meyer, & Ohanian, 2001; Welburn et al., 2002).

Interpersonal Needs Questionnaire (INQ). The Interpersonal Needs Questionnaire is an 18-item self-report questionnaire designed to measure participants' current beliefs about the extent to which they feel connected to others (i.e., belongingness) and the extent to which they feel like a burden on the people in their lives (i.e., perceived burdensomeness; Van Order, Witte, Gordon, Bender, & Joiner, 2008). Nine items measure belongingness (e.g., "These days other people care about me"), and nine items measure perceived burdensomeness (e.g., "These days I feel like a burden on the people in my life"). Individuals are to respond to questions on a 7-point Likert-type scale ranging from 1 (*not true at all for me*) to 7 (*very true for me*) with higher scores indicating a greater sense of thwarted belongingness and burdensomeness. Items on each scale are summed and used as indexes of perceived burdensomeness and thwarted belongingness. Freedenthal, Lamis, Osman, Kahlo, and Gutierrez (2011) found the scale to have good internal consistency.

The Deliberate Self-Harm Inventory (DSHI). The Deliberate Self-Harm Inventory (Gratz, 2001) is a 17-item self-report measure that assesses various that assesses various aspects of self-injury such as method, frequency, severity, and duration. An example question is, "have

you ever intentionally (i.e., on purpose) cut your wrists, arms, or other area(s) of your body (without intending to kill yourself)? If so, “how many times have you done this? When was the last time you did this? And how many years have you been doing this (if you are no longer doing this, how many years did you do this before you stopped?)” A total score indicating number of acts of NSSI was calculated by summing all 17 items. The scale has been found to have high internal consistency (alpha of .82), adequate test-retest reliability, and adequate construct, discriminant, and convergent validity (Gratz, 2001).

Acquired Capability for Suicide Scale (ACSS). The Acquired Capability for Suicide Scale (Bender, Gordon, Bresin & Joiner, 2011) is a 20-item self-report questionnaire designed to assess one’s desensitization to lethal self-injury and/or being exposed to potentially fatal situations. Individuals are asked to rate each item on a 1 (*not at all like me*) to 5 (*very much like me*) scale. Examples of items include “Things that scare most people don’t scare me” and “The pain involved in dying frightens me.” Scores on each of the 20 questions are summed to create a total score, with higher scores indicating greater acquired capability. The ACSS is strongly correlated with a BSS item that asks about one’s courage to kill oneself ($r = .79, p = .007$; Bender et al., 2007). Further, the ACSS is not correlated with measures of current distress/depression (as Joiner (2005) suggested it should not be) thus demonstrating good discriminant validity (Bender et al., 2007).

Childhood Trauma Questionnaire (CTQ). Childhood adversity was measured using a 28-item version of the Childhood Trauma Questionnaire used by Felitti et al. (1998) assessing six adverse experiences occurring before age 18 including: (1) exposure to a mentally ill person in the home, (2) exposure to an adult alcoholic/drug addict in the home, (3) sexual abuse, (4) physical abuse, (5) psychological abuse, and (6) violence directed against the respondent’s

mother. Participants respond to each statement on a 5-point Likert-type scale ranging from 1 (*never true*) to 5 (*very often true*) with higher scores indicating a greater number of adverse childhood experiences. The questionnaire includes such items as “When I was growing up, I didn’t have enough to eat?” and “When I was growing up, someone tried to touch me in a sexual way.” A total score is calculated by summing the participants responses on all 28 items.

Procedure

The university sample was recruited through a posting on an introductory psychology website. Participants were offered either course credit (1.0) or \$7 for their participation. Participation in this study had no bearing on the individual’s academic standing. Interested participants followed the link to Survey Monkey, completed the study, and noted the type of compensation they preferred.

The community sample was recruited through a request that was posted on Mechanical Turk offering the opportunity to complete a questionnaire for Amazon credit. Participants who met the specified criteria (i.e., American citizen, fluent in English) were redirected to Survey Monkey. Participants then completed the survey and were provided with a completion code in order to be compensated for their participation (\$1).

For both the undergraduate and community participants, the survey began with a consent form. In order to continue the study, the individual had to consent to participation (see Appendix A and B). Next, participants completed the demographic questionnaire followed by the Young Schema Questionnaire – Short Form, Interpersonal Needs Questionnaire, Acquired Capability for Suicide Scale, Psychache Scale, Deliberate Self-Harm Inventory, the Beck Scale of Suicidal Ideation, and the Adverse Childhood Experiences Scale. The questionnaires were administered in this order so that the least sensitive questions were asked first to ease individuals into

responding. Participation took between 30-45 minutes. At the end of the questionnaire participants were provided a debriefing form (Appendix C and D) and the opportunity to make comments. Ethics approval for the current research was obtained through the Queen's University research and ethics board.

Data Analytic Strategy

Preliminary analyses consisted of screening the data for accuracy and missing values. Any observed out of range values were corrected by verifying the values with the participants' original questionnaires. Responses on the DSHI were reviewed and participants were excluded from the non-suicidal self-injury group if their only act of self-mutilation was accidental, one time for a dare, or for the purpose of scarification (a method of body modifications related to perceived beautification). For participants missing less than 10% of data within any one measure, scale scores were prorated. Any participants missing more than 10% of data within a measure had the scale score excluded from analyses. Means, standard deviations, and coefficient alphas were calculated for both the predictor and criterion variables. Independent samples t-tests were conducted to compare the community and university samples on a number of variables of interest. Pearson correlations were subsequently calculated between the predictor and criterion variables.

To test the proposed blended model of suicide and self-mutilation (see Figures 3 and 4), the decision was made to explore the individual paths in the model separately using multiple regression analyses. Given the exploratory nature of the current research, multiple regression was the chosen method of analysis based largely on the work of Hayes (2013). He suggests that contrary to widespread belief, Structural Equation Modeling is not better than multiple regression when dealing with serial multiple mediation models and that results from either method will produce similar results.

Multiple regression analyses began by evaluating the normality of the predictors and outcome variables by calculating indices of skewness and kurtosis and by visually inspecting histograms. A lack of normality is indicated by a ratio of skewness or kurtosis to its standard error that is greater than three or less than negative three. All of the predictor variables, with the exception of acquired capability, were substantially non-normal based on their histograms and had either problems with skewness and/or kurtosis. Due to violations of normality, a nonparametric bootstrapping approach was used to analyze the data. Typical parametric tests require assumptions to be met (i.e., normal distribution) regarding the data. When these assumptions are not met, conclusions cannot be accurately drawn regarding tests of significance. Thus, the technique of bootstrapping was used in these cases because it does not rely on assumptions of either normality or homoscedasticity.

Bootstrapping assumes that the sample obtained (in this case, $N = 533$ [community sample] and $N = 417$ [university sample]) is representative of the population. Bootstrapping bases analyses on a sampling distribution which is empirically derived from the given sample. From the sample (which is seen to represent the population), a sampling distribution is created by taking a large number of samples randomly (with replacement). For each sample (10,000 resamples in this case), the statistic of interest is calculated. These samples then comprise a frequency distribution which is used as an estimate of the sampling distribution. The resulting distribution is then used to draw inferences about the population and to generate confidence intervals for significance testing (Cirincione & Gurrieri, 1997; Hesterberg, Moore, Monaghan, Clipson, & Epstein, 2005).

To test the first path of the blended model of self-harm, two multiple regressions were completed (one for the university sample and one for the community sample) examining whether

the CTQ was able to statistically predict acquired capability. Next, multiple regressions were completed to assess whether the CTQ, YSQ, and specific YSQ subscales (social isolation and insufficient self-control/discipline) had predictive power for explaining burdensomeness and belongingness. To determine whether the YSQ, and relevant subscales, mediated the relationship between the CTQ and burdensomeness/belongingness, a series of mediation analyses were then completed.

Mediation analyses were completed using the *MEDIATE* macro for SPSS designed by Andrew Hayes (2014). Bootstrapped values of the 95% confidence interval that do not contain zero were considered significant mediators (Preacher & Hayes, 2008). Although the *MEDIATE* macro was used to evaluate whether mediation occurred, actual regression weights were obtained from a bootstrapped regression as model coefficients in the *MEDIATE* macro are based on normal theory. Full mediation was deemed to have occurred if the direct effect between the predictor and criterion variable was reduced to non-significant as a result of the addition of the mediator. Partial mediation was deemed to have occurred if the direct effect between the predictor and criterion variable continued to be significant in spite of the addition of the mediator.

To assess the final component of the proposed model, analyses began by assessing whether combining psychache and the ITS provided more predictive power than either theory alone for the prediction of suicide and self-mutilation. This was completed by examining whether psychache adds variance to the prediction of the criterion variables over and above that provided by the ITS (acquired capability, belongingness, burdensomeness, and the interactions between them) and vice-versa. Given the additional variance provided by ITS over and above

psychache, full mediation was not possible and therefore further mediation analyses were not conducted.

CHAPTER 3

Results

Preliminary Analyses

Means, standard deviations, observed ranges, and coefficient alpha reliabilities for the university and community samples are shown in Table 3. For the university sample, with the exception of suicide motivation and preparation, all coefficient alpha reliabilities exceeded .80, indicating that these measures are adequately reliable for further analysis. Suicide motivation and preparation have alphas that are slightly lower (.78 and .66, respectively) but when combined into the full scale (Beck Scale for Suicide Ideation) the reliability exceeds .80. For the community sample, alpha reliabilities also exceed .80, with the exception of the DSHI and once again the preparation subscale of the BSS (.79 and .74, respectively)

Analyses revealed that the university and community sample were significantly different across all the predictor variables with the exception of acquired capability, and across all the criterion variables, with the exception of non-suicidal self-harm (with the community sample scoring higher). See Table 3 for effect sizes.

Among the university sample there was a significant difference between suicide attempters and non-attempters across all the predictor and criterion variables, with the exception of acquired capability (it was not significantly different between these groups; See Table 4). There were also significant differences between those who did and did not engage in non-suicidal self-injury across all the predictor and criterion variables. It was not appropriate to assess differences between those whose sole reported method of self-harm was attempted suicide

and those who reported self-mutilation because there were only two individuals who had attempted suicide and had not self-mutilated.

Among the community sample, there were also significant differences between past suicide attempters and non-attempters and between non-suicidal self-mutilators and non-mutilators across all criterion (with the exception of acquired capability) and predictor variables (see Table 5). Comparing those who reported only engaging in self-mutilation to those who only reported having attempted suicide across all the predictor and criterion variables, the only observable difference was with the predictor variable of suicide preparation, as would be expected (see Table 6).

Comparing previous suicide attempters between the community and university sample showed no significant difference on any of the criterion variables (with the exception of childhood trauma), although this was potentially the result of inadequate power as there were so few suicide attempters among the university sample (see Table 7). On the other hand, non-suicidal self-injury was significantly different between the university and community sample (with the community sample scoring higher), once again across all variables except acquired capability.

Table 8 shows the means and standard deviations for the subscales of the Childhood Trauma Questionnaire. Across all 5 subscales, the community sample had higher scores than the university sample. Table 9 displays the means and standard deviations for the subscales of the Young Schema Questionnaire. Across many subscales, the community sample once again scored higher than the university sample, the biggest effect sizes were on the subscales of Emotional Deprivation and Social Isolation.

Overall, the community sample demonstrated higher average scores across the predictor variables of psychache, burdensomeness, belongingness, and the criterion variables of suicide ideation, motivation, and preparation. The community sample also scored higher on the adverse childhood experiences scale and the Young Schema Questionnaire. In comparing attempters and non-attempters, and self-mutilators and non-self-mutilators, attempters and self-mutilators had higher scores across the majority of predictor and criterion variables than non-self-harmers (for both the university and community sample). The only real exception was acquired capability which was not significantly different between these groups. In comparing attempters and self-mutilators between the university and community sample, attempters appeared to be similar across the groups while self-mutilators were quite different between university and community samples. Finally, in comparing self-mutilators and suicide attempters among the community sample, the only significant difference between these groups was on the criterion variable of suicide preparation (again this analysis cannot be performed with the university sample as there are only 2 individuals who reported having attempted suicide and not engaging in NSSI).

Table 3

Means, Standard Deviations, and Reliabilities for the University and Community Sample

	Possible Range	University Sample (<i>n</i> = 417)				Community Sample (<i>n</i> = 533)				
		Observed Range	<i>M</i>	<i>SD</i>	α	Observed Range	<i>M</i>	<i>SD</i>	α	<i>d</i>
Predictors										
Psychache	13-65	13-61	21.31	9.25	.96	13-65	24.95*	12.24	.97	.34
Perceived Burdensomeness	1-7	1-7	1.93	0.96	.90	1-7	2.30*	1.35	.92	.32
Thwarted Belongingness	1-7	1-7	2.47	1.16	.91	1-7	3.27*	1.58	.93	.58
Acquired Capability	0-80	3-78	36.46	13.13	.83	0-76	38.23	14.87	.87	--
Childhood Trauma	25-125	25-91	31.82	8.99	.87	25-121	44.82*	18.8	.94	.90
Young Schema Questionnaire	75-450	78-336	172.80	46.48	.96	75-383	189.81*	56.99	.97	.33
Criteria										
Suicide Ideation	0-38	0-28	4.12	3.87	.81	0-28	6.33*	5.41	.85	.47
Motivation	0-18	0-12	0.77	1.68	.78	0-15	1.71*	2.83	.86	.40
Preparation	0-19	0-15	2.52	2.22	.66	0-17	3.77*	3.05	.74	.47
Attempted Suicide	0-1	0-1	0.04	0.20	--	0-1	0.14*	0.34	--	.36
Deliberate Self-Harm Inventory	0-17	0-8	0.55	1.28	.73	0-12	0.65	1.56	.79	--

Note. Due to missing data some descriptive statistics are based on fewer than specified participants. Number of lifetime attempts was not included in the current table because those data were collected in a categorical format. *Significant difference between samples ($p < .01$, two-tailed).

Table 4

Means and Standard Deviations for Suicide-Attempters Versus Non-Attempters and Mutilators Versus Non-Mutilators (University sample, n = 417)

	<i>Attempters</i> (n = 16)		<i>Non-Attempters</i> (n = 403)			<i>Mutilators</i> (n = 98)		<i>Non-Mutilators</i> (n = 311)		
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>d</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>D</i>
Predictors										
Psychache	34.79	14.46	20.84*	8.66	1.17	27.00	11.18	19.54*	7.80	.77
Perceived Burdensomeness	3.25	1.61	1.88*	0.90	1.05	2.40	1.22	1.77*	0.81	.61
Thwarted Belongingness	3.58	1.11	2.43*	1.14	1.02	2.96	1.31	2.30*	1.07	.55
Acquired Capability for Suicide Scale	39.39	11.66	36.36	13.18	--	40.08	15.30	35.26*	12.19	.35
Childhood Trauma Questionnaire	48.14	14.98	31.20*	8.08	1.41	35.23	11.38	30.61*	7.60	.48
Young Schema Questionnaire-SF	227.57	65.82	170.62*	44.28	1.02	194.67	55.34	166.08*	40.90	.59
Criterion										
Beck Scale for Suicide	14.62	7.63	3.74*	3.07	1.87	6.76	5.18	3.26*	2.87	.84
Motivation	5.29	3.89	.61*	1.29	1.61	1.76	2.39	.45*	1.22	.69
Preparation	8.41	4.32	2.31*	1.78	1.85	3.91	2.99	2.06*	1.67	.76
Attempted Suicide	--	--	--	--	--	.11	.32	.01*	.08	.43
Deliberate Self-Harm Inventory	2.30	1.68	.46	1.13	--	2.30	1.68	.00*	.00	.49

Note. Due to missing data some descriptive statistics are based on fewer than specified participants. Attempted suicide was not compared between attempters and non-attempters because it was a categorical variable.

*Significant difference between samples ($p < .01$, two-tailed).

Table 5

Means and Standard Deviations for Suicide-Attempters Versus Non-Attempters and Mutilators Versus Non-Mutilators (Community sample, n = 533)

	<i>Attempters</i> (n =73)		<i>Non-Attempters</i> (n =443)			<i>Mutilators</i> (n =128)		<i>Non-Mutilators</i> (n =375)		
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>d</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>D</i>
Predictors										
Psychache	34.91	13.58	23.39*	11.26	.92	33.00	13.59	22.18*	10.41	.89
Perceived Burdensomeness	3.18	1.55	2.16*	1.26	.73	3.02	1.56	2.03*	1.15	.72
Thwarted Belongingness	4.02	1.51	3.15*	1.56	.57	4.11	1.49	2.98*	1.51	.75
Acquired Capability for Suicide Scale	41.15	16.75	37.78	14.54	--	39.15	15.50	37.92	14.75	--
Childhood Trauma Questionnaire	59.46	23.82	42.50*	16.22	.83	52.75	20.53	42.13*	16.78	.57
Young Schema Questionnaire-SF	222.58	62.74	184.66*	54.34	.65	219.63	59.48	178.76*	52.24	.73
Criterion										
Beck Scale for Suicide	13.40	6.06	5.21*	4.34	1.55	10.69	6.20	4.83*	4.16	1.11
Motivation	4.59	4.25	1.24*	2.21	.99	3.57	3.81	1.06*	2.04	.82
Preparation	8.12	3.00	3.08*	2.42	1.85	6.26	3.31	2.92*	2.43	1.15
Attempted Suicide	--	--	--	--	--	.40	.49	.05*	.21	.93
Deliberate Self-Harm Inventory	2.26	2.61	.39*	1.12	.93	2.54	2.18	.00*	.00	1.15

Note. Due to missing data some descriptive statistics are based on fewer than specified participants. Attempted suicide was not compared between attempters and non-attempters because it was a categorical variable.

*Significant difference between samples ($p < .01$, two-tailed).

Table 6

Means, Standard Deviations, and Effect Sizes of Self-Mutilators versus Suicide-Attempters Among the Community Sample

	<i>Mutilators</i> (<i>n</i> = 18)		<i>Attempters</i> (<i>n</i> = 77)		<i>d</i>
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	
Predictors					
Psychache	29.85	12.61	26.83	9.49	--
Perceived Burdensomeness	3.02	1.56	3.18	1.55	--
Thwarted Belongingness	4.11	1.49	4.02	1.51	--
Acquired Capability for Suicide Scale	37.43	14.41	39.45	16.90	--
Childhood Trauma Questionnaire	47.17	16.54	54.56	25.70	--
Young Schema Questionnaire-SF	213.15	59.93	196.61	72.44	--
Criterion					
Beck Scale for Suicide	8.26	5.01	10.50	5.35	--
Motivation	2.44	2.95	2.61	3.42	--
Preparation	4.73	2.66	6.89*	3.20	.73
Attempted Suicide	--	--	--	--	--
Deliberate Self-Harm Inventory	--	--	--	--	--

Note. Due to missing data some descriptive statistics are based on fewer than specified participants.

*Significant difference between samples ($p < .01$, two-tailed).

Table 7

Means and Standard Deviations for University Suicide-Attempters Versus Community Suicide-Attempters and University Self-Mutilators Versus Community Self-Mutilators

	University Attempters (<i>n</i> =15)		Community Attempters (<i>n</i> =70)		<i>d</i>	University Mutilators (<i>n</i> =97)		Community Mutilators (<i>n</i> =128)		<i>d</i>
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>		<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	
Predictors										
Psychache	34.79	14.46	34.91	13.58	--	27.15	11.25	33.00*	13.59	.47
Perceived Burdensomeness	3.25	1.61	3.18	1.55	--	2.40	1.22	3.02*	1.56	.43
Thwarted Belongingness	3.58	1.11	4.02	1.51	--	2.96	1.31	4.11*	1.49	.81
Acquired Capability for Suicide Scale	39.39	11.66	41.15	16.75	--	40.43	15.26	39.15	15.50	--
Childhood Trauma Questionnaire	48.14	14.98	59.46*	23.82	.57	35.23	11.38	52.75*	20.53	1.06
Young Schema Questionnaire-SF	227.57	65.82	222.58	62.74	--	194.67	55.34	219.63*	59.48	.43
Criterion										
Beck Scale for Suicide	14.62	7.63	13.40	6.06	--	6.85	5.24	10.69*	6.19	.67
Motivation	5.29	3.89	4.59	4.25	--	1.78	2.41	3.57*	3.81	.56
Preparation	8.41	4.32	8.12	3.00	--	3.99	3.00	6.26*	3.31	.72
Attempted Suicide	--	--	--	--	--	.11	.32	.40*	.49	.70
Deliberate Self-Harm Inventory	3.23	2.35	2.26	2.61	--	2.30	1.68	2.53	2.18	--

Note. Due to missing data some descriptive statistics are based on fewer than specified participants. Attempted suicide was not compared between attempters and non-attempters because it was a categorical variable.

*Significant difference between samples ($p < .01$, two-tailed).

Table 8

Means, Standard Deviations, and reliabilities of the University and Community Sample on the Childhood Trauma Questionnaire

	University Sample ($n = 409$)				Community Sample ($n = 500$)				
	Observed Range	M	SD	α	Observed Range	M	SD	α	d
Emotional Abuse	5-25	7.39	3.59	.85	5-25	9.77*	5.32	.90	.52
Physical Abuse	5-22	5.72	2.04	.77	5-25	7.76*	4.11	.84	.63
Sexual Abuse	5-23	5.21	1.33	.86	5-25	7.04*	4.70	.95	.53
Emotional Neglect	5-21	7.44	3.44	.86	5-25	12.14*	5.77	.95	.99
Physical Neglect	5-16	6.03	1.91	.41	5-25	8.29*	3.75	.77	.76
CTQ total	25-91	31.77	8.93	.87	25-120	44.82*	18.38	.94	.90

Note. Due to missing data some descriptive statistics are based on fewer than specified participants.

*Significant difference between samples ($p < .01$, two-tailed).

Table 9

Means, Standard Deviations, and reliabilities of the University and Community Sample on the Young Schema Questionnaire - SF

	University Sample (<i>n</i> = 427)				Community Sample (<i>n</i> = 533)				
	Observed Range	M	SD	α	Observed Range	M	SD	α	<i>d</i>
Emotional Deprivation	5-30	8.87	4.65	.87	5-30	13.59**	6.76	.93	.81
Abandonment	5-30	11.88	5.80	.90	5-30	11.84	6.56	.94	--
Mistrust/Abuse	5-30	11.96	5.36	.88	5-30	14.19**	6.44	.91	.38
Social Isolation	5-30	10.72	5.05	.90	5-30	15.21**	7.17	.94	.72
Defectiveness/Shame	5-30	8.72	4.89	.92	5-30	10.59**	6.40	.95	.33
Failure	5-30	10.70	5.97	.96	5-30	10.27	6.01	.94	--
Dependence/Incompetence	5-25	8.69	3.67	.76	5-30	9.57**	4.83	.83	.21
Vulnerability to Harm	5-30	9.15	4.63	.85	5-30	11.60**	5.73	.87	.47
Enmeshment	5-30	8.32	4.11	.80	5-30	9.14**	5.08	.86	.18
Subjugation	5-30	10.09	4.65	.84	5-30	11.11**	5.62	.88	.20
Self-Sacrifice	5-30	17.16	5.50	.86	5-30	16.42*	5.67	.86	.13
Emotional Inhibition	5-30	11.70	5.72	.87	5-30	13.39**	6.64	.91	.27
Unrelenting Standards	5-30	18.59	5.93	.85	5-30	17.85	5.95	.84	--
Entitlement	5-28	12.70	4.64	.76	5-30	12.79	5.19	.80	--
Insufficient Self-Control/Self-Discipline	5-29	13.62	5.60	.87	5-30	12.81*	5.65	.88	.14

Note. Due to missing data some descriptive statistics are based on fewer than specified participants.

***p* < .01 (two-tailed), * *p* < .05 (two-tailed) indicates a significant difference between samples.

Correlations Among Measures of Self-harm

Correlations among all variables (except the Young Schema Questionnaire) are shown in Table 10 and Table 11. Significant positive correlations existed between all of the predictor variables (with the exception of acquired capability) and all of the criterion variables for both the university and community samples. Significant correlations were also found between psychache, perceived burdensomeness, and thwarted belongingness (.60 to .76). These large correlation values are similar to those found by Joiner et al. (2009) and Van Orden et al. (2008) among an undergraduate and community mental health sample, respectively. The non-significant correlations between acquired capability and burdensomeness, and belongingness and the significant correlation between acquired capability and suicide ideation are also consistent with the work of Joiner and Van Orden.

The significant, positive correlations between psychache and the criterion variables of suicide intent, motivation, attempter status, and deliberate self-harm are similar to the correlations found by DeLisle and Holden (2009) with a university sample. The correlations between the predictors of belongingness and burdensomeness with suicide ideation are similar to those found by Van Orden (2008) with medium and large effect sizes, respectively.

Correlations between the components of the Young schema questionnaire and the unmet needs outlined in Joiner's interpersonal theory (perceived burdensomeness and thwarted belongingness) are displayed in Table 12 (acquired capability is included for interest sake as it is not believed that EMS are particularly influential on acquired capability). Among both the university and community sample, burdensomeness was most strongly correlated with the EMS of Defectiveness/Shame (.68 and .67, respectively). The EMS that correlated most strongly with belongingness among both the university and community samples was social isolation (.69 and

.67, respectively). As expected, based on the research of Castille et al. (2007), the specific EMS of social isolation was a strong predictor of belongingness. However, contrary to expectations, insufficient self-control was found to be more modestly related to perceived burdensomeness and thwarted belongingness among both samples (effect sizes ranged from .30 -.37).

Table 10

Intercorrelations Among Measures of Self-harm - University Sample (N =417)

Measure	1	2	3	4	5	6	7	8	9	10
<i>Predictors</i>										
1. Psychache	--									
2. Perceived Burdensomeness	.69**	--								
3. Thwarted Belongingness	.60**	.71**	--							
4. Acquired Capability	-.06	.08	.02	--						
5. Childhood Trauma	.37**	.43**	.39**	.02	--					
<i>Criteria</i>										
6. Suicide Ideation	.60**	.60**	.47**	.20**	.52**	--				
7. Motivation	.58**	.62**	.45**	.16**	.53**	.87**	--			
8. Preparation	.51**	.48**	.38**	.21**	.44**	.92**	.70**	--		
9. Attempter Status	.28**	.26**	.18**	.05	.35**	.53**	.51**	.52**	--	
10. Deliberate Self-Harm	.39**	.32**	.26**	.14**	.26**	.45**	.39**	.45**	.26**	--

Note. Due to missing data, some correlations are based on fewer than 417 participants.

**p <.01, two-tailed. Correlations of .10, .30, and .50 correspond to small, medium, and large effect sizes, respectively (Cohen, 1992).

Table 11

Intercorrelations Among Measures of Self-harm – Community Sample (N = 533)

Measure	1	2	3	4	5	6	7	8	9	10
<i>Predictors</i>										
1. Psychache	--									
2. Perceived Burdensomeness	.68**	--								
3. Thwarted Belongingness	.61**	.73**	--							
4. Acquired Capability	-.03	.02	.01	--						
5. Childhood Trauma	.43**	.42**	.45**	-.01	--					
<i>Criteria</i>										
6. Suicide Ideation	.61**	.62**	.52**	.19**	.43**	--				
7. Motivation	.60**	.66**	.52**	.17**	.43**	.89**	--			
8. Preparation	.50**	.45**	.39**	.19**	.39**	.91**	.67**	--		
9. Attempter Status	.32**	.26**	.19**	.08	.32**	.52**	.41**	.57**	--	
10. Deliberate Self-Harm	.38**	.29**	.26**	.04	.24**	.44**	.34**	.48**	.42**	--

Note. Due to missing data, some correlations are based on fewer than 533 participants.

** $p < .01$, two-tailed. * $p < .05$, two-tailed. Correlations of .10, .30, and .50 correspond to small, medium, and large effect sizes, respectively (Cohen, 1992).

Table 12

Intercorrelations Among Young Schema Questionnaire and Joiner's Interpersonal Theory of Suicide - University (N =417) and Community sample (N=504)

	University Sample			Community Sample		
	Perceived Burdensomeness	Thwarted Belongingness	Acquired Capability	Perceived Burdensomeness	Thwarted Belongingness	Acquired Capability
Emotional Deprivation	.53**	.55**	.11*	.53**	.66**	.05
Abandonment	.57**	.54**	-.08	.44**	.36**	-.15**
Mistrust/Abuse	.50**	.49**	-.01	.48**	.49**	.06
Social Isolation	.58**	.69**	.02	.52**	.67**	-.01
Defectiveness/Shame	.68**	.60**	.03	.67**	.58**	-.06
Failure	.49**	.44**	-.01	.64**	.32**	-.11*
Dependence/Incompetence	.41**	.41**	.01	.58**	.48**	-.06
Vulnerability to Harm	.50**	.44**	-.17**	.56**	.54**	-.13**
Enmeshment	.29**	.32**	-.06	.37**	.29**	-.03
Subjugation	.50**	.44**	-.09	.58**	.52**	-.06
Self-Sacrifice	.13**	.03	-.12*	.07	.02	-.01
Emotional Inhibition	.42**	.50**	.04	.48**	.54**	.08
Unrelenting Standards	.13**	.14**	-.02	.02	.04	.12**
Entitlement	.04	.11*	.06	.05	.02	.19**
Insufficient Self-Control/Self-Discipline	.32**	.30**	-.02	.36**	.37**	-.10*

Note. Due to missing data, some correlations are based on fewer participants.

**p < .01, two-tailed. *p < .05. Correlations of .10, .30, and .50 correspond to small, medium, and large effect sizes, respectively (Cohen, 1992).

Multiple Regression and Mediation Analyses

To test the blended model of self-harm, analyses began by exploring childhood trauma. Contrary to expectations, the childhood trauma questionnaire (CTQ) was not a significant predictor of acquired capability among either the university or community sample. See Table 13 for details. However, the CTQ was a significant predictor of burdensomeness and belongingness for both the university and community participants. The subscales of Emotional Neglect and Emotional Abuse provided unique variance over and above the other variables for the prediction of burdensomeness within each sample. The subscale of Emotional Neglect was also a significant unique predictor of belongingness for each sample, however, Emotional Abuse was only a unique predictor of belongingness in the university sample.

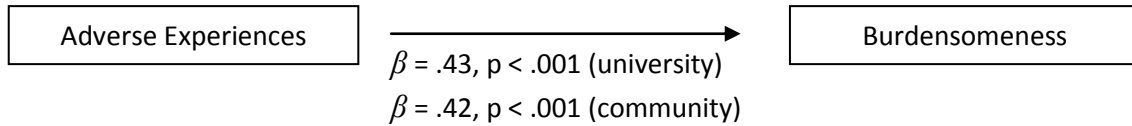
To test the utility of early maladaptive schemas in predicting burdensomeness and belongingness a series of multiple regressions were conducted. As predicted, the Young Schema Questionnaire was a significant predictor of burdensomeness and belongingness (see Table 14; acquired capability was included in the table purely for interest sake). For the variable of burdensomeness, the YSQ scales of Defectiveness/Shame and Emotional Deprivation were the variables that for both the university and community sample provided predictive power over and above the others. Among the university sample, Social Isolation was also a significant predictor of burdensomeness as were the scales of Failure and Mistrust/Abuse among the community sample. For the variable of belongingness, the scales that provided increased predictive power for both the university and community sample were Emotional Deprivation, Self-Sacrifice, Social Isolation, and Emotional Inhibition. Among the community sample, Abandonment and Subjugation were also significant unique predictors.

To test the ability of the Young Schema Questionnaire, as a whole, and the subscales of Social Isolation and insufficient Self-Control/Discipline, in particular, to mediate the relationship between childhood trauma and the unmet needs of burdensomeness and belongingness a series of multiple regressions was completed. In the mediation model, the bootstrapped values of the 95% confidence interval that do not contain zero were considered to be significant mediators (Preacher & Hayes, 2008). Mediation analysis demonstrated that in the university sample, the total YSQ scale, the YSQ subscale of Social Isolation, and the YSQ subscale of Insufficient Self-Control/Discipline each partially mediated the relationship between childhood trauma and each of burdensomeness and belongingness. See Figures 5 and 6 for standardized Beta weights.

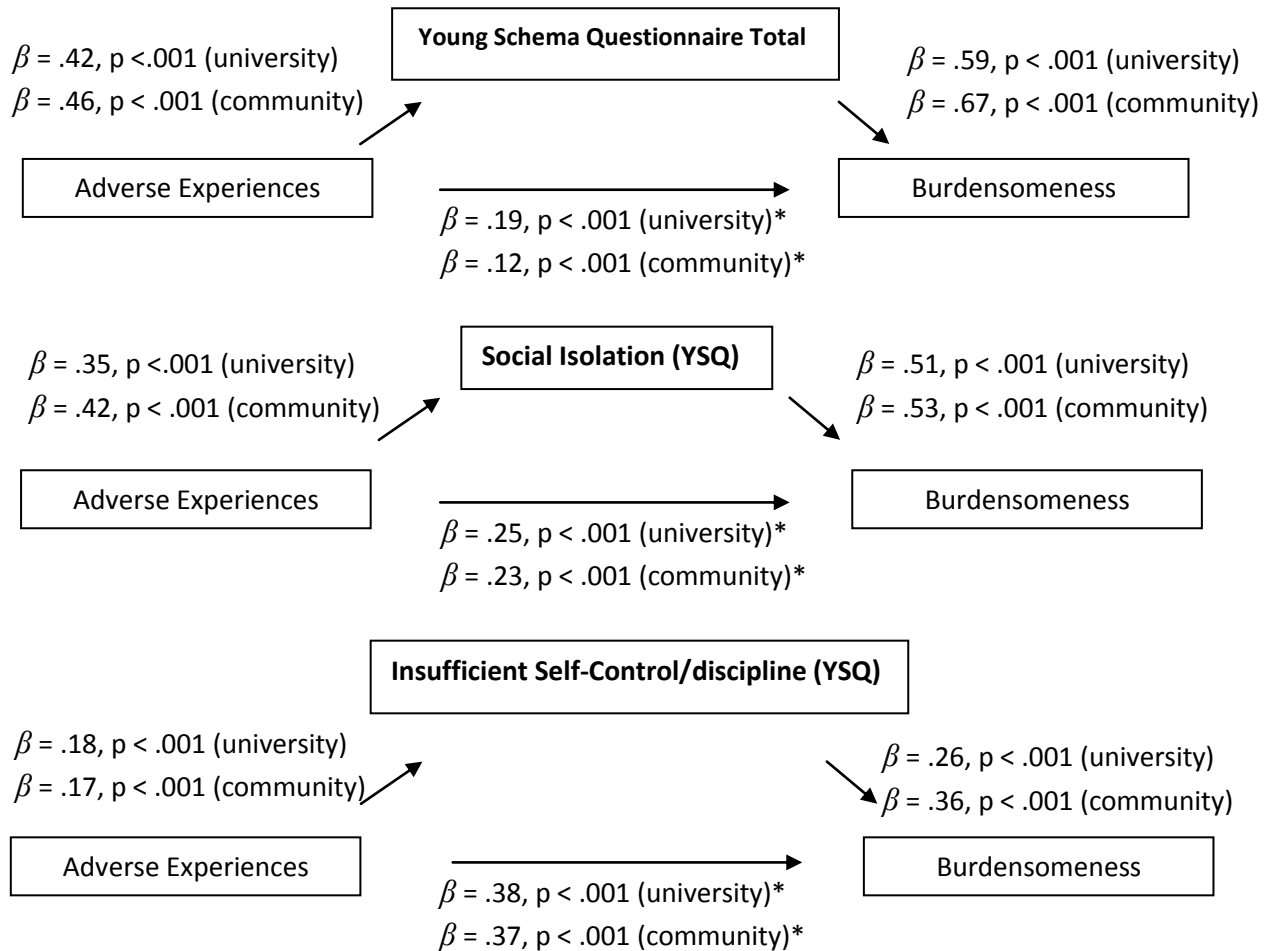
Figure 5

Direct and Indirect Mediation Paths for Criterion Variable of Burdensomeness (University & Community Sample)

a) direct path



mediated path

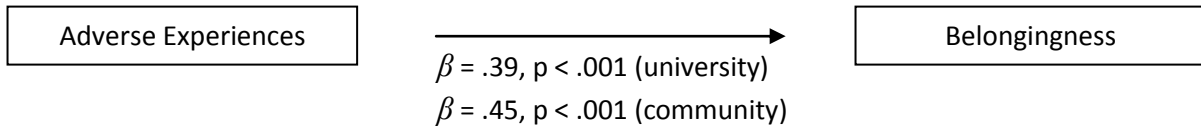


* indicates mediation occurred as there was a significant decrease in standardized regression coefficients between the criterion and predictor variables with the addition of the mediator ($p < .05$). However, as the direct path remains significant with the addition of the mediator, only partial mediation is said to have occurred.

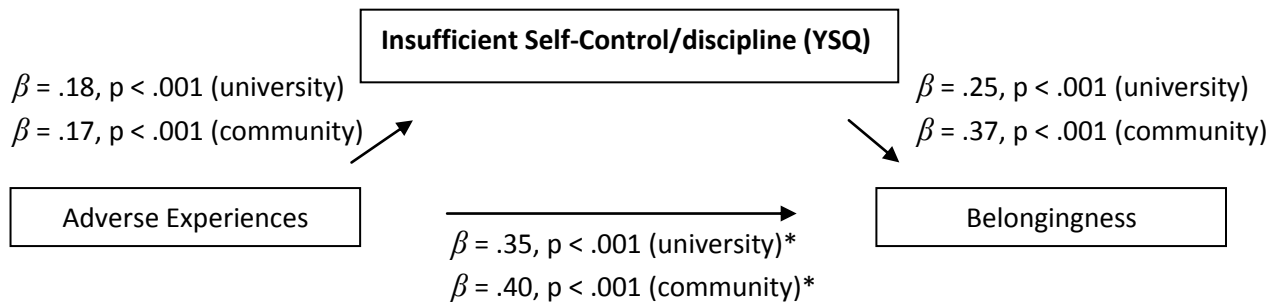
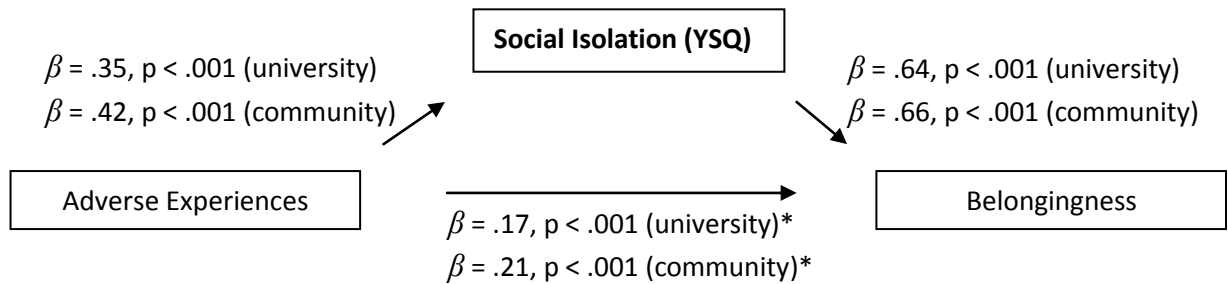
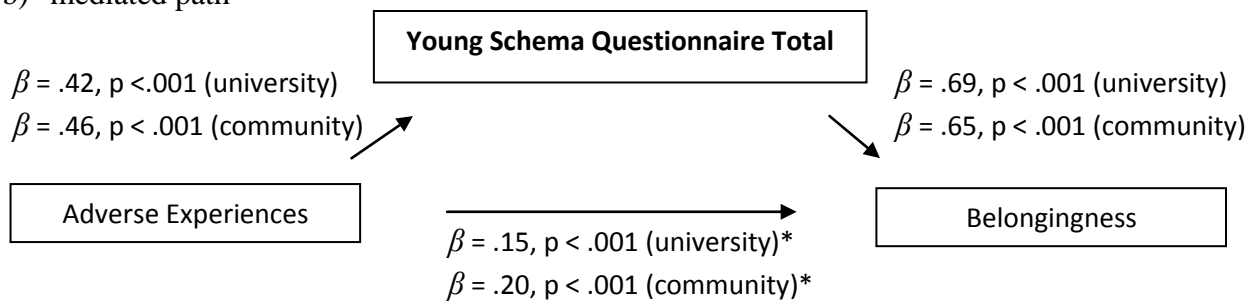
Figure 6

Direct and Indirect Mediation Paths for the Criterion Variable of Belongingness (University & Community Sample)

a) direct path



b) mediated path



* indicates mediation occurred as there was a significant decrease in standardized regression coefficients between the criterion and predictor variables with the addition of the mediator ($p < .05$). However, as the direct path remains significant with the addition of the mediator, only partial mediation is said to have occurred.

To assess whether a combined model has more predictive power than either theory alone for the prediction of self-harm, analyses began by examining whether psychache added variance to the prediction of the criterion variables over and above that provided by the ITS (acquired capability, belongingness, burdensomeness, and the interactions between them) and vice-versa allowing for the determination of whether a combined model has more predictive power than either theory alone (See Table 15). As expected, among the university sample, psychache added predictive power over and above that provided by the components of the ITS in predicting total ideation (R^2 change = .07), motivation (R^2 change = .06), preparation (R^2 change = .06), attempter status (R^2 change = .02) and non-suicidal self-injury (R^2 change = .04). A similar pattern existed for the community sample, whereby psychache added predictive power over and above that provided by the components of the ITS in predicting total ideation (R^2 change = .06), motivation (R^2 change = .04), preparation (R^2 change = .06), attempter status (R^2 change = .04), and non-suicidal self-injury (R^2 change = .06).

Contrary to expectations, the interaction between the components that make up the ITS also provided added variance in the prediction of the criterion variables for the university and community sample. Specifically, among the university sample, the ITS provided predictive power over and above psychache in predicting total ideation (R^2 change = .13), preparation (R^2 change = .10), motivation (R^2 change = .18), and non-suicidal self-harm (R^2 change = .05). Added predictive power was not provided to attempter status with the addition of ITS among the university sample. Among the community sample, ITS provided added variance above psychache in predicting total ideation (R^2 change = .13), preparation (R^2 change = .07), and motivation (R^2 change = .17). The ITS did not increase predictive power when added to psychache for predicting attempter status and non-suicidal self-harm. Given that ITS scale scores

increased the statistical prediction of suicide ideation, motivation, preparation, and NSSI (among the university sample) beyond the predictive power achieved by psychache, mediation analyses are not relevant. Although not necessary, regression coefficients for predicting suicidality among the university and community sample are provided in Appendix F (Tables 16 and 17) for interest sake.

Table 13

Regression Coefficients for Predicting Perceived Burdensomeness, Thwarted Belongingness, and Acquired Capability from the Childhood Trauma Questionnaire (Community N = 533 and University Sample N = 417)

	University Sample						Community Sample					
	Perceived Burdensomeness		Thwarted Belongingness		Acquired Capability		Perceived Burdensomeness		Thwarted Belongingness		Acquired Capability	
<i>R</i> ²	.22**		.19**		.01		.20**		.29**		.00	
Statistical Predictor	<i>b</i>	β	<i>b</i>	β	<i>b</i>	<i>B</i>	<i>b</i>	β	<i>b</i>	β	<i>b</i>	β
Intercept	9.88		12.11		36.91		8.45		13.23		37.76	
Emotional Abuse	.77	.32**	.49	.17*	.05	.01	.44	.19*	.36	.14	-.18	-.07
Physical Abuse	-.18	-.04	-.37	-.07	.56	.09	-.12	-.04	-.16	-.05	.02	.01
Sexual Abuse	-.35	-.05	.21	.03	-.88	-.09	.19	.08	.09	.03	.01	.00
Emotional Neglect	.56	.22*	1.03	.34**	-.24	-.06	.51	.24*	1.12	.46**	.08	.03
Physical Neglect	.07	.02	-.03	-.01	.38	.06	.16	.05	-.04	-.01	.13	.03

* $p < .05$, two-tailed, ** $p < .01$, two tailed assuming standard parametric assumptions.

All indicated significant results were confirmed using non-parametric bootstrapping with 10,000 resamples.

Table 14

Regression Coefficients for Predicting Perceived Burdensomeness and Thwarted Belongingness from the Young Schema Questionnaire - SF (Community N = 533 and University Sample N = 417)

Statistical Predictor	University Sample				Community Sample			
	Perceived Burdensomeness		Thwarted Belongingness		Perceived Burdensomeness		Thwarted Belongingness	
<i>R</i> ²	.55**		.57**		.57**		.63**	
<i>b</i>	β	<i>b</i>	β	<i>b</i>	β	<i>b</i>	β	
Intercept	3.05		5.77		3.45		8.76	
Emotional Deprivation	.24	.13*	.32	.14*	.36	.20**	.81	.39**
Abandonment	.14	.09	.20	.11	-.08	-.04	-.19	-.09*
Mistrust/Abuse	-.08	-.05	-.03	-.02	.22	.12*	.08	.04
Social Isolation	.30	.17*	.85	.41**	-.13	-.08	.52	.26**
Defectiveness/Shame	.61	.34**	.21	.09	.47	.25**	.01	.01
Failure	.08	.06	.10	.06	.45	.22**	.23	.10
Dependence/Incompetence	-.02	-.01	-.01	.00	.29	.12	-.09	-.03
Vulnerability to Harm	.22	.12	.11	.05	.08	.04	.20	.08
Enmeshment	-.06	-.03	.01	.01	-.04	-.02	-.08	-.03
Subjugation	.17	.09	.05	.02	.23	.11	.33	.13*
Self-Sacrifice	-.06	-.04	-.22	-.12*	-.12	-.06	-.31	-.12**
Emotional Inhibition	.00	.00	.23	.13*	.14	.08	.21	.10*
Unrelenting Standards	.03	.02	-.03	-.02	-.13	-.06	-.13	-.05
Entitlement	-.09	-.05	.00	.00	.02	.01	-.10	-.04
Insufficient Self-Control/Discipline	.04	.03	-.01	.00	-.08	-.04	.16	.06

* $p < .05$, two-tailed, ** $p < .01$, two-tailed assuming standard parametric assumptions.

All indicated significant results were confirmed using non-parametric bootstrapping with 10,000 resamples.

Note. No correction for Type I error was completed because the 16 analyses are not independent and a correction would be overly conservative. With that said, the number of significant results (24/96) is greater than would be expected by chance (4-5) and suggests that the findings are not spurious.

Table 15

Regression Coefficients for Psychache and ITS in Predicting Self-Harm Among the University & Community Sample

	University Sample ($N = 417$)					Community Sample ($N = 533$)				
	Suicidal Ideation	Suicidal Motivation	Suicidal Preparation	Attempter Status	Self- mutilation	Suicidal Ideation	Suicidal Motivation	Suicidal Preparation	Attempter Status	Self- mutilation
R^2	.49**	.53**	.35**	.08**	.20**	.50**	.53**	.31**	.12**	.14**
R^2 Change – addition of psychache	.07**	.06**	.06**	.02**	.04**	.06**	.04**	.06**	.04**	.06**
R^2 Change – addition of ITS	.13**	.10**	.18**	.00	.05**	.13**	.07**	.17**	.00	.00

Note. Addition of ITS refers to the addition of all components of the ITS including the interaction terms.

** $p < .01$, two-tailed, assuming standard parametric assumptions. All indicated significant results were confirmed using non-parametric bootstrapping with 10,000 resamples.

CHAPTER 4

Discussion

Suicide and self-mutilation are two different, yet related manifestations of distress (O'Carroll et al., 1996; Stanley et al., 1992). Although suicide is obviously much more final, both relate to serious pain and suffering. Determining which factors predict both self-mutilation and suicide are important components for understanding who is at greatest risk.

Two theories that have garnered substantial support in the self-harm literature are Shneidman's (1993) theory of psychache and Joiner's (2005) interpersonal theory of suicide. Although there has been a significant amount of research establishing a relationship between each of these theories and suicidality, there has not been any research to date that has combined the crucial components from each of these theories into a new model of suicide. Given the many similarities between psychache and ITS, the current research attempted to determine if suicide is better predicted by a combination of Shneidman and Joiner's theories.

The current research also attempted to determine the utility of the theories of Shneidman (1993) and Joiner (2005) in the prediction of self-mutilation. To date, there is only limited research that has explored the applicability of these theories to self-mutilation. However, given the similarities between suicide and self-mutilation (See explanations in previous sections), it was expected that these theories would also effectively explain self-mutilation. Thus, the goal of the current research was to assess whether these theories apply to NSSI and whether a combination of these theories was better able to predict self-mutilation than either theory alone.

The final goal of the current research was to explore the effect of early unmet needs on the prediction of self-harm. Both Shneidman (1993) and Joiner (2005) suggest that suicide occurs as a result of current unmet needs, along with lethality/acquired capability. However, it was expected that other types of unmet needs, namely those unmet in childhood, would serve as

predisposing factors for later unmet needs. Therefore, adverse childhood experiences along with early maladaptive schemas were explored.

In sum, the proposed model, around which the hypotheses were built, was that the interaction between thwarted belongingness, perceived burdensomeness, and acquired capability would predict suicide and self-mutilation, however, this relationship would be mediated by psychache (outlined in Figures 1 & 2). The inclusion of adverse experiences into the blended model would increase the ability to predict acquired capability and would also contribute to the prediction of early maladaptive schemas which then would influence the development of feelings of burdensomeness and lack of belonging (outlined in Figures 3 & 4).

Findings

In terms of descriptive statistics, the results showed that the community sample demonstrated higher scores than the university sample across all the predictor and criterion variables, with the exception of acquired capability and NSSI (not significantly different). Across both populations, people who engaged in any form of self-harm had higher scores than non self-harmers across all the predictor and criterion variables, once again with the exception of acquired capability (not significantly different). Interestingly, the results showed that individuals who reported having attempted suicide had similar scores regardless of sample, whereas individuals who reported engaging in NSSI had different scores depending on whether they were from the university or community sample. Finally, in comparing self-mutilators and suicide attempters within the community sample, the only significant difference between these groups was on the criterion variable of suicide preparation (once again this analysis could not be completed with the university sample). Other than the fact that the community sample scored higher than the university sample across the majority of variables, the results were as would be expected. One

possible explanation for the difference between samples is demographic differences. The 17 year age difference on average between samples suggests that the community sample might have had more opportunities to experiences mental illness, NSSI, and/or suicide than the university sample. Further, research has shown that the prevalence of NSSI is higher among adolescents/young adults than among older adults (Swannell et al., 2014). Given the significant difference in age between the university and community sample, this fact may help explain some of the observed differences in predictor and criterion scores. Gender differences may also be relevant for explaining the discrepancies between samples. The community sample had relatively equal numbers of men and women, however, the university sample had significantly more women (7:1). This issue is discussed at greater length in the study limitations section.

In terms of the relationship between variables, as expected, significant positive correlations existed between all of the predictor variables (with the exception of acquired capability) and all of the criterion variables for both the university and community samples. Among both the university and community samples the outcome variables were more highly correlated with psychache and burdensomeness than with belongingness.

Contrary to expectation (Van Orden et al., 2008), the childhood trauma questionnaire (CTQ) was not a significant predictor of acquired capability among either the university or community sample. However, the CTQ was a significant predictor of burdensomeness and belongingness for both samples. For both the university and community participants, the subscales of Emotional Neglect and Emotional Abuse provide unique variance for the prediction of burdensomeness. These constructs were also important in the prediction of belongingness with Emotional Neglect offering significant unique prediction for both samples and with Emotional Abuse offering unique prediction among the university sample. These results suggest that

emotional trauma is predictive of feelings of burdensomeness and a lack of belonging. The fact that childhood trauma was not a significant predictor of acquired capability was initially surprising. However, the results make more sense in light of research which has found childhood abuse to be less effective in facilitating acquired capability than events which involve physical pain (e.g., past suicide attempts, NSSI) or which reduce fearlessness to suicide (Smith & Cukrowicz, 2010).

To test the utility of early maladaptive schemas in predicting burdensomeness and belongingness, a series of multiple regressions was conducted. As predicted, the Young Schema Questionnaire was a significant predictor of burdensomeness and belongingness. For the variable of burdensomeness, the YSQ scales of Defectiveness/Shame and Emotional Deprivation were the variables that, for both the university and community sample, provide predictive power over and above the others. For the variable of belongingness, the scales that provided increased predictive power for both samples was Emotional Deprivation, Self-Sacrifice, Social Isolation, and Emotional Inhibition. As predicted, based on the research of Castille et al. (2007), social isolation was a significant predictor of current unmet needs however, insufficient self-control was not a unique predictor. Mediation analyses found that as predicted, the relationship between adverse childhood experiences and the unmet needs of burdensomeness and belongingness was mediated by early maladaptive schemas (as a whole and more specifically by the subscales of social isolation and insufficient self-control/discipline). Given that the current investigation of the relationship between EMS and unmet needs was rather exploratory in nature and given limited prior research, it is not surprising that additional schemas, over and above those which were proposed, emerged as significant. Additional replication is needed in order to determine which EMS reliably predict the proposed unmet needs.

Analyses exploring the final component of the proposed model found that, as expected, based on the work of Shneidman (1993), psychache added predictive power over and above that provided by the components of the ITS in predicting total ideation, motivation, preparation, attempter status, and non-suicidal self-injury (only among the university sample). However, contrary to Shneidman's model, the ITS also provided predictive power over and above psychache in predicting total ideation, preparation, and motivation (for both samples). These results suggest that there is added value to combining these theories for the prediction of total ideation, motivation, preparation, and potentially NSSI. Given the added value of ITS to the prediction of the criterion variables over and above psychache, mediation analyses were not conducted. Although psychache added predictive power over and above ITS for the prediction of all the criterion variables, ITS did not provide predictive power over and above psychache for predicting past suicide attempts or NSSI (among the community sample). One potential explanation for this finding is that current measures of burdensomeness, belongingness, acquired capability and psychache are better able to predict current ideation, motivation, and preparation than they are able to predict a previous attempt. Given that ITS does not add to the prediction of these variables, a blended model would not be appropriate for these criterion variables and instead psychache would be the most useful predictive model. As a whole, these results suggest that there is added value to incorporating both theories into one for the prediction of total ideation, motivation, preparation, and potentially NSSI, but surprisingly not for a past attempt.

Theoretical Implications

Both Shneidman's theory of psychache (1993) and Joiner's interpersonal theory of suicide (2005) have received considerable support in the literature. To date however, there has been no research combining these two theories in an attempt to better predict suicide, and very

limited research that has applied these theories to non-suicidal self-injury. Given the many similarities between these theories, and given the relationship between suicide and NSSI, it was expected that a combined theory would better predict self-harm. Determining the best model of self-harm is important as it allows clinicians and researchers to better predict and potentially prevent suicide.

The results showed that consistent with the hypothesis, a combined theory was better able to predict suicide ideation, motivation, and preparation. However, contrary to expectations, psychache did not mediate the relationship between the ITS and the criterion variables. Further, a combined theory was not better than psychache alone in the prediction of a past suicide attempt. One possible explanation for this finding is that participants were asked to report on *current* ideation, motivation, and preparation but on a *past* suicide attempt. A variety of things may have influenced suicide ideation, motivation, and preparation in the timeframe between their suicide attempt and responding to the study questionnaire. Therefore, current ideation, motivation, and preparation may not accurately represent the intensity of their ideation around the time frame of their suicide attempt. In terms of the ability of a combined theory to predict NSSI, more research is needed before a conclusion can be made as a combined theory was better able to predict NSSI among the university sample but not among the community sample. As a whole, these results provide an important theoretical contribution to the literature by providing some evidence for the utility of a new model of self-harm.

The current research also offers an important theoretical contribution to the literature by examining the relationship between adverse childhood experiences/early maladaptive schemas and established models of suicide, a new area of research. Although adverse childhood experiences do not offer predictive power in understanding acquired capability, they were shown

to be related to EMS. Early maladaptive schemas were also found to have predictive power in explaining the unmet needs that form the basis of the ITS. Establishing a significant relationship between early maladaptive schemas and the ITS unmet needs provides researchers and treatment professionals with another avenue to explore and potentially target in reducing feelings of burdensomeness and a lack of belonging, established predictors of self-harm. Please see Figures 7 & 8 for the amended model of suicide and self-mutilation.

Figure 7

Amended Model of Suicide

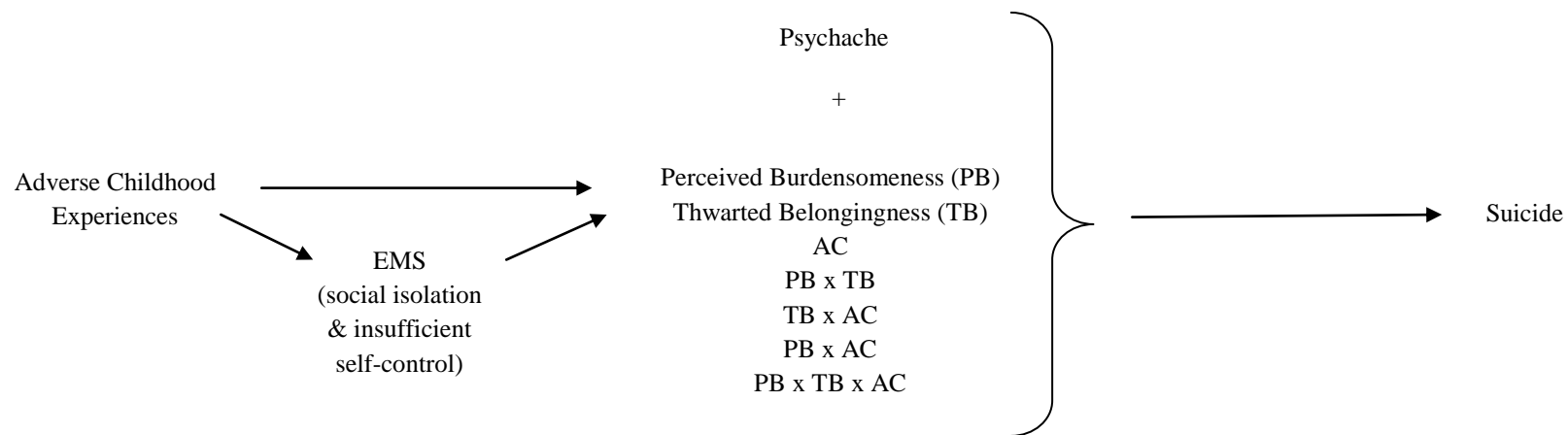
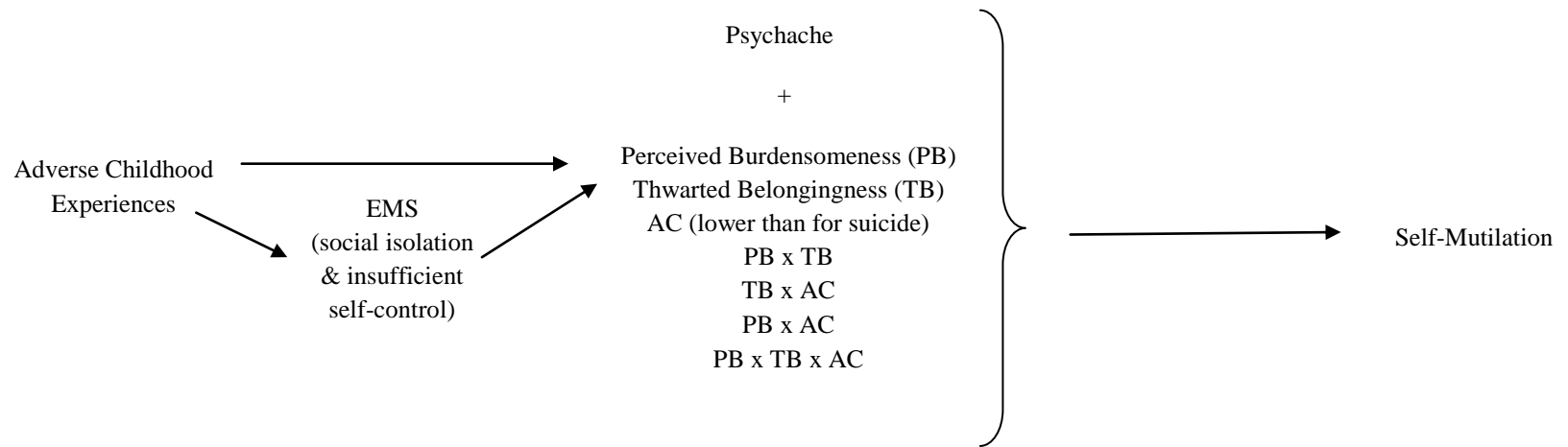


Figure 8

Amended Model of Self-Mutilation



Practical implications

Given that self-harm is a major problem in Canada (Statistics Canada, 2009) research to demystify the issue is imperative. The results of the current research suggest that a model that combines both the ITS and psychache into a single theory is better able to predict suicide ideation, motivation, preparation, and potentially NSSI than either theory alone. This finding is practically important as it supports mental health practitioners in the assessment of belongingness, burdensomeness, acquired capability, and psychache among at-risk clients, factors that research suggests clinicians are currently assessing (Jobes, 2006). A theory that can predict both NSSI and suicide risk is valuable because it allows clinicians to better differentiate risk for self-harm.

Assessment. Assessing burdensomeness, belongingness, psychache, current and past experiences with self-injurious behaviours, and experience with pain and trauma will help in ascertaining the risk of self-injurious behaviours. It will also help guide the clinician in the management of these behaviours. Burdensomeness and belongingness are likely best assessed through clinical interview. In terms of burdensomeness, the clinician should evaluate the client's level of dependency on others by inquiring into illness, financial struggles, or any other factors that may be requiring reliance on others. Associated distress relating to feeling needy can then be gauged. Belongingness should be assessed by inquiring into the client's social support networks (e.g., family, friends, coworkers, pets), recent interpersonal losses, and any changes in interpersonal involvement.

Given that psychache is more difficult to assess purely by clinical interview, I propose the use of a scale designed by Holden et al. (2001) to assess psychological pain as defined by Shneidman (1993). The 13-item Psychache Scale is a self-report measure with good construct

validity and internal consistency (Mills et al., 2005) with an alpha coefficient of .92 indicating a strong level of homogeneity (Holden, 2001). Support for construct validity was found in its strong to moderate relationship with other valid measures of depressed affect and psychiatric symptoms (Mills et al.) as well as in its significant and large correlation with a scale of suicide ideation and a significant medium correlation with a scale of suicide attempts (Holden, 2001) Research has found that the Psychache Scale is able to distinguish between suicide ideators and attempters (Holden et al. 2001). The psychache scale is available to use by clinicians and is currently being used in clinical settings in the United States and Europe. The use of this scale in a clinical setting may help distinguish between those potentially at risk for suicide.

In line with Joiner's interpersonal theory of suicide, the clinician should also assess acquired capability by exploring experiences with self-harm including self-mutilation, past suicide attempts, and general experience with risky behaviour. The clinician should inquire as to the amount of previous and current planning and preparation that has taken place towards an act of self-injury and the degree of confidence the client has in being able to carry out their intended plans. The client's tendency towards impulsivity should also be evaluated and considered when assessing suicide risk.

Differentiating NSSI from suicide. If a client endorses self-injurious behaviours, it is important for the clinician to differentiate self-mutilation from suicidal intent as the outcome of the latter action is obviously much more serious. The most important factor which differentiates these actions is intent (Walsh, 2012). Individuals who engage in self-mutilation generally do so to manage painful emotions. Those who contemplate suicide are looking for a way to end unbearable pain that they believe will not improve. Once a clinician has established the intent of the self-harm thoughts and actions they are in a better position to judge imminent danger.

However, it is important to remember that even when suicide risk is assessed to be low (e.g., no current intent, plans, past behaviours, etc.) it is imperative that the clinician continue to monitor the risk as individuals who engage in NSSI are especially vulnerable to suicide risk in the future (Cavanagh, Owens, & Johnstone, 1999)

Intervention. In line with Shneidman's (1993) theory of psychache and Joiner's (2005) interpersonal theory of suicide, the current research found that unmet needs (burdensomeness, belongingness) and psychache have a strong relationship to suicidality. Both Joiner (Stellrecht et al., 2006) and Shneidman (2005) suggest that addressing these unmet needs may reduce levels of suicidality. Joiner and colleagues (Stellrecht et al., 2006) suggest that unmet needs are created as a result of misinterpreting the reactions of others and thus, cognitive restructuring of these negative thought processes is critical. Similarly, Shneidman (2005) suggests that in order to reduce the risk of suicide the clinician must focus on the frustrated psychological need/s which is/are causing the psychache. He suggests reducing psychache can be done in two ways. First, by increasing the threshold of what an individual can cope with by redefining the pain from something that is *unbearable* to something seen as *bearable* and second, by trying to reduce and/or eliminate the psychological pain. Although Shneidman does not suggest specific techniques for changing levels of psychache, Cognitive Behavioural Therapy (CBT) that targets cognitive inflexibility and encourages an individual to restructure their negative thought patterns seems to fit with his recommendations for treatment.

A meta-analysis of CBT with suicidal clients has shown that CBT is effective in reducing suicidal behaviour (Tarrier, Taylor, & Gooding, 2008). In fact, the effectiveness of CBT in the treatment of suicidal behaviour has made it the leading treatment for suicidal behaviour (Rudd, Joiner, & Rajab, 2004). Cognitive Behavioural Therapy aims to improve cognitive flexibility and

help an individual redefine their *unbearable* pain as *bearable*. CBT could also be used to address distress tolerance, emotion regulation, problem solving, anger management, and interpersonal skills through a variety of techniques. For example, the use of thought records could help to promote cognitive restructuring around thoughts of burdensomeness and lack of belongingness. Socratic questioning would also be helpful in challenging an individual's all or nothing thinking (suicide is the *only* way to stop the suffering). Over the course of CBT, negative maladaptive schemas are likely to emerge. Given the influence of EMS in the proposed model of self-harm, schema change work is also an important component of treatment. After discovering the maladaptive schemas and identifying alternative schemas techniques such as continuum methods, positive data logs, and core belief worksheets can help the client develop more positive schemas (Padesky, 1994).

The strategies and treatment methods used to target feelings of burdensomeness, lack of belongingness, and psychache among suicidal clients are also likely to be useful in the treatment of individuals who engage in NSSI. However, individuals who engage in NSSI often do so as a means of coping with powerful emotions. Therefore adjunctive treatment that focuses on increasing distress tolerance and emotion regulation would likely be very helpful among this population. Linehan's (1993) Dialectical Behaviour Therapy (DBT) specifically encourages the development of adaptive coping when powerful emotions arise (e.g., distraction, self-soothing, etc.). DBT enables clients to manage overwhelming emotions in a more adaptive and less risky manner.

Limitations and Future Directions

Although the current research is promising, there are limitations. One limitation of the current study is that participants were identified and assessed based on their willingness to

participate in the study. Participants that volunteer to talk about their experiences with self-harm are possibly different in some way than those who do not volunteer (e.g., more extraverted rather than introverted). This potentially limits the generalizability of the study. The information that is missed from these people may be important to understanding self-harm. Although it is impossible to completely eliminate this problem, efforts to reduce barriers to participation and obtain as diverse a sample as possible are important.

As with most questionnaires, demand characteristics may have been at play. Participants may not have been completely honest in describing their experience with self-harming behaviour. Although an attempt was made to reduce demand characteristics by having participants complete the questionnaires online in an anonymous manner, they may not have wanted to admit certain things to the researcher or they may lack insight into the factors related to self-harming behaviour. Future researchers should continue to reduce the impact of demand characteristics by increasing efforts to conveying anonymity.

There was an unequal number of men and women in the university sample. This potentially limits our ability to generalize our findings to men as research has shown that men and women differ in their suicide related behaviours (Edwards & Holden, 2003; Nock, Borges, Bromet, Alonso, Angermeyer, & Beautrais, 2008; Nock, Borges, Bromet, Cha, Kessler, & Lee, 2008). In fact, research has found that women are more likely to make a suicide attempt although men are more likely to actually commit suicide (Canetto & Sakinofsky, 1998; Moscicki, 2001). Thus, there is something different about men and women in regards to suicide. Past research exploring gender differences among NSSI did not find significant differences in terms of number of episodes of NSSI, duration of NSSI history, number of different NSSI methods used, or the degree of physical pain experienced (Andover, Primack, Gibb, & Pepper, 2010; Nock, Joiner,

Gordon, Lloyd-Richardson, & Prinstein, 2006) Thus, an unequal distribution of men and women is most likely to influence the generalizability of the findings related to suicide. An unequal ratio of men to women was not found among the community sample thus increasing generalizability among this population. Future research with university students should recruit an equal number of men and women, especially when exploring suicide. Although I would not expect the proposed model to be differentially applicable to men and women (as both Joiner and Shneidman's theories are believed to transcend gender), future research should ensure this is in fact true.

Because the nature of suicide is such that once it is complete it is impossible to collect certain data, proxies for suicide are required. The use of proxies is another potential limitation. Traditionally, suicidality is assessed by scores on measures of suicide attempts, suicide ideation, suicide motivation and suicide preparation. These criterion variables are likely not perfect proxies thus limiting the conclusions that can be drawn to the broader population of suicide completers. Additionally, individuals who survive a suicide attempt may be different from those individuals who actually complete suicide. Support for the use of these variables as proxies comes from research which has shown that the presence of suicide ideation and a suicide plan significantly increase the risk of a suicide attempt and the risk of a suicide. Further, it has been found that prior suicidal behaviours are among the strongest predictors of subsequent suicidal behaviours (Borges, Angst, Nock, Ruscio, Walters, & Kessler, 2006; Goldstein, Black, Nasrallah, & Winokur, 1991; Joiner, Conwell, Fitzpatrick, Witte, Schmidt, Berlim et al., 2005; Fawcett, Scheftner, Fogg, Clark, Young, Hedeker, et al., 1990). Although not perfect surrogates for suicide, the variables of suicidal attempts, ideation, motivation, and preparation are indicators of extreme psychological distress that, in and of themselves, warrant research attention.

The current study does not address all types of suicide. Specifically, this dissertation does not address euthanasia or altruistic suicide. Euthanasia is the act of ending the life of an individual suffering from a terminal illness or an incurable condition, as by lethal injection or the suspension of extraordinary medical treatment (Chochinov et al., 1995). Euthanasia occurs when an individual feels that physical pain is unbearable and believes death is the only way to stop the pain. Research has shown that, among individuals with both depression and a life-threatening illness, the vast majority describe the psychological pain as being worse than the physical pain (Osmond et al., 1984, as cited in Mee et al., 2006). Therefore, in that euthanasia is thought to occur when an individual's physical pain exceeds their threshold for tolerance and research has demonstrated that psychological pain is perceived as worse than physical pain, it would be interesting to explore the relationship between psychological pain, physical pain, and suicide/euthanasia.

Altruistic suicide on the other hand is suicide which takes place because the individual perceives that his/her death will have some positive impact on his/her society (Durkheim, 1951). Altruistic suicide has four key features: First it is characterized by excess social integration meaning the person is so closely tied to the rituals and cultural beliefs of a group that he/she loses a sense of individuality. Second, altruistic suicide is supported by public opinion. Third, it benefits society materially or culturally. Finally, altruistic suicide tends to be pursued with a psychological state of enthusiasm rather than distress. This form of suicide has been linked with martyrdom, military heroism, and suicide bombings (Pedahzur, Perliger, & Weinberg, 2003). There are two places where altruistic suicide is likely to occur; in primitive societies or in the military. Shneidman (1993) is silent with respect to psychache in relation to euthanasia or altruistic suicide. These types of suicide seem to be viewed as fundamentally different from

typical suicide perhaps because altruistic suicide is not thought to involve psychological disturbance (Stack, 2004) and euthanasia is thought to stem from unbearable physical pain (Chochinov et al.). There is a real lack of research surrounding distress and psychological pain among individuals who engage in these types of suicide and, thus, this would also be an important area for future research.

Most studies exploring the predictors of both self-mutilation and suicide utilize a cross-sectional design. Although these studies provide valuable information, the significant predictors can only be considered as correlates. Cross-sectional designs also rely on participants' retrospective self-reports which potentially limit the validity of the results. Individuals may have forgotten important details, they may have inaccurate memories, or they may have fabricated more socially acceptable explanations. Further, cross-sectional designs do not allow for the establishment of temporal order of events (e.g., do unmet needs precede self-harm behaviors). Research that utilizes a longitudinal prospective approach, allowing for the establishment of temporal ordering and the ability to measure change over time, would be extremely useful.

The findings of the current study provide variable results in regards to the ability of a combined model to predict NSSI. Given that the combined model of self-harm was able to predict NSSI among the university sample but not among the community sample suggests that more research is required. The difference between the groups may once again be attributable to demographic differences between the samples, specifically the large difference in age. The tendency for younger individuals to be more prone to engaging in NSSI (Gratz, 2001) may help explain these differences.

Finally, results are potentially limited by the fact that the groups of suicide attempters and self-mutilators were not mutually exclusive. It could be argued that, to truly explore differences

in the application of the proposed model to suicide and self-mutilation, we need to separate participants into those who have only attempted suicide and those who have only engaged in NSSI. I would argue however, that any overlap between these groups has ecological validity in that these are naturally occurring, overlapping groups (Ryan, Clemmett, & Nelson, 1997) and therefore, although studying these groups separately is important, the current approach is also valuable as it likely increases generalizability of the findings.

CHAPTER 5

Conclusion

Overall, the current research contributes to our understanding the psychological predictors of self-harm. The purpose of the current research was to determine whether a model that combines two well-supported theories of suicide is better able to predict suicide than either theory alone. The goal was also to measure the applicability of a new model to the prediction of NSSI. The final goal was to incorporate and test the applicability of other factors that are expected to play a role in self-harm.

Contrary to predictions, adverse childhood experiences were not significant predictors of acquired capability but did add predictive power to the prediction of belongingness and burdensomeness. Early maladaptive schemas also added variance to the prediction of belongingness and burdensomeness. The proposed model suggested that psychache mediates the relationship between the interpersonal theory of suicide (the interaction of thwarted belongingness, perceived burdensomeness, and acquired capability) and the suicide criterion variables of ideation, motivation, and preparation. As expected, among both the university and community sample a combined model was better able to predict suicide ideation, motivation, preparation, and NSSI (only among the university sample) than either theory alone. However,

contrary to expectation, psychache did not fully mediate the relationship between ITS and the self-harm criterion variables. Further, a combined model was not better than psychache alone for the prediction of a past suicide attempt among either the university or community sample. This finding is potentially the result of temporal differences between the current measurement of the predictor variables and a past suicide attempt.

Overall, the current research has significant implications for clinical practice. Therapeutic interventions should focus on ascertaining the presence of perceived burdensomeness, thwarted belongingness, acquired capability, and psychache and work to amend cognitive distortions, negative interpersonal response styles, early maladaptive schemas, and ineffective coping behaviours that serve to maintain self-harm behaviours. Future research should address the limitations present in the current study by conducting longitudinal research with a more representative sample.

References

- Andover, M. S., Primack, J. M., Gibb, B. E., & Pepper, C. M. (2010). An examination of non-suicidal self-injury in men: Do men differ from women in basic NSSI characteristics? *Archives of Suicide Research, 14*(1), 79-88, doi: 10.1080/13811110903479086
- Arria, A. M., O'Grady, K. E., Caldeira, K. M., Vincent, K. B., Wilcox, H. C., & Wish, E. D. (2009). Suicide ideation among college students: A multivariate analysis. *Archives of Suicide Research, 13*(3), 230-246. doi: 10.1080/13811110903044351.
- Baumeister, R. F., DeWall, C. N., Ciarocco, N. J., & Twenge, J. M. (2005). Social exclusion impairs self-regulation. *Journal of Personality and Social Psychology, 88*(4), 589-604. doi: [org/10.1037/0022-3514.88.4.589](https://doi.org/10.1037/0022-3514.88.4.589)
- Baumeister, R. F., & Leary, M. R. (1995). The need to belong: Desire for interpersonal attachments as a fundamental human motivation. *Psychological Bulletin, 117*(3), 497-529. doi: [org/10.1037//0033-2909.117.3.497](https://doi.org/10.1037//0033-2909.117.3.497)
- Beck, A. T. (1967). *Depression: Clinical, experimental, and theoretical aspects*. New York: Harper & Row (Republished as *Depression: Causes and treatment*. Philadelphia: University of Pennsylvania Press, 1972).
- Beck, A. T., Brown, G. K., & Steer, R. A. (1997). Psychometric characteristics of the Scale for Suicide Ideation with psychiatric outpatients. *Behaviour Research and Therapy, 35*, 1039-1046. doi: 10.1016/S0005-7967(97)00073-9
- Beck, A. T., Davis, D. D., & Freeman, A. (2015). *Cognitive therapy of personality disorders*. New York: The Guilford Press.
- Beck, A. T., Kovacs, M., & Weissman, A. (1975). Hopelessness and suicidal behavior: An

- overview. *The Journal of the American Medical Association*, 234 (11), 1146-1149.
doi:10.1001/jama.1975.03260240050026.
- Beck, A. T., Kovacs, M., & Weissman, A. (1979). Assessment of suicide ideation: The Scale for Suicide Ideation. *Journal of Consulting and Clinical Psychology*, 47, 343-352. doi:10.1037/0022-006X.47.2.343
- Beck, A. T., & Steer, R. A. (1993). *Beck Scale for Suicide Ideation manual*. San Antonio, TX: Psychological Corporation.
- Beck, A. T., Steer, R. A., & Ranieri, W. F. (1988). Scale for Suicide Ideation: Psychometric properties of a self-report version. *Journal of Clinical Psychology*, 44, 499-505.
- Bender, T. W., Gordon, K. H., Joiner, T. E., & Bresin, K. (2011). Impulsivity and suicidality: The mediating role of painful experiences. *Journal of Affective Disorders*, 129 (1), 301-307. doi: 10.1016/j.jad.2010.07.023
- Bohus, M., Limberger, M., Ebner, U., Glocker, F. X., Schwarz, B., Wernz, M., & Lieb, K. (2000). Pain perception during self-reported distress and calmness in patients with borderline personality disorder and self-mutilating behavior. *Psychiatry Research*, 95, 251-260. doi: 10.1016/S0165-1781(00)00179-7
- Borges, G., Angst, J., Nock, M. K., Ruscio, A. M., Walters, E. E., & Kessler, R. C. (2006). A risk index for 12-month suicide attempts in the National Comorbidity Survey Replication (NCS-R). *Psychological Medicine*, 36(12), 1747-1757.
doi:10.1017/S0033291706008786
- Briere, J., & Gil, E. (1998). Self-mutilation in clinical and general population samples:

- Prevalence, correlates, and functions. *American Journal of Orthopsychiatry*, 68(4), 609-620. doi:10.1037/h0080369
- Bryan, C. J., Clemans, T. A., & Hernandez, A. M. (2012). Perceived burdensomeness, fearlessness of death, and suicidality among deployed military personnel. *Personality and Individual Differences*, 52(3), 374–379. doi:10.1016/j.paid.2011.10.045
- Buhrmester, M., Kwang, T., & Gosling, S. D. (2011). Amazon's Mechanical Turk: A new source of inexpensive, yet high-quality, data? *Perspectives on Psychological Science*, 6(1), 3-5. doi: 10.1177/1745691610393980
- Bureau, J-F., Martin, J., Freynet, N., Poirier, A., Lafontaine, M-F., & Cloutier, P.F. (2010). Perceived dimensions of parenting and non-suicidal self-injury in young adults. *Journal of Youth and Adolescence* 5, 484–494. doi: org/10.1007/ s10964-009-9470-4
- Calkins, S.D., & Hill, A., (2007). Caregiver influences on emerging emotion regulation: Biological and environmental transactions in early development. In J. J. Gross (Ed.), *Handbook of emotion regulation*. (pp. 229-248). New York: Guilford Press.
- Canetto, S. S., & Sakinofsky, I. (1998). The gender paradox in suicide. *Suicide and Life-Threatening Behavior*, 28, 1-23. doi: 10.1111/j.1943-278X.1998.tb00622.x
- Cantor, C. H., Leenaars, A.A., Lester, L., Slater, P. J., Wolanowski, A. M., & O'Toole, B. (1996). Suicide trends in eight predominantly English-speaking countries 1960-1989. *Social Psychiatry and Psychiatric Epidemiology*, 31(6), 364-373. doi: 10.1007/BF00783426
- Castille, K., Prout, M., Marczyk, G., Shmidheiser, M., Yoder, S., & Howlett., B. (2007). The early maladaptive schemas of self-mutilators: Implications for therapy. *Journal of Cognitive Psychotherapy*, 21(1), 58-71. doi: org/10.1891/088983907780493340

- Cavanagh, J. T., Owens, D. G., & Johnstone, E. C. (1999). Life events in suicide and undetermined death in south-east Scotland: A case-control study using the method of psychological autopsy. *Social Psychiatry and Psychiatric Epidemiology*, *34*(12), 645-650. doi: 10.1007/s001270050187
- Chochinov, H. M., Wilson, K. G., Enns, M., Mowchun, N., Lander, S., & Levitt, M. (1995). Desire for death in the terminally ill. *The American Journal of Psychiatry*, *152*, 1185-1191.
- Cirincione, C., & Gurrieri, G. A. (1997). Research methodology: Computer-intensive methods in the social sciences. *Social Science Computer Review*, *15*, 83-97. doi: 10.1177/089443939701500108
- Cornette, M. M., Strauman, T. J., Abramson, L. Y., & Busch, A. M. (2009). Self-discrepancy and suicidal ideation. *Cognition and Emotion*, *23*(3), 504-527. doi:10.1080/02699930802012005
- Dale, R., Power, K., Kane, S., Stewart, A. M., & Murray, L. (2010). The role of parental bonding and early maladaptive schemas in the risk of suicidal behavior repetition. *Archives of Suicide Research*, *14*(4), 311-328. doi: 10.1080/13811118.2010.524066.
- deCatanzaro, D. (1995). Reproductive status, family interactions, and suicidal ideation: Surveys of the general public and high-risk groups. *Ethology & Sociobiology*, *16*(5), 385-394. doi:10.1016/0162-3095(95)00055-0
- DeLeo, D., Cerin, E., Spathonis, K., & Burgis, S. (2005). Lifetime risk of suicide ideation and attempts in an Australian community: Prevalence, suicidal process, and help-seeking behaviour. *Journal of Affective Disorders*, *86*(2), 215-224. doi: 10.1016/j.jad.2005.02.001

- DeLisle, M. M., & Holden, R. R. (2009). Differentiating between depression, hopelessness, and psychache in university undergraduates. *Measurement and Evaluation in Counseling and Development, 42*, 46-63. doi: 10.1177/0748175609333562
- Dube, S. R., Anda, R. F., Felitti, V. J., Chapman, D. P., Williamson, D. F., & Giles, W. H. (2001). Childhood abuse, household dysfunction, and the risk of attempted suicide throughout the life span: Findings from the adverse childhood experiences study. *Journal of the American Medical Association, 286* (24), 3089-3096. doi:10.1001/jama.286.24.3089.
- Dubo, E. D., Zanarini, M.C., Lewis, R. E., & Williams, A. A. (1997). Childhood antecedents of self-destructiveness in borderline personality disorder. *Canadian Journal of Psychiatry, 42*, 63-69. doi: 1997-03072-007
- Durkheim, E. (1951). *Suicide*. New York: MacMillan Publishing Company.
- Edwards, M. J., & Holden, R. R. (2003). Coping, meaning in life, and suicidal manifestations: Examining gender differences. *Journal of Clinical Psychology, 59*, 1133-1150. doi: 10.1002/jclp.10206
- Everett, B. & Gallop, R. (2000). *The link between childhood trauma and mental illness*. New York: Sage Publishing.
- Favazza, A. R. (1992). Repetitive self-mutilation. *Psychiatric Annals, 22*(2), 60-63. doi: 1992-28124-001
- Favazza, A. R. (1998). The coming of age of self-mutilation. *Journal of Nervous and Mental Disease, 186*(5), 259-268. doi:10.1097/00005053-199805000-00001
- Fawcett, J., Scheftner, W. A., Fogg, L., Clark, D. C., Young, M. A., & Hedeker, D. (1990).

- Time-related predictors of suicide in major affective disorder. *American Journal of Psychiatry*, 147(9), 1189-1194. doi: 1991-04597-001
- Felitti, V. J., Anda, R. F., Nordenberg, D., Williamson, D. F., Spitz, A. M., Edwards, V.,... Marks, J. S. (1998). Relationship of childhood abuse and household dysfunction to many of the leading causes of death in adults: The adverse childhood experiences study. *American Journal of Preventative Medicine*, 14(4), 245–58. doi: 10.1016/S0749-3797(98)00017-8
- Flamenbaum, R. (2009). *Testing Shneidman's theory of suicide: Psychache as a prospective predictor of suicidality and comparison with hopelessness*. Unpublished doctoral thesis. Queen's University, Kingston, ON.
- Franklin, J. C., Hessel, E. T., & Prinstein, M. J. (2011). Clarifying the role of pain tolerance in suicidal capability. *Psychiatry Research*, 189, 362–367. doi: 10.1016/j.psychres.2011.08.001
- Freedenthal, S., Lamis, D. A., Osman, A., Kahlo, D., & Gutierrez, P. M. (2011). Evaluation of the psychometric properties of the Interpersonal Needs Questionnaire-12 in a sample of men and women. *Journal of Clinical Psychology*, 67(6), 609-623. doi:10.1002/jclp.20782
- Friedman, P. (1967). *On suicide*. New York: International Universities Press.
- Giesen-Bloo, J., van Dyck, R., Spinhoven, P., van Tilburg, W., Dirksen, C., & van Asselt, T. (2006). Outpatient psychotherapy for borderline personality disorder: Randomized trial of schema-focused therapy vs transference focused psychotherapy. *Archives of General Psychiatry*, 63(6), 649-658. doi:10.1001/archpsyc.63.6.649
- Goldstein, R. B., Black, D. W., Nasrallah, A., & Winokur, G. (1991). The prediction of

- suicide: Sensitivity, specificity, and predictive value of a multivariate model applied to suicide among 1906 patients with affective disorders. *Archives of General Psychiatry*, 48(5), 418–22. doi:10.1001/archpsyc.1991.01810290030004
- Gratz, K. L. (2000). *The measurement, functions, and etiology of deliberate self-harm*. Unpublished master's thesis, University of Massachusetts, Boston.
- Gratz, K. L. (2001). Measurement of deliberate self-harm: Preliminary data on the Deliberate Self-Harm Inventory. *Journal of Psychopathology and Behavioral Assessment*, 23(4), 253-263. doi: 10.1023/A:1012779403943
- Gratz, K. L. (2003). Risk factors for and functions of deliberate self-harm: An empirical and conceptual review. *Clinical Psychology: Science and Practice*, 10, 192–205. doi: 10.1093/clipsy.bpg022
- Gratz, K. L. (2006). Risk factors for deliberate self-harm among female college students: The role and interaction of childhood maltreatment, emotional inexpressivity, and affect intensity/reactivity. *American Journal of Orthopsychiatry*, 76, 238–250. doi.org/10.1037/0002-9432.76.2.238
- Gratz, K. L., Conrad, S. D., & Roemer, L. (2002). Risk factors for deliberate self-harm among college students. *American Journal of Orthopsychiatry*, 72(1), 128-140. doi:10.1037//0002-9432.72.1.128
- Hagen, R., Nordahl, H. M., Kristiansen, L., & Morken, G. (2005). A randomized trial of cognitive group therapy vs. waiting list for patients with co-morbid psychiatric disorders: Effect of cognitive group therapy after treatment and six and twelve months follow-up. *Behavioural and Cognitive Psychotherapy*, 33, 33–44. doi: 10.1017/S1352465804001754

- Haines, J., Williams, C. L., & Brain, K. L. (1995). The psychopathology of incarcerated self-mutilators. *Canadian Journal of Psychiatry, 40* (9), 514–522.
- Hayes, A. F. (2013). *Introduction to mediation, moderation, and conditional process analysis: A regression-based approach*. New York: Guilford Press.
- Heikkinen, M., Aro, H., & Lönnqvist, J. (1994). Recent life events, social support, and suicide. *Acta Psychiatrica Scandinavica, 89*(1), 65–72. doi:10.1111/j.1600-447.1994.tb05805.x
- Hesterberg, T., Moore, D. S., Monaghan, S., Clipson, A., & Epstein, R. (2005). *Bootstrap methods and permutation tests* (2nd ed.). New York: W. H. Freeman.
- Higgins, E. T. (1987). Self-discrepancy: A theory relating self and affect. *Psychological Review, 94*(3), 319-340. doi:10.1037//0033-295X.94.3.319
- Holden, R. R., & DeLisle, M. (2005). Differentiating between depression, hopelessness, and psychache in university undergraduates. *Measurement and Evaluation in Counseling and Development, 42*(1), 46-63. doi: 10.1177/0748175609333562
- Holden, R. R., & Kroner, D. G. (2003). Differentiating suicidal motivations and manifestations in a forensic sample. *Canadian Journal of Behavioural Science, 35*, 35-44. doi: 10.1037/h0087184
- Holden, R. R., Mehta, K., Cunningham, E. J., & McLeod, L. D. (2001). Development and preliminary validation of a scale of psychache. *Canadian Journal of Behavioural Science, 33*, 224-232. doi: 10.1037/h0087144
- Jahn, D. R., Cukrowicz, K. C., Linton, K., & Prabhu, F. (2011). The mediating effect of perceived burdensomeness on the relation between depressive symptoms and suicide ideation in a community sample of older adults. *Aging & Mental Health, 15*(2), 214-220. doi:10.1080/13607863.2010.501064

Jobes, D. A. (2006). *Managing suicidal risk: A collaborative approach*. New York: Guilford Press.

Joiner, T. E. (2005). *Why people die by suicide*. Cambridge, MA: Harvard University Press.

Joiner, T. E., Conwell, Y., Fitzpatrick, K. K., Witte, T. K., Schmidt, N. B., & Berlim, M. T. (2005). Four studies on how past and current suicidality relate even when “everything but the kitchen sink” is covaried. *Journal of Abnormal Psychology, 114*(2), 291–303. doi:10.1037/0021-843X.114.2.291

Joiner, T. E., Ribeiro, J. D., & Silva, C. (2012). Nonsuicidal self-injury, suicidal behavior, and their co-occurrence as viewed through the lens of the interpersonal theory of suicide. *Current Directions in Psychological Science, 21*, 342 – 347. doi: 10.1177/0963721412454873

Joiner, T. E., Van Orden, K. A., Witte, T. K., Selby, E. A., Ribeiro, J. D., Lewis, R., & Rudd, D. (2009). Main predictions of the Interpersonal Psychological Theory of Suicidal Behaviour: Empirical tests in two samples of young adults, *Journal of Abnormal Psychology, 118*(3), 634–646. doi:10.1037/a0016500

Kaslow, N.J., Sherry, A., Bethea, K., Wyckoff, S., Compton, M.T., & Bender-Grall, M. (2005). Social risk and protective factors for suicide attempts in low income African American men and women. *Suicide and Life-Threatening Behaviour, 35*(4), 400 - 412. doi: 10.1521/suli.2005.35.4.400

Kemperman, I., Russ, M., & Shearin, E. (1997). Self-injurious behavior and mood regulation in borderline patients. *Journal of Personality Disorders, 11*, 146–157. doi: 10.1521/pedi.1997.11.2.146

Kessler, R. C., Borges, G., & Walters, E. E. (1999). Prevalence of and risk factors for

- lifetime suicide attempts in the national comorbidity survey. *Archives of General Psychiatry*, 56, 617 – 626. doi:10.1001/archpsyc.56.7.617.
- Klonsky, D. E. (2007). The functions of deliberate self-injury: A review of the evidence. *Clinical Psychology Review*, 27(2), 226-239. doi: 10.1016/j.cpr.2006.08.002
- Klonsky, E. D., Oltmanns, T. F., & Turkheimer, E. (2003). Deliberate self-harm in a nonclinical population: Prevalence and psychological correlates. *American Journal of Psychiatry*, 160, 1501–1508.
- Koivumaa-Honkanen, H., Honkanen, R., Viinamaki, H., Heikkila, K., Kaprio, J., & Koskenvuo, M. (2001). Life satisfaction and suicide: A 20-year follow-up study. *The American Journal of Psychiatry*, 158(1), 433–439. doi:10.1176/appi.ajp.158.3.433
- Laye-Gindhu, A., & Schonert-Reichl, K. A. (2004). Nonsuicidal self-harm among community adolescents: Understanding the ‘whats’ and ‘whys’ of self-harm. *Journal of Youth and Adolescence*, 34(5), 447-457. doi: 10.1007/s10964-005-7262-z
- Leary, M. R., Terdal, S. K., Tambor, E. S., & Downs, D. L. (1995). Self-esteem as an interpersonal monitor: The sociometer hypothesis. *Journal of Personality and Social Psychology*, 68(3), 518 –530. doi:10.1037/0022-3514.68.3.518
- Lee, C. W., Taylor, G., & Dunn, J. (1999). Factor structure of the Schema-Questionnaire in a large clinical sample. *Cognitive Therapy and Research*, 23(4), 441-451. doi: 10.1023/A:1018712202933
- Linehan, M. M. (1993). *Cognitive-behavioral treatment for borderline personality disorder*. New York: Guilford Press.
- Lubell, K. M.. (2001). *Gender, social isolation, and psychopathology: Making sense of male-*

- female differences in suicide mortality*. Unpublished PhD dissertation. Bloomington, IN: Indiana University; 2001.
- Munchua, M. M. (2003). *The underlying need structure of psychache and its role in the statistical prediction of suicidal manifestations*. Unpublished master's thesis, Queen's University, Kingston, Ontario, Canada.
- Mason, C. H., & Perreault, W. D. (1991). Collinearity, power, and interpretation of multiple regression analysis. *Journal of Marketing Research*, 28, 268-280. doi: 10.2307/3172863
- Mee, S., Bunney, B. G., Reist, C., Potkin, S. G., & Bunney, W. E. (2006). Psychological pain: A review of evidence. *Journal of Psychiatric Research*, 40, 680-690. doi: 10.1016/j.jpsychires.2006.03.003
- Mills, J. F., Green, K., & Reddon, J. R. (2005). An evaluation of the Psychache Scale on an offender population. *Suicide and Life-Threatening Behavior*, 35, 570-580. doi: 10.1521/suli.2005.35.5.570
- Moscicki, E. K. (2001). Epidemiology of completed and attempted suicide: Toward a framework for prevention. *Clinical Neuroscience Research*, 1(5), 310-323. doi: 10.1016/S1566-2772(01)00032-9
- Munchua, M. M. (2003). *The underlying need structure of psychache and its role in the statistical prediction of suicidal manifestations*. Unpublished master's thesis, Queen's University, Kingston, Ontario, Canada.
- National Institute of Mental Health (n. d.). *Suicide in the U.S.: Statistics and prevention*. Retrieved February 29, 2012 from <http://www.nimh.nih.gov/health/publications/suicide-in-the-us-statistics-and-prevention/index.shtml>.

- Nock, M. K. (2010). Self-injury. *Annual Review of Clinical Psychology, 6*(1), 339-363.
doi: 10.1146/annurev.clinpsy.121208.131258
- Nock, M. K., Borges, G., Bromet, E. J., Alonso, J., Angermeyer, M., & Beautrais, A. (2008). Cross-national prevalence and risk factors for suicidal ideation, plans and attempts. *British Journal of Psychiatry, 192*, 98-105.
- Nock, M. K., Joiner, T. E., Gordon, K. H., Lloyd-Richardson, E., & Prinstein, M. J. (2006). Non-suicidal self-injury among adolescents: Diagnostic correlates and relation to suicide attempts. *Psychiatry Research, 144*, 65–72. doi:10.1016/j.psychres.2006.05.010
- Nordahl, H. M., Holthe, H., & Haugum, J. A. (2005). Early maladaptive schemas in patients with or without personality disorders: does schema modification predict symptomatic relief? *Clinical Psychology and Psychotherapy, 12*(2), 142-149. doi: org/10.1002/cpp.430
- O'Carroll, P. W., Berman, A. L., Maris, R., & Moscicki, E. (1996). Beyond the tower of Babel: A nomenclature for suicidology. *Suicide & Life-Threatening Behavior, 26*(3), 237-252.
doi: 10.1111/j.1943-278X.1996.tb00609.x
- Orbach, I., Mikulincer, M., Stein, D., & Cohen, O. (1998). Self-representations of suicidal adolescents. *Journal of Abnormal Psychology, 107*(3), 435-439. doi: org/10.1037//0021-843X.107.3.435
- Orbach, I., Palgi, Y., Stein, D., Har-Even, D., Lotem-Peleg, M., Asherov, J., & Elzur, A. (1996). Tolerance for physical pain in suicidal subjects. *Death Studies, 20*(4), 327–341.
doi:10.1080/07481189608252786
- Padesky, C. (1994). Schema change processes in cognitive therapy. *Clinical Psychology and Psychotherapy, 1*(5), 267-278. doi: 10.1002/cpp.5640010502
- Patterson, A. A., & Holden, R. R. (2012). Psychache and suicide ideation among men who are

- homeless: A test of Shneidman's model. *Suicide and Life Threatening Behavior*, 42(2), 147-156. doi: 10.1111/j.1943-278X.2011.00078.x.
- Pattison, E. M., & Kahan, J. (1983). The deliberate self-harm syndrome. *American Journal of Psychiatry*, 140(1), 867-872. doi: AJP/3323/867
- Pedahzur, A., Perliger, A., & Weinberg, L. (2003). Altruism and fatalism: The characteristics of Palestinian suicide terrorists. *Deviant Behavior: An Interdisciplinary Journal*, 24, 405-423. doi: 10.1080/713840227
- Penn, J. V., Esposito, C. L., Schaeffer, L. E., Fritz, G. K., & Spirito, A. S. (2003). Suicide attempts and self-mutilative behavior in a juvenile correction facility. *Journal of the American Academy of Child and Adolescent Psychiatry*, 42(7), 762-769. doi:10.1097/01.CHI.0000046869.56865.46
- Preacher, K. J., & Hayes, A. F. (2008). Asymptotic and resampling strategies for assessing and comparing indirect effects in multiple mediator models. *Behavior Research Methods*, 40, 879-891. doi: 10.3758/BRM.40.3.879
- Qin, P., & Nordentoft, M. (2005). Suicide risk in relation to psychiatric hospitalization. *Archives of General Psychiatry*, 62(4), 427-432. doi:10.1001/archpsyc.62.4.427
- Renner, F., Lobbestael, J., Peeters, F., Arntz, A., Huibers, M. (2012). Early maladaptive schemas in depressed patients: Stability and relation with depressive symptoms over the course of treatment. *Journal of Affective Disorders*, 136, 581-590. doi:10.1016/j.jad.2011.10.027
- Ross, S. & Heath, N. (2002). A study of the frequency of self-mutilation in a community sample of adolescents. *Journal of Youth and Adolescence*, 31, 67-77. doi: 10.1023/A:1014089117419
- Rudd, D., Joiner, T. E., & Rajab, H. M. (2004). *Treating suicidal behavior: An effective, time-*

- limited approach*. New York: Guilford Press.
- Ryan, J., Clemmett, S., & Nelson, A. (1997). Role of a psychiatric liaison nurse in an A & E department. *Accident and Emergency Nursing*, 5(3), 152–155. doi:10.1016/S0965-2302(97)90010-2
- Ryan, R. M., & Deci, E. K. (2000). Intrinsic and extrinsic motivations: Classic definitions and new directions. *Contemporary Educational Psychology*, 25, 54–67. doi:10.1006/ceps.1999.1020
- Saldias, A., Power, K., Gillanders, D. T., Campbell, C. W., & Blake, R. A. (2013). The mediatory role of maladaptive schema modes between parental care and non-suicidal self-injury. *Cognitive Behaviour Therapy*, 42 (3), 244–257. doi.org/10.1080/16506073.2013.781671
- Schmahl, C., Bohus, M., Esposito, F., Treede, R., Di Salle, F. D., Greffath, W, ... Seifritz, E. (2006). Neural correlates of antinociception in borderline personality disorder. *Archives of General Psychiatry*, 63, 659–667. doi:10.1001/archpsyc.63.6.659.
- Shneidman, E. S. (1985). *Definition of suicide*. New York, NY: John Wiley & Sons, Inc.
- Shneidman, E. S. (1993). Suicide as psychache. *Journal of Nervous and Mental Disease*, 181, 145-147.
- Shneidman, E. S. (1999). The Psychological Pain Assessment Scale. *Suicide and Life-Threatening Behavior*, 29, 287-294. doi: 10.1111/j.1943-278X.1999.tb00524.x
- Shneidman, E. S. (2001). Suicidology and the university: A founder's reflection at 80. *Suicide and Life-Threatening Behaviour*, 31, 1-8. doi: 10.1521/suli.31.1.1.21314
- Smith, P. N., Cukrowicz, K. C., Poindexter, E. K., Hobson, V., & Cohen, L. M. (2010). The

- acquired capability for suicide: A comparison of suicide attempters, suicide ideators, and non-suicidal controls. *Depression and Anxiety*, 27(9), 871-877. doi:10.1002/da.20701
- Solomon, R.L. (1980). The opponent-process theory of acquired motivation: The costs of pleasure and benefits of pain. *American Psychologist*, 35(8), 691-712. doi:10.1037//0003-066X.35.8.691
- Sourander, A., Klomek, A. B., Niemela, S., Haavisto, A., Gyllenberg, D., Helenius, H., & Gould, M. S. (2009). Childhood predictors of completed and severe suicide attempts: Findings from the Finnish 1981 Birth Cohort Study. *Archives of General Psychiatry*, 66(4), 398-406. doi:10.1001/archgenpsychiatry.2009.21
- Stack, S. (2004). Emile Durkheim and altruistic suicide. *Archives of Suicide Research*, 8, 9-22. doi: 10.1080/13811110490243741
- Stanley, B., Gameroff, M. J., Venezia, M., & Mann, J. (2001). Are suicide attempters who self-mutilate a unique population? *American Journal of Psychiatry*, 158(3), 427-432. doi:10.1176/appi.ajp.158.3.427
- Stanley, B., Winchel, R., Molcho, A., Simeon, D., & Stanley, M. (1992). Suicide and the self-harm continuum: Phenomenological and biochemical evidence. *International Review of Psychiatry*, 4(2), 149-155. doi:10.3109/09540269209066312
- Statistics Canada (2014). *Suicides and suicide rate, by sex and by age group*. Retrieved Jan 12, 2013: <http://www.statcan.gc.ca/tables-tableaux/sum-som/l01/cst01/hlth66a-eng.htm>
- Stellrecht, N. E., Gordon, K. H., Van Orden, K., Witte, T. K., Wingate, L. R., Cukrowicz, K. C.,

- ... Joiner, T. E. (2006). Clinical applications of the Interpersonal Psychological Theory of attempted and completed suicide. *Journal of Clinical Psychology, 62*(2), 211-222. doi: 10.1002/jclp.20224
- Stillion, J. M., & McDowell, E. E. (1996). *Suicide across the life span: Premature exits*. Washington, DC: Taylor & Francis.
- Stopa, L., Thorne, P., Waters, A., & Preston, J. (2001). Are the short and long forms of the Young Schema Questionnaire comparable and how well does each version predict psychopathology scores? *Journal of Cognitive Psychotherapy, 15*(3), 253–272. doi: 10.1348/147608304X21383
- Strauman, T. J., & Higgins, T. E. (1988). Self-discrepancies as predictors of vulnerability to distinct syndromes of chronic emotional distress. *Journal of Personality, 56*(4), 685-707. doi:10.1111/j.1467-6494.1988.tb00472.x
- Swannell, S. V., Martin, G. E., Page, A., Hasking, P., & St John, N. J. (2014). Prevalence of nonsuicidal self-injury in nonclinical samples: Systematic review, meta-analysis and meta-regression. *Suicide and Life-Threatening Behavior, 44*(3), 273-303. doi: 10.1111/sltb.12070
- Tarrier, N., Taylor, K., & Gooding, P. (2008). Cognitive-behavioral interventions to reduce suicide behavior: A systematic review and meta-analysis. *Behavior Modification, 32*, 77-108. doi: 10.1177/0145445507304728
- Troister, T., & Holden, R. R. (2010). Comparing psychache, depression, and hopelessness in their associations with suicidality: A test of Shneidman's theory of suicide. *Personality and Individual Differences, 49*(7), 689-693. doi:10.1016/j.paid.2010.06.006
- Troister, T., & Holden, R. R. (2012). Factorial differentiation among depression, hopelessness,

- and psychache in statistically predicting suicidality. *Measurement and Evaluation in Counseling and Development*, 46(50), 49-63. doi: 10.1177/0748175612451744
- Trout, D. L. (1980). The role of social isolation in suicide. *Suicide and Life-Threatening Behavior*, 10(1), 10-23. doi: 10.1111/j.1943-278X.1980.tb00693.x
- Turvey, C. L., Conwell, Y., Jones, M. P., Phillips, C., Simonsick, E., Pearson, J. L., & Wallace, R. (2002). Risk factors for late-life suicide: A prospective community-based study. *American Journal of Geriatric Psychiatry*, 29(10), 398–406.
doi:10.1176/appi.ajgp.10.4.398
- Van der Kolk, B. A., Perry, J. C., & Herman, J. L. (1991). Childhood origins of self-destructive behavior. *American Journal of Psychiatry*, 148(1), 1665-1671. doi: AJP/3568/1665
- Van Orden, K. A., Witte, T. K., Gordon, K. H., Bender, T. W., & Joiner, T. E. (2008). Suicidal desire and the capability for suicide: Tests of interpersonal-psychological theory of suicidal behaviour among adults. *Journal of Consulting and Clinical Psychology*, 76(1), 72-83. doi:10.1037/0022-006X.76.1.72
- Van Orden, K. A., Witte, T. K., Cukrowicz, K. C., Braithwaite, S. R., Selby, E. A., & Joiner, T. E. (2010). The interpersonal theory of suicide. *Psychological Review*, 117(2), 575–600. doi:10.1037/a0018697
- Vivekananda, K. (2000). Integrating models for understanding self-injury. *Psychotherapy in Australia*, 7, 18–25.
- Vlierberghe, L. V., Braet, C., Bosmans, G., Rosseel, Y., & Bögels, S. (2010). Maladaptive schemas and psychopathology in adolescence: On the utility of Young's schema theory in youth. *Cognitive Therapy and Research*, 34(4), 316-332. doi:10.1007/s10608-009-9283-5

- Waller, G., Meyer, C., & Ohanian, V. (2001). Psychometric properties of the long and short versions of the Young Schema Questionnaire: Core beliefs among bulimic and comparison women. *Cognitive Therapy and Research*, 25(2), 137-147.
doi:10.1023/A:1026487018110
- Walsh, B. W. (2007). Clinical assessment of self-injury: A practical guide. *Journal of Clinical Psychology*, 63(11), 1057–1068. doi: 10.1002/jclp.20413
- Walsh, B. W. (2012). *Treating self-injury: A practical guide*. New York: Guilford Press.
- Warm, A., Murray, C., & Fox, J. (2003). Why do people self-harm? *Psychology, Health, and Medicine*, 8(1), 71-79. doi:10.1080/1354850021000059278
- Wedig, M. M., Nock, M. K., 2007. Parental expressed emotion and adolescent self injury. *Journal of the American Academy of Child and Adolescent Psychiatry*, 46, 1171–1178.
doi.org/10.1097/chi.0b013e3180ca9aaf
- Welburn, K. R., Coristine, M., Dagg, P., Pontefract, A., & Jordan, S. (2002). The Schema Questionnaire-short form: Factor analysis and relationship between schemas and symptoms. *Cognitive Therapy and Research*, 26(4), 519–530.
doi.org/10.1023/a:1016231902020
- World Health Organization. (2008). *Suicide statistics: Introduction*. Retrieved June 20, 2012 from http://www.who.int/mental_health/prevention/suicide/suicideprevent/en/print.html
- Woznica, J. G., & Shapiro, J. R. (1990). An analysis of adolescent suicide attempts: The expendable child. *Journal of Paediatric Psychology*, 15(6), 789 –796.
doi:10.1093/jpepsy/15.6.789
- Young, J. E. (1990). *Cognitive therapy for personality disorder: A schema focused approach*.

Sarasota, FL: Professional Resource Exchange Inc.

Young, J. E. (1998). *Young Schema-Questionnaire - Short Form*. New York: Cognitive Therapy Center.

Young, J. E., Klosko, J. S., & Weishaar, M. E. (2003) *Schema therapy: A practitioner's guide*. New York: Guilford Press.

Zlotnick, C., Shea, T. M., Pearlstein, T., Simpson, E., Costello, E., & Begin, A. (1996). The relationship between dissociative symptoms, alexithymia, impulsivity, sexual abuse, and self-mutilation. *Comprehensive Psychiatry*, 37(1), 12-16. doi:10.1016/S0010-440X(96)90044-9

Zoroglu, S. S., Tuzun, U., Sar, V., Tutkun, H., Savaş, H. A., Ozturk, M., ... Kora, M. E. (2003). Suicide attempt and self-mutilation among Turkish high school students in relation with abuse, neglect and dissociation. *Psychiatry and Clinical Neurosciences*, 57(1), 119–126. doi: 10.1046/j.1440-1819.2003.01088.x

Appendix A
Letter of Information/Consent Form
Letter of Information – University Sample
The Role of Unmet Needs in Self-Harming Behaviours

Who

- The research is being carried out by Allisha Patterson, a PhD student, working with Dr. Ronald Holden, a psychology professor at Queen's University in Kingston, Ontario.

Purpose

- Understand how unmet needs relate to self-harming behaviour. The more information we have, the better able we are to predict and hopefully prevent self-harm/suicide in the future.

What will you do?

- Fill out questionnaires asking about predictors of self-harm. These questionnaires ask about topics which may be personal or stressful.
- Your involvement in the study is voluntary and you may stop participating at any time.
- If there is a question that makes you feel uncomfortable you do not have to answer.
- You can keep the \$7 compensation even if you don't answer a question or want to stop participating early.
- We estimate that it will take about 45 minutes to 1 hour to complete these questionnaires.
- There are no known physical, economic, or social risks associated with completing the questionnaires. The only known risk is potential psychological or emotional discomfort. This study has been granted clearance according to the recommended principles of Canadian ethics guidelines and Queen's policies.

Requirements

- At least 18 years of age.
- Fluent in English

Privacy

- Your responses will be kept confidential.
- The only time that privacy may be disrupted is if you tell me that you are currently feeling suicidal. In this case I am required to assess the situation further and ensure you receive immediate help at the hospital.
- Nobody, except for myself and my supervisor, will be able to identify you from your questionnaire.
- Data will be stored in a file cabinet in a locked room until the questionnaires are no longer needed. Questionnaires will then be destroyed in a confidential manner.
- Questionnaires and consent forms will be separated so your name and answers cannot be linked.
- To help ensure privacy, please do not put your name on any of the research answer sheets.
- Presentation of the findings will be of general findings and will never breach individual privacy.
- Should you be interested, you are entitled to a copy of the findings.

What to do if you feel distressed

- If any of the questions make you feel distressed, I am trained to assess the situation further and will immediately consult with Dr. Ronald Holden.
- Further, I can provide you with a list of resources (i.e., Telephone Aid Line Kingston (613-544-1771), Frontenac Community Mental Health Services (24 crisis line; 613-544-4229), Ontario Mental Health Helpline (1-866-531-2600).
- If you do contact my supervisor and indicate that you are at immediate risk, we will attempt to act to ensure your safety.

Contact Information

- If you have any complaints, concerns, or questions about this research, please contact Dr. Ronald Holden, (613-533-2879, or holdenr@queensu.ca). Any ethical concerns about the study may be directed to the Chair of the Queen's University General Research Ethics Board at chair.GREB@queensu.ca or 613-533-6086.

Consent Form – University Sample
The Role of Unmet Needs in Self-Harming Behaviours

Please answer the following:

	True	False
I may stop participating at any time.	<input type="checkbox"/>	<input type="checkbox"/>
I have to answer all questions.	<input type="checkbox"/>	<input type="checkbox"/>
Everybody at Queen's University has access to my answers.	<input type="checkbox"/>	<input type="checkbox"/>
If I say I am feeling suicidal the researcher will be required to act to ensure my safety.	<input type="checkbox"/>	<input type="checkbox"/>

I, _____ (Name - please print clearly) have volunteered to participate in the study titled, self-harm & unmet needs.

1. I have read the Letter of Information and have had any questions answered to my satisfaction.
2. I understand that I will be asked to fill out questionnaires pertaining to my own self-harm history and suicidal ideation, as well as related scales, so that potential predictors may be better understood.
3. I understand that my participation in this study is voluntary and I may stop participating at any time.
4. I understand that every effort will be made to maintain the privacy of the data now and in the future. The data will be stored in a file cabinet in a locked room, and only Allisha and Dr. Holden will have access to this data. To ensure security, participants' names will be kept separately from answers to the questionnaires. If the data is presented it will be of general findings and will never breach individual confidentiality.
5. I am aware that if I have any questions, concerns, or complaints, I may contact Dr. Ronald R. Holden, (613-533-2879, or holdenr@queensu.ca) and that any ethical concerns about the study may be directed to the Chair of the Queen's University General Research Ethics Board at chair.GREB@queensu.ca or 613-533-6086.

I have read the above statements and freely consent to participate in this research:

Signature: _____ *Date:* _____

Appendix B
Letter of Information/Consent Form
Letter of Information – Community Sample
The Role of Unmet Needs in Self-Harming Behaviours

Who

- The research is being carried out by Allisha Patterson, a PhD student, working with Dr. Ronald Holden, a psychology professor at Queen's University in Kingston, Ontario.

Purpose

- Understand how unmet needs relate to self-harming behaviour. The more information we have, the better able we are to predict and hopefully prevent self-harm/suicide in the future.

What will you do?

- Fill out questionnaires asking about predictors of self-harm. These questionnaires ask about topics which may be personal or stressful.
- Your involvement in the study is voluntary and you may stop participating at any time.
- If there is a question that makes you feel uncomfortable you do not have to answer.
- We estimate that it will take about 45 minutes to 1 hour to complete these questionnaires.
- You will be compensated \$1 for your participation.
- There are no known physical, economic, or social risks associated with completing the questionnaires. The only known risk is potential psychological or emotional discomfort. This study has been granted clearance according to the recommended principles of Canadian ethics guidelines and Queen's policies.

Requirements

- At least 18 years of age.
- Fluent in English

Privacy

- Your responses will be kept confidential.
- Data will be stored in a file cabinet in a locked room until the questionnaires are no longer needed. Questionnaires will then be destroyed in a confidential manner.
- To help ensure privacy, please do not put your name on any of the research answer sheets.
- Presentation of the findings will be of general findings and will never breach individual privacy.

What to do if you feel distressed

- If any of the questions make you feel distressed we suggest that you contact or seek out one of the following:
 - Your family doctor
 - A crisis line **1-800-273-TALK (8255)**
 - The Emergency Department at your nearest hospital
 - 911

Contact Information

If you have any complaints, concerns, or questions about this research, please contact Dr. Ronald Holden, (613-533-2879, or holdenr@queensu.ca). Any ethical concerns about the study may be directed to the Chair of the Queen's University General Research Ethics Board at chair.GREB@queensu.ca or 613-533-6086.

Consent Form – Community Sample
The Role of Unmet Needs in Self-Harming Behaviours

I have read the Letter of Information and understand that I will be asked to fill out questionnaires pertaining to my own self-harm history as well as related scales, so that potential predictors may be better understood.

I understand that my participation in this study is voluntary and I may stop participating at any time.

I understand that every effort will be made to maintain the privacy of the data now and in the future.

Please answer the following:

I agree to participate in the research entitled “The Role of Unmet Needs in Self-Harming Behaviours”

Yes	No
<input type="checkbox"/>	<input type="checkbox"/>

Appendix C
Debriefing Form
Debriefing Form – University Sample
The Role of Unmet Needs in Self-Harming Behaviours

Suicidality and self-harm are growing concerns in our society. By performing this research, we hope to find out more about the factors involved in suicidality and self-harm, especially with regards to thoughts, feelings and motivations. We are particularly interested in focusing on unmet needs (i.e., the need to be appreciated) and their link to suicidal ideation and self-harming behaviour. If we are able to discover a relationship we can better prevent suicide in the future.

We appreciate you taking the time and effort to share your experiences with us. If remembering these experiences has caused you to feel distressed and you would like to speak to someone about how you are feeling, or you would like more information on suicide and self-harm, you are strongly encouraged to contact your local health practitioner (e.g. your physician). Alternatively, please contact any of the following resources available to you in Kingston and surrounding areas:

Telephone Aid Line Kingston (TALK – crisis 7pm – 3am).....613-544-1771

Frontenac Community Mental Health Services (24/hr crisis line).....613-544-4229

Ontario Mental Health Helpline.....1-866-531-2600

Individual results cannot be provided to you because we have no way of identifying the questionnaires. However, if you are interested in a general summary of the findings, please contact Dr. Ronald R. Holden at holdenr@queensu.ca or 613-533-2879 for more information.

If you have any questions, complaints, or concerns about this research or the manner in which it was conducted, please contact Dr. Ronald R. Holden (613-533-2879, or holdenr@queensu.ca). Any ethical concerns about the study may be directed to the Chair of the Queen's University General Research Ethics Board at chair.GREB@queensu.ca or 613-533-6086.

Thank you very much for participating

Appendix D
Debriefing Form
Debriefing Form – Community Sample

The Role of Unmet Needs in Self-Harming Behaviours

Suicidality and self-harm are growing concerns in our society. By performing this research, we hope to find out more about the factors involved in suicidality and self-harm, especially with regards to thoughts, feelings and motivations. We are particularly interested in focusing on unmet needs (i.e., the need to be appreciated) and their link to suicidal ideation and self-harming behaviour. If we are able to discover a relationship we can better prevent suicide in the future.

We appreciate you taking the time and effort to share your experiences with us. If remembering these experiences has caused you to feel distressed and you would like to speak to someone about how you are feeling, or you would like more information on suicide and self-harm, you are strongly encouraged to contact your local health practitioner (e.g. your physician). Alternatively, please contact a crisis line and/or emergency services in your area.

A country wide crisis line is - Mental Health America 24 hour Crisis line:

1-800-273-TALK (8255)

If you have any questions, complaints, or concerns about this research or the manner in which it was conducted, please contact Dr. Ronald R. Holden (613-533-2879, or holdenr@queensu.ca) or the Chair of the General Research Ethics Board (613-533-6086) at Queen's University.

Thank you very much for participating

Appendix E
Questionnaires

QUESTIONNAIRE BOOKLET:

The Role of Unmet Needs in Self-Harming Behaviours

Allisha Patterson

Department of Psychology

Queen's University

Kingston, Ontario K7L 3N6

E-mail: 7ap33@queensu.ca

Today's Date : _____

Demographics

1. What is your age? _____
2. Please circle your gender: **Male Female**
3. Birth Country? _____
4. What is your ethnicity (circle)? **Euro-Canadian Indo-Canadian First Nations
Metis African-American Chinese Other**_____
5. Do you regularly use illegal drugs other than marijuana (more than once a week)? **NO YES**
6. Do you regularly use alcohol to excess (more than once a week)? **NO YES**
7. What is the highest level of education you have completed? _____
8. Have you ever been diagnosed with a mental illness (e.g., depression, anxiety disorder, etc.)
9. Do you take medication for your mental health? **YES NO**
10. Are you currently receiving counselling/therapy for your mental health issues from a health professional (e.g., psychologist, counsellor, etc.) **YES NO since when?**_____
11. Do you find it helpful? Very unhelpful Slightly unhelpful neither helpful or unhelpful
slightly helpful very helpful
12. If YES, what type of therapy are you receiving (e.g., cognitive behavioural therapy, talk therapy, etc.)? _____
13. Have you ever received counselling/therapy for your mental health issues from a health professional (e.g., psychologist, counsellor, etc.) **YES NO For how long?**_____
14. Have you ever attempted suicide (circle one)? **YES NO**
15. If YES, how long ago was your most recent attempt? _____
16. If YES, how did you attempt to kill yourself in this attempt? _____
17. If YES, how intent were you on killing yourself in this most recent attempt (circle)?
NOT VERY SOMEWHAT MODERATELY QUITE EXTREMELY

INTENT INTENT INTENT INTENT INTENT

18. How many suicide attempts have you made in your entire lifetime (circle one)?

0 1 2-3 4-6 7-10 More than 10

19. Was there an attempted suicide by a family member in the year prior to your attempt?

Yes No

20. Was there a completed suicide by a family member in the year prior to your attempt?

Yes No

21. Was there an attempted suicide by a friend/acquaintance in the year prior to your attempt?

Yes No

22. Was there a completed suicide by a friend/acquaintance in the year prior to your attempt?

Yes No

23. If you answer yes to any of the above please answer the following for each individual:

Who (i.e., what was the relationship? Mother, best-friend, etc.)?

How long ago?

How close were you to this individual?

*** Please note: Due to copyright laws, the remaining questionnaires have been omitted.**

Appendix F

Table 16

Regression Coefficients for Predicting Suicidality Among the University Sample (N = 417)

Statistical Predictor	Suicidal Ideation		Suicidal Motivation		Suicidal Preparation		Attempter Status		Self-mutilation	
	<i>b</i>	<i>B</i>	<i>b</i>	β	<i>b</i>	β	<i>b</i>	<i>B</i>	<i>b</i>	<i>B</i>
<i>R</i> ²	.49*		.53*		.35*		.08*		.20*	
Intercept	5.02		2.57		2.39		.09		-0.23	
Psychache	.16	.39*	.06	.35*	.09	.36*	.01	.19*	.05	.30*
Belongingness (TB)	-.21	-.56	-.17	-1.03*	-.07	-.31	.00	-2.53	.02	.17
Burdensomeness (PB)	-.47	-1.05*	-.23	-1.19*	-.24	-.96*	-.01	-.49	-.05	-.32
Acquired capability (AC)	-.11	-.36	-.06	-.44	-.05	.31	.00	-.21	.01	.06
PBxTB	.01	1.63*	.01	2.28*	.01	1.18	.00	.66	.00	-.17
PBxAC	.01	1.26*	.00	1.12	.01	1.34*	.00	.61	.00	.20
TBxAC	.00	.43	.00	.71	.00	.28	.00	.10	.00	-.40
PBxTBxAC	.00	-1.18	.00	-1.35	.00	-1.11	.00	-.43	.00	.65

* $p < .05$, two-tailed, assuming standard parametric assumptions. All indicated significant results were confirmed using non-parametric bootstrapping with 10,000 resamples. Please see Hayes, (2013) for an argument against interpreting individual regression coefficients for product models when the variables are highly correlated.

Table 17

Regression Coefficients for Predicting Suicidality Among the Community Sample (N = 533)

Statistical Predictor	Suicidal Ideation		Suicidal Motivation		Suicidal Preparation		Attempter Status		Self-mutilation	
	<i>b</i>	<i>B</i>	<i>b</i>	β	<i>b</i>	<i>B</i>	<i>b</i>	β	<i>b</i>	<i>B</i>
<i>R</i> ²	.50*		.53*		.31*		.12*		.14*	
Intercept	2.35		-0.81		2.44		.13		.33	
Psychache	.16	.35*	.07	.31*	.09	.36*	.01	.29*	.04	.34*
Belongingness (TB)	-.14	-.37	-.05	-.27	-.11	-.49*	-.01	-.44	-.05	-.49
Burdensomeness (PB)	-.09	-.20	.02	.09	-.08	-.32	-.01	-.23	-.01	-.09
Acquired capability (AC)	-.05	-.14	-.01	-.03	-.05	-.24	-.01	-.29	-.02	-.15
PBxTB	.01	.64	.00	.25	.00	.75	.00	.47	.00	.54
PBxAC	.00	.36	.00	.01	.00	.61	.00	.61	.00	-.06
TBxAC	.00	.44	.00	.17	.00	.70*	.00	.57	.00	.59
PBxTBxAC	.00	-.35	.00	.26	.00	-.85	.00	-.78	.00	-.35

**p* < .05, two-tailed, assuming standard parametric assumptions. All indicated significant results were confirmed using non-parametric bootstrapping with 10,000 resamples. See Hayes, (2013) for an argument against interpreting individual regression coefficients for product models when the variables are highly correlated.