



January 2013

Online Self-Injury Forums, Social Support, And Psychological Distress

Kirsten Louise Williams

Follow this and additional works at: <https://commons.und.edu/theses>

Recommended Citation

Williams, Kirsten Louise, "Online Self-Injury Forums, Social Support, And Psychological Distress" (2013). *Theses and Dissertations*. 1490.

<https://commons.und.edu/theses/1490>

This Dissertation is brought to you for free and open access by the Theses, Dissertations, and Senior Projects at UND Scholarly Commons. It has been accepted for inclusion in Theses and Dissertations by an authorized administrator of UND Scholarly Commons. For more information, please contact zeinebyousif@library.und.edu.

ONLINE SELF-INJURY FORUMS, SOCIAL SUPPORT, AND PSYCHOLOGICAL
DISTRESS

by

Kirsten Louise Williams
Master of Arts, University of North Dakota, 2006

A Dissertation
Submitted to the Graduate Faculty

of the

University of North Dakota

in partial fulfillment of the requirements

for the degree of

Doctor of Philosophy

Grand Forks, North Dakota

May
2013

Copyright 2013 Kirsten L. Williams

This dissertation, submitted by Kirsten L. Williams in partial fulfillment of the requirements for the degree of Doctor of Philosophy from the University of North Dakota, has been read by the Faculty Advisory Committee under whom the work has been done and is hereby approved.

Dr. Cindy Juntunen, Ph.D.

Dr. David Whitcomb, Ph.D.

Dr. Kara Wettersten, Ph.D.

Dr. Joseph Miller, Ph.D.

Dr. Lynne Chalmers, Ph.D.

This dissertation meets the standards for appearance, conforms to the style and format requirements of the Graduate School of the University of North Dakota, and is hereby approved.

Dr. Wayne Swisher
Dean of the Graduate School

Date

TABLE OF CONTENTS

LIST OF FIGURES.....	vii
LIST OF TABLES.....	viii
ACKNOWLEDGMENTS.....	ix
ABSTRACT.....	x
CHAPTER	
I. INTRODUCTION.....	1
Non-Suicidal Self-Injury.....	2
Non-Suicidal Self-Injury and Internet Forums.....	2
Purpose of the Present Study.....	7
II. LITERATURE REVIEW.....	8
NSSI: Population and Prevalence.....	9
Theoretical Models of NSSI.....	12
Social Aspects of NSSI.....	20
Internet-Based Support.....	27
Internet Group Identity and NSSI.....	36
Rationale and Purpose.....	44
III. METHODS.....	51
Participants.....	51
Instruments.....	52
Procedure.....	67

	Data Analysis.....	68
IV.	RESULTS.....	72
	Preliminary Analyses.....	72
	Effect of Group Type.....	74
	Structural Equation Modeling.....	77
V.	DISCUSSION.....	89
	Findings in Relation to Initial Hypotheses.....	89
	Online Group Type: Similarities and Differences.....	95
	Implications for Research, Practice, and Theory.....	97
	Limitations.....	100
	Conclusion.....	101
	APPENDICES.....	103
	REFERENCES.....	119

LIST OF FIGURES

Figure	Page
1. The Hypothesized Model of Relationships Between Latent Variables	47
2. Model A. (N = 151). The Structural Model Based on the Originally Hypothesized Relationships.....	81
3. Model B. (N = 151). Alternative Model in which Group Identity Had a Direct Effect on Psychological Distress.....	83
4. Model C. (N = 151). The Final Model with Time Online as a Latent Mediator Variable.....	87

LIST OF TABLES

Table	Page
1. Means, Standard Deviations, and Univariate Comparisons Between Group Types....	75
2. Means, Standard Deviations, and Correlations of All Indicator Variables.....	78
3. Fit Indices for Measurement, Hypothesized, and Alternative Models.....	79
4. Measurement Model Factor Loadings for Original and Corrected Versions.....	79
5. Latent Variable Correlations for Original and Corrected Measurement Model.....	80
6. Factor Loadings for Measurement Model 2.....	85
7. Latent Variable Correlations for Measurement Model 2.....	85

ACKNOWLEDGMENTS

I wish to express sincere thanks and appreciation to my advisor and dissertation chair, Cindy Juntunen, for advice, patience, humor, and encouragement throughout this process. All graduate students should be so fortunate as to have someone to whom they can go, no matter what the problem, and exit the conversation feeling better about themselves, their work, and life in general. Thanks as well to David Whitcomb and Kara Wettersten for their work and support throughout this process, and to Joseph Miller and Lynne Chalmers, who came on board later in the process but were no less helpful or enthusiastic for that. I also wish to acknowledge the work of Darcie Sell, lore dickey, and Samantha Chase for their help in researching websites appropriate to this study.

On a more personal note, thanks to my parents, David and Gail Williams for their unflagging support and encouragement, both on this project and throughout my life. Thanks to my husband, Don Agas, for being willing to schedule our wedding the same week I was defending. And thanks for your obvious pride in my work, your love, and for keeping me grounded throughout these crazy years. Also, I want to acknowledge my dear son, Atticus Nyle. Darling boy, I have to admit, you weren't much help with getting the dissertation done. And I don't mind one single bit, because you are the absolute joy of my heart.

In honor of my parents,

David and Gail Williams

and in memory of my grandparents,

Nyle and Alma Gallagher

John and Lee Williams

ABSTRACT

Non-suicidal self-injury (NSSI) is a behavior being seen with increasing frequency among clinicians and the general population. Internet forums where people who engage in the behavior may discuss topics related to NSSI have become widespread. The effects of those websites on people who engage in the behavior have not been researched. This study used structural equation modeling to better understand the relationship between identification with these groups, time online, comfort discussing NSSI, social support, and psychological distress. The final model suggests a complicated relationship between Internet use and offline effects. Identification with such an online group appears to lead to both increases in feelings of social support and increases in psychological distress. Also, the model indicates that comfort with discussing NSSI leads to increased feelings of social support, decreased loneliness, and decreased psychological distress. However, time spent online may both decrease social problems and increase psychological distress. Implications and limitations of the study are also discussed.

CHAPTER I

INTRODUCTION

Non-suicidal self-injury (hereafter referred to as NSSI or self-injury) is a topic that causes complicated reactions both among those who engage in it and clinicians who learn of it. Those who engage in it often have feelings of shame and may feel alienated from those who do not engage in the behavior (Hodgson, 2004). People who engage in behavior that causes feelings of shame frequently use the Internet as a means of seeking out people with the same sort of problems (McKenna & Bargh, 1998). In recent years, websites devoted to the topic of NSSI have arisen on the Internet that are intended to provide support for people who engage in this behavior (Whitlock, Powers, & Eckenrode, 2006). It has been found that social use of the Internet for people who have feelings of shame around an aspect of their identity can be useful in helping people incorporate that aspect of their identity into their offline lives (McKenna & Bargh, 1998). The increase in the prevalence and use of these sites raises questions about the functions and the repercussions of engaging with these websites. Although a few studies have examined the content of the Internet postings on NSSI Internet forums, systematic attention has not yet been given to understanding the place that these forums have in the lives of those who use them. This dissertation uses the statistical tool of Structural Equation Modeling (SEM) to provide a quantitative model for the interplay between Internet support group use, social relationships, and emotional difficulties.

Non-Suicidal Self-Injury

In order to understand the reasons for the appearance of these websites, NSSI itself must first be defined and placed into context. Non-suicidal self-injury, also called deliberate self-harm, self-mutilation, or self-injurious behavior, can be defined as the intentional, direct destruction of body tissue in a socially unacceptable manner without conscious suicidal intent that causes minor to moderate injury (e.g., scratching one's skin, cutting one's skin, self-burning, or self-hitting) (Herpertz, Sass, & Favazza, 1997; Suyemoto, 1998). The behavior is one that has received increasing attention in the media over the past several years, and has caused increasing concern among professionals due to its alarming nature and the perceived rise in its prevalence (Heath, Toste, Nedecheva, & Charlebois, 2008; Turp, 1999). It has been noted that there appears to be a large degree of stigma and shame attached to the behavior, and that the person who engages in it may attempt stigma-management strategies in order to conceal the behavior (Hodgson, 2004). NSSI may cause the person who engages in the behavior to isolate from others, reinforce feelings of alienation, and be marked by feelings of loneliness (Favazza, 1996). Overall, however, there has been relatively little research regarding sources of social support among people who self-injure.

Non-Suicidal Self-Injury and Internet Forums

The Internet has provided people who experience feelings of isolation and loneliness related to NSSI a way of communicating with others who have similar experiences. A simple Google search inquiry for "self-injury" will reveal literally thousands of Internet locations which address the behavior in some way. A subset of these websites and pages have been created in order to give people who engage in self-

injurious behavior the opportunity to communicate with one another via bulletin boards, chat rooms, and email lists. Whitlock, Powers et al. (2006) found 400 message boards devoted to the topic of NSSI, some of which had thousands of members. The sites may provide information about NSSI, news stories about the behavior, and sometimes elaborate websites devoted to multiple aspects of the topic. Two studies which have looked at content of Internet-based groups (Rodham, Gavin, & Miles, 2007; Whitlock, Powers, et al. 2006) noted that most prevalent on the website was informal, warm support, and responses to requests for support and advice.

Models of the effect Internet communication has on offline experiences have not yet been applied to self-injury groups. The literature about online group interactions suggests possible outcomes. Studies have found participation in online groups can reduce feelings of loneliness and increase feelings of social support and connectedness (McKenna & Green, 2005). Engagement with a group and the saliency of that group to personal identity may cause people to bring aspects of their “online selves” into their face-to-face interactions (McKenna & Bargh, 1998; McKenna, Green, & Smith, 2001). McKenna and Bargh (1998) completed a study which found that people who participated in online groups for people who had concealable, marginalized identities went on to incorporate that group more into their self-identity, leading to outcomes of greater self-acceptance and behaviors offline more consistent with their online reality.

It is possible that websites for self-injury may function in a similar way as those in the McKenna and Bargh (1998) study. Initial support for this possibility has been demonstrated in two qualitative studies about NSSI websites, which have noted that those who engage with the websites describe the “real world” as a place they feel at odds with

and isolated from. This research has found that one function served by self-injury discussion forums is alleviation of strong feelings of isolation and loneliness. The forums allow those who participate to feel more strongly connected to others (Adler & Adler, 2008; Williams, 2006). It has also been suggested that these types of self-help groups may provide positive benefits in the face-to-face world for people who self-injure in terms of allowing them to talk to significant others about NSSI, feel more connected to other people, and reduce feelings of shame and loneliness in day to day interactions (Williams, 2006). Adler & Adler (2008) describe the users as “loners” who used the websites as a way of having a sort of “double life” wherein they had social support, non-judgmental acquaintances, and legitimization of the behavior. Some noted expressly that the Internet provided a forum wherein behaviors practiced there could then be transferred to the “real world.”

It seems there may be many ways the users of these websites are reinforced for engaging in these forums, such as consistent support, feeling that one is not alone, help with crisis management, lack of self-consciousness regarding scars, and basic friendship (Williams, 2006). These benefits may be of special relevance and import to a population typically characterized as having difficulties with interpersonal interactions. Klonsky, Oltmanns, and Turkheimer (2003) found in a non-clinical, non-college based sample that participants who admitted to NSSI were perceived by their peers as evidencing more difficulty in interpersonal relations than their non-self-injuring counterparts. Non-clinical self-injurers were generally reported to experience strange, intense emotions and to have a heightened sensitivity to interpersonal rejection. While these features may be interpersonally troubling in face-to-face situations, they may actually allow self-injurers

to be more receptive to the benefits and features of online communication than the rest of the population. Indeed, this may be part of the attraction of online communication. Warm et al. (2002) suggests that Internet bulletin boards may “function as a forum that enables self-harmers to receive and provide support.”

The act of joining a support group whose stated purpose is to provide people who self-injure a safe place to discuss their experiences ensures some level of understood commonality with the group. Given this common bond concerning an act that is generally kept private, it is likely that this disclosure and this group will take on important meaning. Research has found that people who have identities that are both marginal and concealable are likely to derive maximum benefit from Internet-based support groups, and that being active within the groups is likely to have an effect on how one perceives one’s identity in the face-to-face realm (McKenna & Bargh, 1998; McKenna, Green, & Smith, 2001). It has been found that people who have difficulties with social anxiety and loneliness may feel better able to express their “real selves” with people on the Internet than people in face-to-face conversations (McKenna, Green, & Gleason, 2002). Also, some studies have found that time spent “chatting” on the Internet can increase feelings of social support, self-esteem and decrease depression and loneliness (Shaw & Gant, 2002). These aspects of Internet communication may play an important role in people’s motivation for using online support, especially when they have difficulties in face-to-face contexts.

While it is often put forth within the literature that NSSI is a way of coping with distressing events or affect (Favazza, 1998; Harris, 2000; Suyemoto, 1998; Solomon & Farrand, 1996), there is very little concentration on the social or personal stresses that

NSSI may cause the person who engages it as a coping mechanism. These stresses seem to be brought to the forefront in Internet NSSI support groups. Conversation tends to emphasize support about the issues raised by self-injuring, rather than question or challenge the behavior itself (Whitlock, Powers, et al. 2006). Such day-to-day issues around decisions to conceal one's behavior, feelings brought about by the act itself, and feelings of alienation created by engaging in the behavior have yet to be addressed in the literature. Exploration of these issues in the context of Internet communities may provide insight into these typical issues.

A typical course of NSSI may be several years (Favazza, 1998). Given this, it is likely important to our understanding of NSSI to explore the day-to-day coping with the aftereffects of the behavior and the interpersonal stress it may bring. Also, several mood states and social correlates of NSSI have been identified, such as loneliness, anxiety, depression, feelings of alienation, and difficulty regulating affect. Social use of the Internet has been shown to have the potential to positively or negatively affect each one of these variables (Junghyun, LaRose, & Peng 2008; Valkenburg & Peter, 2009; van den Eijnden, et al., 2008; Whitty, 2008). Therefore, Internet groups' consequences on the life and emotions members are subject to much theorizing, as different studies produce very divergent outcomes. On the one hand, fewer feelings of alienation may increase positive social functioning and mood. On the other hand, identification with groups that promote greater degrees of NSSI or normalize the behavior rather than cessation may have detrimental effects. At this stage in the literature, the actual effects of such group use are largely unknown.

Purpose of the Present Study

NSSI is a problem for a significant portion of the population, especially among adolescents and young adults. The behavior is associated with depression and suicidal ideation and may play a part in causing feelings of isolation and loneliness of those who harm themselves. In recent years, Internet support groups have arisen and become increasingly popular as forums where people who harm themselves can anonymously express themselves and receive support. However, the quantitative impact that belonging to these groups has on NSSI, feelings of loneliness, willingness to self-disclose, perceived social support, or other variables of interest has yet to be systematically evaluated.

The overarching purpose of this study was to provide a model of the way in which participation in an online NSSI group may affect face-to-face social and emotional distress. This study observationally examined and expanded the statistical models of Internet identity formation of marginalized populations put forth by the studies of McKenna and Bargh (1998) in combination with the qualitative findings of Williams (2006) to determine if these findings appear to translate to Internet groups for people who engage in NSSI.

CHAPTER II

LITERATURE REVIEW

The purpose of this chapter is to provide an overview of the existing knowledge both about self-injury and models of Internet social support, as well as a rationale for the proposed study. First, basic information about what is known regarding the prevalence of self-injury and the characteristics of people who engage in the behavior will be addressed. Then, theories that have been put forward as explanations for the behavior will be considered, with special attention given to functional approaches to understanding self-injury, self-injury and trauma, and affect regulation models of self-injury. Further, in order to understand the reasons why people who self-injure may seek out social support, the social context around self-injury will be examined, including reactions of health care professionals and the general population's interpretations of the behavior.

Following this discussion of the literature of self-injury, models of Internet interactions and the effect of the Internet on social support will be considered. This includes common reasons for seeking out Internet forums, relationship formation on the Internet, the Internet and identity formation, and the possible downfalls of identifying with Internet groups, as well as what is currently known about self-injury specific forums. Finally, variables for inclusion in a model of Internet groups' relationship with offline outcomes based on the work of McKenna and Bargh (1998) and Williams (2006) will be briefly discussed.

NSSI: Population and Prevalence

Most of what is known about self-injury is based on clinical samples, primarily people exhibiting personality disorders (and especially borderline personality disorder). This makes actual estimates within the general population very difficult to obtain. However, studies based on non-clinical samples (e.g., Paivio & McCulloch, 2004) tend to indicate that the behavior is more common than generally supposed. Turp (1999) refers to this as a sub-clinical population. Self-injury is thought to be at least as prevalent as 1000 per 100,000 population per year (Favazza, 1998). A 1988 study found that 12% of undergraduates had deliberately harmed themselves at least once (Favazza & Conterio, 1988). A more recent study by Whitlock, Eckenrode, and Silverman (2006) found that 17% of undergraduate students at two Northeastern universities had harmed themselves at least once, and the majority of those who self-harmed had done so more than once with 15.2% of those who self-injured reporting more than 21 instances. A study of high school students by Ross and Heath (2002) showed a prevalence rate of 13.9% having self-injured at one point. Among those who self-injured, 64% were girls, and 36% were boys. These studies add to the impression that self-injury is much more common among the non-clinical population than generally estimated. Also noteworthy in the Ross and Heath (2002) study was the frequency of self-injurious behavior, such that 31% reported injuring themselves more than once a week. Klonsky, et al. (2003) provides one of the few studies that uses a non-clinical, non-student sample. In their sample of 1,986 non-clinical Air Force recruits approximately 4% admitted to having engaged in self-injury, with comparable prevalence rates among both genders. They estimated that approximately 1% of their sample engaged in the behavior more than once.

In their proposal for a deliberate self-harm syndrome, Kahan and Pattison (1984) suggested that the onset of self-harm was in late adolescence and the duration of the behavior was between 15 and 19 years. Subsequent research among college and high school students suggest the typical duration of self-injurious behavior may be much shorter than this (Ross & Heath, 2002; Whitlock et al., 2006). Subsequent research has appeared to bear out the notion that the behavior begins in adolescence (Whitlock et al., 2006). In fact, the proposal for the DSM-5 lists “Non-Suicidal Self Injury” among the Disorders Usually First Diagnosed in Infancy, Childhood, or Adolescence (American Psychiatric Association, 2005).

Suyemoto and Macdonald (1995) found that although the typical “cutter” is considered to be a female who began cutting in adolescence, 64% of the people who self-injured identified by their sample of therapists did not fit into this traditional picture. Whitlock et al. (2006) found that there were only gender differences in self-injury rates among those who repeatedly engaged in the behavior, and that these effects were not strong. The authors suggest that the popular conception that women are more likely to engage in the behavior with men may be due to the fact that self-injury is generally associated with cutting behavior, in which women were found to be more likely to engage. Fennig, Carlson, and Fennig (1995) point out that the majority of adolescent females in a public school they investigated who self-injured during an “outbreak” of self-injury did not demonstrate any severe overt psychopathology.

Few studies have focused on the characteristics of people who are members of self-injury support groups. In their overview of 10 popular self-injury websites Whitlock, Powers, et al. (2006) found that the percentage of female members ranged from 74% to

91.5%, although they note this may not reflect the demographics of all self-injurers. Two studies which recruited their sample from Internet self-injury groups (Murray, Warm, & Fox, 2005; Warm, Murray, & Fox, 2002) found that their samples were comprised of well over 80% female participants. The self-injurious behavior most commonly found was cutting, followed by scratching, hitting, burning, and scalding, with 37.9% of participants reporting use of multiple methods of self-injury (Warm et al., 2002.) Furthermore, 41.6% of the participants reported a history of overdosing, and 54.7% reported a previous attempt at suicide. Approximately a third of the sample in the 2005 study reported a history of stealing, and 11.7% reported a history of alcoholism or drug addiction, respectively. A large sexual minority population has been found in those Internet based groups, with 22.7% stating they were bisexual, and 3.9% indicating they were gay or lesbian. In regards to the secrecy surrounding the behavior, it is interesting to note that 80% of respondents reported the “often” or “always” hid their scars from others (Murray, et al., 2005). This is further borne out by the finding of Whitlock, Powers, et al. (2006) that nearly ten percent of posts in the boards surveyed were about concealing the signs of the behavior from others.

Also, high levels of sexual or physical abuse history were found, and approximately one-third of the population reported a history of either anorexia or bulimia (Warm, et al., 2002). The impact of trauma and abuse as factors leading to the use of self-injury as a coping mechanism has been written about fairly extensively. Gladstone et al (1999) found that childhood sexual abuse alone and independent of other variables had a significant predictive value that an individual had engaged in self-injurious behavior. Paivio and McCulloch (2004) found that in their sample of 100 undergraduate students,

those who had engaged in self-injurious behavior were twice as likely to report having been abused or neglected in childhood than those who did not report engaging in self-injury. They put forth an intriguing model which shows alexithymia (the inability to identify or express emotions) as a mediating variable between having been abused or maltreated in childhood and engaging in self-injurious behavior later in life. They found support for this model, as well as finding that alexithymia was a factor of self-injury independent of child abuse or neglect.

Theoretical Models of NSSI

The question of why a person would deliberately injure him or herself is one that has long puzzled the mental health community. Self-injury appears to be antithetical to basic survival instinct, and can appear to be pointless and frightening. It certainly can have the effect of eliciting strong reactions in onlookers. Its seeming contradiction – self-preservation through an act of self-destruction – is something which is difficult to fully wrap one’s mind around. Harris (2000) points out that self-injurious behavior has an internal logic which may not be readily apparent to those unfamiliar with the behavior. Self-injury is often perceived as being irrational due to its perceived departure from rational logic – if a person is not suicidal, why should he or she endanger his or her life? Yet, both Harris (2000) and Solomon and Farrand (1996) put forth the idea that self-injury is the antithesis of suicide, in that it is used to cope with overwhelming feelings as an alternative to suicide or depression. Rather than maladaptive, it may be seen as an adaptive act, which enables a person to survive and continue with life despite overwhelming negative feelings. In essence, the person is sacrificing their own physical integrity for the sake of preserving mental integrity.

It is no wonder this complex and seemingly self-contradictory behavior has spawned so many competing theories and explanations (Shaw, 2002; Suyemoto, 1998; Suyemoto & MacDonald, 1995; Warm, Murray, & Fox, 2003). It is very likely that the complexity of the theories proposed and their diverse nature speaks to the multifunctional nature of the behavior. Haines and Williams (1997) point out that self-injury may be seen at different places in the literature as a method of coping with psychological difficulty and as a symptom of psychopathology. The 1998 article by Suyemoto serves as an excellent example of the range of theories that have arisen concerning the behavior. Suyemoto (1998) attempts to classify current understandings of self-injury into four broad categories of theories around self-injury, including: Environmental Model, Drive Models, Affect Regulation Models, and Interpersonal Model. Each of these models poses a different explanation about the functions and maintaining factors of self-injury. Some of the more specific factors put forth that are encompassed within these theories include: Environmental (i.e., the creation of reinforcing environmental responses while serving the needs of the environment), Antisucide (i.e., suicide replacement), Sexual (i.e., self-injury occurs due to conflicts over sexuality), Affect Regulation (i.e., it occurs due to the need to express or control emotions that cannot be expressed through other means), Dissociation (i.e., a way to manage or end dissociation that occurs from intensity of affect) and Boundaries (i.e., it creates an identity and/or distinction between self and others. It protects from feelings of engulfment.) Among these theories, Suyemoto and Macdonald (1995) found that the two theories endorsed most often by psychologists and social workers as useful in treating self-injurious behavior were the expression and control of affect models, followed by theories concerning the creation of boundaries.

Self-injury has been described as an overdetermined behavior such that it is probable that self-injury can fulfill several functions simultaneously (Suyemoto, 1998), including all of the functions described by the varying theories. Haines and Williams (1997) point out multimodal determinants of self-injury, including an examination of the psychophysiology of the act, may be more correct than attempting to explain the act by a single theory. This is also written about by Favazza (1998) who refers to self-injury as a “morbid form of self help” that provides relief from a variety of distressing symptoms and which produces several effects, including “tension release, termination of depersonalization, euphoria, decreased troublesome or enhanced positive sexual feelings, release of anger, satisfaction from self-punishment, a sense of security, control, and uniqueness, manipulation of others, and relief from feelings of depression, loneliness, loss, and alienation (p. 264).”

This is consistent with the findings concerning self-capacities among people who self injure (Deiter, Nicholls, & Pearlman, 2000). The specific self-capacities referred to in this research come from constructivist self developmental theory (Pearlman, 1998). This theory holds that self-capacities are defined as the abilities that allow a person to maintain a consistent, cohesive sense of self. In this framework, there are three major self capacities: the ability to maintain an inner sense of connection with others; the ability to experience, tolerate, and integrate strong affect; and the ability to maintain a sense of self as viable, benign, and positive (Pearlman, 1998). The ability to connect and internalize connection allows an individual to develop the other two capacities. Abuse and trauma preclude the development of secure and healthy self-capacities. Within this context, self-injury might be seen as an outcome of impaired self-capacities. In accordance with this

theory, Deiter, Nicholls, and Pearlman (2000) found an interaction between trauma and self-injury such that self-injurers on the whole had greater impairment in all three types of self-capacity than non self-injurers, but that participants who had experienced childhood abuse fared worse within those groupings. Therefore, while there is no inference about abuse as a direct cause of self-injury within this model, it is quite possible that the resultant loneliness, difficulties in handling strong emotions, and self-hatred which can accompany abuse may contribute to the development of self-injurious behavior.

However, although child abuse (specifically, sexual abuse) has often been written of as a possible etiological factor of self-injury, it is quite possible that less severe patterns in childhood may contribute to the development of self-injury as a coping mechanism, possibly mediated by alexithymia or self-capacities that have been impaired by factors other than abuse. Feelings of chronic invalidation, for example, may cause a person to doubt his or her experience as being real or true. This doubt may lead to self-injury as a tangible, unquestionable expression of experience (Linehan, 1993). Alexander and Clare (2004) write of the subjects they interviewed in a qualitative study, “Negative and traumatic experiences in childhood and adulthood combined with invalidating responses from others leading to the suppression of painful emotions and a general sense of being different or not fitting in, all fueled a sense of self-loathing and contributed to the adoption of self-injury as a way of coping with unbearable emotions (p. 81).”

Functional Understanding of Self-Injury

A more categorical approach to understanding self-injury has been taken by Nock and Prinstein (2004). They argue that rather than trying to understand self-injury through

its psychosocial correlates or etiological factors, it is more useful to take a functional view of the behavior. Such a view is consistent with a more behaviorist perspective, in that the act can be understood by its consequence. It has been put forth that there are two basic dimensions of reinforcement from which self-injury ought to be understood: that of automatic reinforcement vs. social reinforcement and positively reinforcing vs. negatively reinforcing. Thus, each act of self-injury can be seen as belonging to one of four categories including: automatic-negative reinforcement (e.g., to stop bad feelings or thoughts), automatic-positive reinforcement (e.g., to feel something, to feel relaxed), social-negative reinforcement (e.g., to avoid school or work) or social-positive reinforcement (e.g., to get attention or to get help).

While this approach describes functions of self-injury in terms of both inter and intra personal factors, Nock and Prinstein (2004) also found that the automatic reinforcement statements (both positive and negative) were endorsed at a higher degree ($p < .01$, Cohen's $f = .92$) and with greater frequency than the social reinforcement statements. They use this evidence to suggest that the behavior is used more often to regulate emotions than to influence others' behavior, at least in the perception of those who engage in it. This is consistent with many studies of self-injury which focus on the role it appears to play in modulating mood or affect. It appears that self-injury is often done either to dampen feelings which are overwhelming or to cause feelings to emerge when they are feeling numb. People who self-injure may report both self-injuring in order to stop bad feelings and self-injuring in order to feel something (Nock & Prinstein, 2004). While this study alone, of course, does not provide enough evidence to determine that self-injury's primary function is to regulate affect, it is consistent with many other studies

which suggest such a model for the activity of self-injury. These will be explored further in the next section.

Affect Regulation and Self-Injury

It has been noted by several authors that often the person who self-injures is in an overwhelming amount of psychic stress prior to the self-injurious act (Harris, 2000; Favazza, 1996; Strong, 1998; Suyemoto, 1998). The act of self-injury relieves this stress, and can be viewed as a type of damage-limitation done to preserve life and sanity by exerting control over the body and environment to obtain relief (Harris, 2000). The mechanism by which relief from overwhelming affect occurs is not well understood (Suyemato & MacDonald, 1995); however, it is clear that such relief does occur and may be presumed as one factor that maintains the behavior.

Warm et al (2002) provide an example of this relief. In their study, they found that self-reported presence of feelings of anxiety, confusion, and depression prior to self-injuring were significantly greater than the reported presence of those feelings after engaging in self-injury. Murray et al. (2005) found that the majority of self-injurers in response to an Internet survey said that they felt anxious, confused, and depressed prior to an act of self-injury, with marked changes in these emotions during and after an act of self-injury. A notable 71.9% reported feeling calm following the act of self-injury as opposed to 76.6% who reported anxiety prior to self-injury, and only 35.9% reported feeling depressed after the act of self-injury as opposed to 87.5% who reported feeling depressed prior to the act of self-injury. Both depression and anxiety have been associated with self-injury, and it has been found that anxiety has an association with self-injury over and above depression (Klonsky, Oltmanns, & Turkheimer, 2003). Also, it

has been found that more symptoms of anxiety and depression are reported among adolescents who self-injure than those who do not (Ross & Heath, 2002).

All of the above-mentioned studies are limited in that they were based on retrospective self-reports due to the inherent ethical and practical difficulties of studying a person engaging in self-injurious behavior. However, guided imagery studies have also provided clear evidence of a mechanism of tension-reduction and affective change brought on by the act of self-injury. Using guided imagery scripts, marked physiological differences as well as verbal analogue differences have been found in people who self-injure compared to those who do not (Haines, et al., 1995). Haines et al. (1995) found that people who self-injure had an immediate drop in physiological response when the act of self-injury was completed in a guided imagery script compared to people who did not self-injure. Although the patterns of arousal for self-injurers did not significantly differ from the patterns observed in non-self-injurers for scripts which described neutral events, acts of interpersonal aggression, and accidental injury scripts, there was a very pronounced difference between the two groups during the script that described an act of self-injury. For the self-injuring group, there was significant and immediate drop in physiological arousal when the script described the commission of the self-injurious act, and this arousal remained low through description of the consequences. There was no such tension reduction for non-self-injurers and, indeed, one arousal measure showed an increase during the description of self-cutting. In fact, even scripts which contained “instructions” to the non-self-injurers to stop feeling distressed or concerned were not associated with decreased arousal. This suggests that the memory of relief via commission of the act is important in maintaining the tension-reduction response from

the act, and generally lends biological support to tension-reduction or affect regulation models of self-injury (Haines, et al., 1995). Furthermore, in this same study, the self-injuring group reported decreases in tension, and greater degrees of calmness as the self-injury script progressed in a pattern that was markedly different from their responses to the other scripts. This demonstrates that the overwhelming relief from tension or moods described by self-injurers may have a very marked physical component. This may partially explain the physical sensation of craving self-injury as well as the withdrawal symptoms experienced upon cessation of the behavior (Favazza, 1996). Thus, the relief experienced upon the completion of the self-injurious act is likely to be a combination of psychological and physiological factors, and physiological factors may be powerful in reinforcing and maintaining the behavior.

A possible factor related to this use of self-harm to regulate mood is the commonly noted inability of people who self-injure to satisfactorily express their emotions verbally or by crying (Suyemoto & Macdonald, 1995; Solomon & Farrand, 1996). This inability may be related to the finding that participants who self-injured in a non-clinical college sample were four times as likely to be categorized as alexithymic than participants who did not self-injure (Paivio & McCulloch, 2004). These findings may be especially relevant when considering the benefits to those who use online support groups, as using the Internet this way may be an alternative method of coping with distressing feelings. Morahan-Martin and Schumaker (2003) found that such affect modulation among Internet users does in fact occur, and that people who are lonely are likely to use the Internet to modulate their moods more than people who are not lonely.

It is also interesting that people generally report experiencing less strong affect during Internet interactions than during face-to-face encounters (Mallen, Day, & Green, 2003). Given that self-injurers in general seem to comprise a group prone to difficulty with the tolerance of strong affect (Deiter, Nicholls, & Pearlman, 2000), it could be expected that they would take advantage of a medium that allows for self-expression and a feeling of belonging, yet which minimizes the possibility of experiencing overwhelming affect. Even if the communication by Internet does cause strong emotional response, it is a form of communication that allows for a degree of control. A computer can be shut off without hurting the other person's feelings, and one can choose which emails one cares to read.

Social Aspects of NSSI

Although self-injury is an act associated with solitude and loneliness, it must be stressed that it occurs, like all acts, within a social context. As members of the larger culture, people who engage in the behavior are likely as aware of this context as people who do not. Indeed, they are perhaps more aware of the reasons for their actions and the cultural perception of them. Warm et al. (2003) found that the sample of people who self-injure obtained from online communities were able to distinguish accurately between statements that were mythical about NSSI and statements that were accurate. The findings of that study are used as a means of validating a questionnaire which lists myths and facts about self-injury and the authors contend that this sample was no different from any other sample of a self-injuring population. Yet it is very possible that people who have sought out online communities are more educated about the causes of their own self-injury, as well as more aware of the reasons that others self-injure. An important

function that online information may serve may simply be to dispel myths about NSSI (e.g., “it’s a woman’s problem” or “people just grow out of self-injury”).

Self-injury is by definition a behavior considered socially unacceptable or deviant. Further, within Western culture there is a high value placed on maintaining physical appearance and of avoiding pain or discomfort. Self-injury seems antithetical to both of these values. It can be viewed very easily by others as wasteful, senseless, and frightening. There is no question that self-injury has the power to horrify onlookers, and part of its essence may be its shocking quality (Turp, 1999; Favazza, 1996). It is easy enough on paper to place self-injury at an intellectual and theoretical distance. Actually seeing scarred and scabbed over arms, deep cuts in need of stitches, hearing stories that imply great familiarity with blood, and realizing that the person sitting close by – one’s child, client, friend, student, classmate, sister, mother, patient, employee, boyfriend – has the capacity to inflict that upon him or herself is simply not something the vast majority of people can accept without strong emotional reaction. Therefore, it may be something that is difficult for the person engaging in the behavior to seek or receive support. It has been found that in the college student population, 31% of people who had repeated incidents of self-injury reported that no one was aware of the behavior, and only 25.7% had ever discussed the behavior with a mental health professional (Whitlock 2006).

Reactions of Health Care Providers and Professionals

Negative reactions and associations with self-injury are also experienced by mental health professionals. Shaw (2002) raises the point, for example, that the literature and training of today spend less time speaking to clinicians’ “fears, puzzlement, and at times, anger and punitive responses in working with women who self-injure” (p. 200)

than did literature at previous points in history. Any given person to whom the self-injurious behavior is disclosed may experience a variety of reactions and assign the act a variety of meanings. Again, this range of emotional reactions and attempts at giving self-injury meaning includes individual professionals working with individual clients. Negative reactions may extend into attitudes and actions of those who work most closely with this population when not properly handled. It may be difficult to provide care for a behavior that induces such negative reactions (Turp, 1999).

The belief that self-harm is a form of attention seeking under the control of the person who self-harms may be part of the reason that people who self-harm generally report high levels of dissatisfaction with those in the helping professions. Warm et al. (2002) found that 73.3% of their Internet-based sample had sought professional help of some sort. Psychiatrists, psychologists, and counselors were the most frequent professionals from whom help was sought. Less than one-third of those who had sought help were satisfied or very satisfied with the treatment they had received. Dissatisfaction was higher for psychiatrists, nurses, and doctors than for other types of professionals such as counselors or psychologists. Furthermore, Jeffery and Warm (2002) found that psychiatrists and medical workers in particular appear to have a poorer understanding of self-injury than the people who engage in the behavior, psychologists, and social workers. It is not unreasonable to suggest that misconceptions about self-harm may contribute to the dissatisfaction that those who self-harm find with their treatment (Warm, et al., 2002).

Indeed, as far as the medical profession is concerned, reports of stitches given with out anesthesia and other “hostile care” situations abound (Harris, 2000; McAllister,

2001; Shaw, 2002). Those who self-injure have reported being infantilized, humiliated, and told they are a “waste of time” (Harris, 2000). People tend to take a rigid stance of refusing to “reward” the self-harmful behavior. This is an attitude that is not likely to deter self-harm, but may deter seeking necessary medical treatment (McAllister, 2001). This is of concern as it has been found that a quarter of repeat-incident self-injurers have harmed themselves so badly that they needed medical treatment (whether they received it or not) but only 5.4% have disclosed their behavior to a physician or allied medical health professional (Whitlock et al., 2006).

Also, as mentioned previously, there is likely a large sub-clinical population of self-injurers not seen in hospital settings, and therefore a variety of professionals may be called upon to deal with self-injurious behavior. These may include school counselors, nurses, doctors, social workers, teachers, residence hall advisors, housing officials, friends, family, and others (Turp, 1999). The reactions of these people may be significant in either alleviating or contributing to the isolation experienced by the person who self-injures. They are, however, unlikely to have specialized training in responding to self-injury (Turp, 1999). Therefore, the reactions and meanings they assign self-injury may very well be influenced not only by their impression of the person who has disclosed self-injury, but by hearsay and public perception of the behavior.

The General Public's Understanding of NSSI

Misconceptions about self-harm may be found both in popular media and in the general public's knowledge of self-injury. The phenomenon of NSSI is something that has begun receiving more attention from both the media and professional literature in recent years (Shaw, 2002). It has been featured on many popular talk shows, in popular

magazines, and is seen increasingly as a behavior of characters in movies and television shows. This attention has been compared to the way that anorexia and bulimia nervosa began becoming issues known in the public consciousness (Favazza, 1998; Favazza & Conterio, 1988). This public consciousness may have complex consequences for people who self-injure. Positive consequences, such as the knowledge that one is not alone or information about resources for help, may be undercut or at least complicated by the way in which people who self-injure are portrayed. Greater awareness of a phenomenon is not necessarily equivalent to greater understanding of a phenomenon.

A parallel may be found in the article by Bishop (2001), who describes the meta-story which has emerged in magazines concerning eating disorders as simplistic and untrue to the experience of eating disorders. Those who have eating disorders are typically shown as selfish and self-obsessed, attention seeking, and cured in a simplistic manner. They are also portrayed with something of a “freak show” mentality. Although it has not been formally documented, given the co-morbidity of eating disorders and self-injurious behavior and the similarities between the two behaviors and populations portrayed as engaging in them (e.g., young and female), (Favazza & Conterio, 1988), it is not unlikely that media stories concerning self-injury may have similar stories or messages. At the very least, the messages about people who self-injure are likely to be much more simplistic than this complex behavior warrants. The question of what effect these stories and more common knowledge of self-injury will have on the feelings of isolation of those who self-injure is a cause for some concern.

While those people who let others know about their self-injury may be stigmatized, those who are secretive are confined to loneliness and forced to keep

something that is very salient to their identity under wraps. This dilemma is well described by Caroline Kettlewell in her autobiography, *Skin Game* (1999).

The way I saw it, the only way to prove the validity of my cutting was to keep it an absolute secret. If I told anyone, somehow let it slip, then right there in the telling would be the evidence that I was cutting only for the melodrama of it, cutting for attention – because once you admitted to these things, didn't the very act of admission render them suspect? I knew, without being able to put the matter into so many words, that no one would believe me if I told them... (p. 70)

This double bind makes it difficult for the person who self-injures to freely express his or her experience without being afraid of being misunderstood. A person may feel utterly alone in his or her experience of self-injury. The overwhelming impact of knowing that one is not alone in engaging in this behavior has been documented from as early as 1985. One researcher went on a popular talk-show, and following the show received responses from more than 1000 persons who wanted more information about “self-abuse” (Favazza & Conterio, 1988). Williams (2006) found that one of the most common things that members of self-injury Internet groups reported as being positive was feeling that they were no longer alone. It was also found that while all participants in that study could articulate negative experiences discussing self-injury in face-to-face contexts, fewer than half could articulate positive experiences, and that positive experiences were often limited to the absence of a negative responses (i.e., the person to whom the self-injury was disclosed did not express disgust) rather than the presence of support. Also, over half of the participants in the Williams (2006) sample expressed experiences or feelings of having their self-injury misunderstood and also experiencing

responses from others that were distinctly unhelpful. Feeling that others cannot understand and fear of disclosing the behavior may contribute to the isolation which several participants noted experiencing (Williams, 2006).

Loneliness and shame are problems which repetitive self-injurers often encounter on a day-to-day basis (Strong, 1998). Self-injurious behavior is a behavior which may be quite salient to a person's self-concept, but is something which cannot be disclosed to others without the risk of losing what support one has or other serious consequences. People who are lonely are less likely to be intimate and self-disclose (Morahan-Martin, 1999). This statement is also often true about people who repetitively self-injure. Chronic self-injury may be conceived of as a lonely-making situation in that it is a personal and relevant topic which cannot be easily disclosed without the possibility of weighty repercussions. To avoid these reactions, people who self-injure may engage in stigma-management strategies (Hodgson, 2004). They may hide scars by wearing long pants and long sleeves, injuring in discreet locations on the body, avoiding activities and relationships which may expose them as a "cutter," and telling "cover stories" when injuries are exposed (Hodgson, 2004). These actions and action limitations may contribute to feelings of alienation from others. Whether these feelings of alienation and isolation precede the onset of self-injury is still not understood, but it appears that the fact that one engages in self-injury can certainly contribute to feelings of alienation or feeling "like a freak" (Williams, 2006).

Social ostracism is one noted problem for people who chronically struggle with NSSI (Favazza & Conterio, 1988). Kahan and Pattison (1984) suggested that lack of social supports and loss of significant social relations might be predisposing factors for

self-injury. Guertin, Richardson, Spirito, Donaldson, and Boergers (2001) found that among people who attempt suicide by overdose, those who engage in NSSI are five times more likely to report severe loneliness than those who attempt suicide but do not have a history of NSSI. Indeed, they found that loneliness was the only significant cognitive or affective predictor of self-injury.

It is unclear whether this loneliness precedes and is a cause of self-injury, or whether those who self-injure isolate themselves more often due to their behavior (Guertin, et al., 2001). It is likely that there is an interaction between the two. One of the noted temporary effects of self-injury may be to alleviate feelings of loneliness, loss, and isolation (Favazza, 1998). Ergo, while self-injury may temporarily relieve a distressing symptom it may create a chronically distressing situation in its wake. In other words, people who are already lonely turn to self-injury to cope. The self-injurious act produces immediate and intense mental and physical relief for the person, as discussed above. However, due to shame, confusion, and fear about using and finding relief via this method, feelings of loneliness and isolation may be reinforced or increase in the longer term. This may be especially true for those who eventually find they are unable to easily desist from self-injury and experience cravings for the act. Those who do tell others may experience being misunderstood or a host of negative reactions from those who they do approach which may deter subsequent attempts to discuss their experiences with others and increase feelings of alienation (Williams, 2006).

Internet-Based Support

The effects of the Internet on social life, communication, and general well-being appear to be complex and a source of controversy within the research literature (Bargh &

McKenna, 2004). Much early social science and psychological research that dealt with social uses of the Internet assumed it to be intrinsically problematic and inferior to face-to-face relationships. Bargh and McKenna's (2004) review of the research on the Internet and social life suggests that this assumption may be a continuation of the history of many technological innovations being decried as inherently harmful to society. As society's use of the Internet has grown and social uses of the Internet have become more commonplace, new findings and models of social use of the Internet have emerged. Associations between Internet use and well-being appear to be more complex than the original studies and theories supposed.

Common Reasons for Seeking Internet Forums

Mental health issues in general appear to have a place of particular import on the Internet. In terms of mental health, the Internet is rife with information and possibilities regarding treatment. It has been noted that self-help sites and forums for the purposes of finding information have been well-received by the general public (Chang, 2005) and that it is important to look at the possibilities such self-help sites have for those who use them. It has been found that Internet-based self-help treatment of panic disorders can be equally effective as traditional therapy (Carlbring et al., 2004). Internet sites for addictive behaviors are increasing in popularity as well (Griffiths, 2005). However, the information available online may be incorrect or biased and is, of course, unmonitored so the quality of information people are receiving regarding things such as eating disorders are rendered somewhat suspect (Murphy, Frost, Webster, & Schmidt, 2004). Despite this, the anonymity and ease of use is likely to make the world of Internet-based support for these issues a place of increasing import for a variety of people. It is important for mental

health professionals treating any disorder to be aware that the Internet is a vital source of information about disorders, treatment, and possibly of support.

What motivates a person to join an Internet group? People join groups in both the online and offline world order to achieve interpersonal goals, which may include such things as: alleviating loneliness, gaining social support, discussing important beliefs or values, or feeling a sense of community (McKenna & Green, 2002). However, the special features of Internet communication provide a forum unlike any other in the social world. These features, such as anonymity and continual access, may motivate people to join groups online rather than face-to-face. Additionally, McKenna and Green (2002) make note of several situational factors which may motivate people to make use of an online group. These include: lack of readily accessible “real-world” groups, time constraints, the sharing of a common predicament not readily identifiable in face-to-face situations, social anxiety, and loneliness. Each of these features may be salient in self-injury based Internet groups.

There is very likely no real-world counterpart to self-injury based support groups. It is very unlikely to be able to readily find a similar group which is accepting of the behavior of self-injury, which has constant availability, and in which one can remain anonymous. Also, many of these forums are hosted by people who either struggle with self-injury currently or in the past, which may give a feeling of egalitarianism within the group, rather than having a group which is being run by a professional with the ostensible goal of curing self-injury (Adler & Adler, 2008).

This also speaks to the “common predicament” feature of the Internet. People tend to bond with those they perceive as being in a similar predicament as themselves,

and will seek out others who share their circumstances. However, many people who self-injure experience self-consciousness about their behavior and take great trouble to hide it (Favazza, 1998; Hodgson, 2002; Murray, et al., 2005). Therefore, searching for a group of people in similar straits as oneself is rendered quite the challenge. These people are more easily identifiable through the Internet than within one's immediate social circle. The Internet may be a refuge also in that people may seek help online who would not seek help from professionals. A previous Internet-based study found 30.5% of adolescent respondents say they have not ever consulted a professional regarding their self-injury (Murray, et al., 2005).

Having constant support of the Internet group to which one belongs is another feature of Internet-based groups likely important in self-injury based groups. It has been found that 46.9% of an Internet-based sample of self-injurers tended to self-injure at night (Murray, et al., 2005). When asked about positive online experiences, self-injurers in Internet based groups have remarked that having information on demand is "reassuring" and spoken about feeling that someone is "always" there (Williams, 2006).

Relationship Formation on the Internet

The process by which the special features of Internet communication (e.g., anonymity) play out during interactions may be largely determined by context. Spears, Postmes, Lea, and Wolbert (2002) suggest that context and group identity are a large part of the types of interactions seen online. They put forward a model which does not presuppose that the effects of anonymity on communication are uniform, but rather interact with social context, the salient aspects of user identity, and the goals of the individual using this method of communication. In this sense, anonymity coupled with

group identification may increase adherence to group norms, rather than decrease it (Spears, et al., 2002).

Are self-injury related Internet groups sought out to alleviate isolation in part because of the special features of communication they provide? A study by Gross, Junoven, and Gable (2002) has implications that lend credence to this idea. They found positive correlations between well-being and Internet use in adolescence when adolescents used the Internet to chat or email others with whom they had close face-to-face relationships. Their findings also indicated that adolescents who reported more loneliness or social anxiety on a day to day basis were more likely to engage in Instant Messenger conversations with people with whom they did not have a close face-to-face affiliation. They were also more likely to endorse that their motivation for using Instant Messenger was “to avoid being alone” (Gross, Junoven, & Gable, 2002).

Online relationships may begin to play an important role in the lives of those who engage in them. Relationships online may blossom quickly. McKenna, Green, and Gleason (2002) found that meaningful, close relationships form rapidly on the Internet and that these relationships may be as stable over time as their offline counterparts. They found that, independent of levels of loneliness or social anxiety, people are better able to express important aspects of their “real selves” when meeting online than when meeting in a face-to-face setting. However, they point out that the formation of online relationships may be considered especially beneficial to those who are more socially anxious and lonely. These people experienced value from being able to express aspects of their selves that remained hidden in face-to-face conversations and being able to form close relationships through such self-expression. These features of Internet

communication may be of special import to those who seek out online support groups. Indeed, this contention may be supported by Caplan (2003) in a study which found that levels of loneliness and depression are predictive of preference for online social interaction. He suggests this may be due to perceptions of social competence in face-to-face interactions.

The Internet and Communication of the Hidden Self

When socializing with someone on the Internet, characteristics of communication people take for granted in face-to-face encounters are unavailable. This includes an absence both non-verbal cues (e.g., tone of voice, rate of speech, facial expression, gestures) and characteristics of the person which may influence interaction (e.g., attractiveness, skin color, gender) (Bargh & McKenna, 2004). The lack of visible and audible cues online influences both how people perceive one another and their self-presentation. In a sense, online anonymity is something that can be controlled and manipulated by the Internet user so that self-presentation is modified to be congruent with the goals of group affiliation.

Research has proposed that the value of Internet discussion may be the ability to bring aspects of one's self to the conversation which are difficult to express or get across to others in a face-to-face setting (McKenna, Green, & Gleason, 2002). One's "true" self can be conceptualized as those aspects of a person that cannot be easily presented to others, but which a person believes are actual and salient characteristics of him or herself (McKenna, Green, & Gleason, 2002). When using this definition of the "true" self, it is not a surprise that people who commonly feel stigmatized, shamed, or misunderstood might be prone to use the Internet as a means of support.

In reference to the current study, one can conceive of self-injury as one such characteristic. For people who self-injure, the behavior of self-injury is something which is important to self-understanding, but that poses special problems when discussing it with others. Favazza (1998) describes one of the features of “repetitive self-mutilation” as that the person who engages in the behavior takes on the identity of a “cutter.” As Favazza and Rosenthal (1993) point out, this may cause several social difficulties. “Physical disfigurement from scars or wound infections may result in social rejection and isolation. Some persons are so embarrassed by their appearance that they rarely appear in public. Others avoid wearing short-sleeved shirts, revealing clothes, or bathing suits” (p. 137). Other repercussions can include personal shame and embarrassment, social rejection, stereotyping, or ostracism (Favazza, 1996; Alderman, 1997).

Expressing aspects of the “true self” may become even more salient when people feel marginalized in some manner from society. McKenna and Bargh (2004) point out that two types of group membership have been studied thus far: those available to people with stigmatized social identities, and those which provide social support for debilitating or life-threatening illnesses. It has been found that people use Internet support groups to discuss health problems, but particularly for those health problems which were embarrassing or stigmatized (AIDS, prostate cancer, etc.) (Davison, Pennebaker, & Dickerson, 2000). The expectation of anonymity combined with a supportive environment for a hidden and stigmatized behavior likely parallels the reasons people seek out support groups for self-injurious behavior.

Utilizing this theory of the “true” self, McKenna, Green, & Smith (2001) put forth a model of how Internet actions may come to be part of people’s self-concept and

something they incorporate into their face-to-face world. Specifically, they looked at aspects people's reasons for engaging in "mainstream" cybersex and used structural equation modeling to discover what aspects of Internet engagement allowed them to internalize hidden aspects of their sexuality. They found that for people who felt that they were better able to express themselves online than off found their online identity to be quite important to them. Those who placed importance on this online identity were then able to incorporate aspects of this online self-concept into their offline self-concept as evidenced by the strengthening of internal guides to behavior, the weakening of external guides, and the possibility of bringing Internet relationships into real life. They suggest that the more a person locates their "sexual self" online, the more important that identity becomes to one's sense of self offline (McKenna, et al., 2001).

Although this research was specific to sexuality, it is consistent with other research that indicates that when one is actively engaged in Internet relationships, that sense of self may eventually translate into "real-world" counterparts (McKenna, et al., 2002). It is also consistent with a model of Internet group activity put forth by McKenna and Bargh (1998) with regards to populations that were marginalized in some manner that was concealable from the larger society. McKenna and Bargh (1998) found that people with self-identified marginalized-concealable social identities, such as minority sexual orientations or fringe political identities, took advantage of the Internet's anonymity and relative safety by seeking out discussion boards and lists in which to participate. Findings indicated that membership in this group was quite important to the members – in fact, statistically more important than Internet group membership for people in marginalized-conspicuous or non-marginalized groups. They hypothesized that

this was likely because the online group was initially their sole venue for receiving support (McKenna & Bargh, 1998).

In two further studies in the same article, the authors proposed and tested a structural equation model in which they hypothesized that people who actively posted would experience the group as being more important to identity than those who did not. In turn, group identity importance was a mediating variable between participation, social isolation, estrangement from society, coming out, and self-acceptance. This model was tested with members of online groups for people with same-sex attraction (Group 1) and, separately, for people who participated in online groups related to fringe political identities (Group 2) (e.g., beliefs in cover-ups, extraterrestrials, topics of White supremacy). They found partial support for their hypothesized model with both groups. They did find that whether or not a member participated in the group did significantly affect the importance of the group identity (Group 1: $r = .52, p < .001$; Group 2: $r = .49, p < .001$). Group identity import, in turn, significantly affected self-acceptance (Group 1: $r = .51, p < .001$; Group 2: $r = .47, p < .001$), coming out (Group 1: $r = .24, p < .05$; Group 2: $r = .43, p < .001$), and estrangement (Group 1: $r = -.23, p < .05$; Group 2: $r = -.26, p < .05$) for both groups. There were no significant relationships between group participation and these variables that were not mediated by group identity import. Noteworthy is that they did not find a relationship between group identity and social isolation in either group. They found a significant relationship between participation and social isolation ($r = -.19, p < .05$) for Group 1. There was no such relationship in Group 2. McKenna and Bargh (1998) note that they believe their basic model could be used with many groups who experience marginalization or stigma. However, this model has not been tested in

regards to mental illness issues in general or the behavior of self-injury in particular. Given that mental illness and self-injury are both concealable identities which may bear some degree of marginalization, this model makes sense as a starting point of understanding the way self-injury Internet groups function.

Internet Group Identity and NSSI

Only a few studies have thus far examined the phenomenon of Internet-based self-injury support groups. A quantitative study, done by Whitlock, Powers et al. (2006), was observational, descriptive, and correlational in nature. In their study of 10 self-injury message boards, Whitlock, Powers, et al. (2006) looked both at content of the boards overall and at the posts of 60 individual oft-posting members. They found that the majority of posts were constituted by informal support for other members (28.3%). This is in concordance with qualitative findings by Williams (2006), who found that members of these boards generally cite the acceptance and availability of other members as things they have gotten since joining the board. It is also consistent with findings by McKenna & Bargh (1998) who found that positive feedback was given in greatest proportion to groups with marginalized-concealable identities. It is possible that these interchanges result in the feeling of trust, friendship, and community experienced by group members (Williams, 2006). Although Whitlock, Powers et al. (2006) did not analyze or consider posts not congruent with the goals of their study (e.g., “off-topic” posts), they did note about the conversations they looked at that, “What the self-injurious adolescents in our study appeared to do online is what most people who trust each other do in conversation: exchange support, share personal stories about daily life events, and voice opinions and ideas (p.9).”

Prasad and Owens (2001) did a cursory study of information available about self-injury via the Internet. Their findings indicate that self-help for those who self-injure is available in terms of information, guidance, advice, and tips on how to find direct assistance. They suggested that the information available was similar to supportive information available online for people with cancer, in that it suggested how to overcome negative emotions and the use of coping techniques. These findings were borne out and expanded by Whitlock, Powers et al. (2006) who found that common themes among members of 10 popular message boards included informal support of members, discussions of triggering events, discussion of concealing the behavior and scars, formal help seeking or treatment, discussion of the addiction-like elements of the behavior, and a variety of other topics.

There are two studies that qualitatively examine the content of self-injury Internet forums, one by Whitlock, Powers, et al. (2006) and one by Rodham, Gavin, & Miles (2007). Both of these studies surveyed the content of several Internet bulletin boards and classified this content, giving findings regarding the nature of what goes on explicitly on the boards. Both studies noted that the Internet forums showed a prevalence of informal, friendly support as being prevalent on the site. Sites were generally viewed as places to vent as well as receive support and advice. Authors of both studies reported having concerns about the possibility that the sites may normalize and thus increase the behavior. Studies also indicated some sharing of methods that occurs on such websites, both intentionally and unintentionally. Both articles caution that websites that portray the act of NSSI positively is a cause for concern as there is potential that participating in the websites could increase isolation and concealment of the behavior (Whitlock, Lader, &

Conterio, 2007; Whitlock, Powers et al., 2006). While these studies educate professionals regarding the content of the websites, they do not engage with the website users or examine outcomes of using such websites.

Whitlock, Powers et al. (2006) also found that discussions of events that triggered self-injury were next most common, followed by discussions about concealing the behavior and its effects (19.5 and 9 percent, respectively). Comments about concealment focused on anxiety around being discovered, managing and concealing scars, and the extent to which posters were dishonest in order to maintain secrecy (Whitlock, Powers et al., 2006). This focus on concealment and remaining concealed is further corroboration that self-injury constitutes a behavior which is hidden. This need for concealment and to choose carefully who one reveals self-injury to may be resultant from negative experiences a person has had with revealing self-injury to others (Williams, 2006).

Though the study by Whitlock, Powers et al. (2006) provides an interesting starting point for quantitative research in this area, it does suffer from several limitations. The study was exploratory and not grounded in theoretical models of Internet identity formation. Given what McKenna and Bargh (1998) have found regarding identity formation, as well as the findings of Spears et al. (2001) on the effects of anonymity and group norms, this becomes a severe problem with the underlying assumptions of the study and with the interpretations of the study's findings. It is unlikely that all message boards or websites are likely to produce the same effects for all members. In looking at the 12 categories for types of discussion that occurred online, Whitlock, Powers et al. (2006) reported the total percentages of posts that comprised each category. However, they failed to report whether or not these occurrences were greater or less in sites that

were looked at more strictly by moderators. For example, requesting or sharing techniques for self-injury was present in 6.2% of the total posts examined. However, one of the websites they looked at had a high degree of moderation (i.e., a moderator screened all posts with triggering content) and others had medium degrees of moderation (i.e., triggering posts were labeled as such). It is unlikely, at least in the high moderation board, that such posts would be likely to constitute any of the posted material. Also, it may be likely that methods-trading posts were a greater percentage in groups with less moderation. In grouping all boards together, high and low moderation levels alike, conclusions may be drawn about boards that are safer that are unwarranted.

This problem remained in the second portion of the study, where the authors looked at 50 posts made by each of 60 members in medium to low moderated boards. They then divided the posts into categories dependent on post content and frequency of posting in these categories. No distinction was made based on the rules of the board and no correlations drawn based on any type of grouping. Also, in looking at correlations between the types of posts shown by different members, Whitlock, Powers et al. (2006) failed to hypothesize what these correlations might be and simply set the 17 types of posts they coded into correlations with one another, which makes the possibility of Type I error in the findings rather high. The purpose for making these correlations was not explicit – possibly, they were looking for profiles of different post types. While the authors did find many significant correlations, only three correlations were above 0.35 (Whitlock, Powers et al., 2006). These three higher correlations were somewhat intuitive in nature and included the fact that people who offered support were more likely to suggest formal treatment, and people who expressed suicidal ideation or a diagnosed

disorder were more likely to disclose that they were in formal treatment. Given that posts could be double coded, it is possible that the high correlations result from the similarities of the posts with one another (e.g., a person who is giving informal support might suggest formal treatment as part of that support or a person who was suicidal or disclosing the presence of a diagnosed disorder might simultaneously talk about formal treatment.)

While there were many other interesting and significant correlations, their magnitude was quite small. However, Whitlock, Powers et al (2006) did draw several interesting implications from these correlations in the discussion section of their article, focusing on a specific subset of these correlations. They chose correlations which seem, on surface, to support a model of Internet boards as dangerous places are chosen especially in the discussion. Although they mention, briefly, that these websites appear to be an important form of social support for their participants, they go on to talk in more detail about the possible negative repercussions of these boards. For example, they note the distressing finding that posts discouraging the disclosure of self-injury are correlated with sharing techniques ($r = .332$). Yet they fail to note in their discussion that discouraging disclosure is also significantly correlated, nearly as highly, with seeking advice on stopping self-injury ($r = .314$) and being able to make positive comments about oneself ($r = .301$). The seeming contradictions here are not addressed, nor any hypotheses advanced as to why this should be so. The final paragraphs go on to discuss the possible implications of sharing the “pleasures and pains of addictions,” negative attitudes towards help-seeking, and the possibility that of the group keeping the person from cessation of the behavior, citing a *Teen People* article which discusses teen “cutting clubs” and other frightening phenomena (Booth, 2004 as cited in Whitlock, Powers, et al., 2006).

It is true that there are web boards that encourage self-injury and that self-injury may be a phenomenon given to contagion effects in face-to-face settings (Muehlenkamp, Hoff, Licht, Azure, & Hasenzahl, 2008). These two things are enough to cause a person to wonder whether or not use of such boards might have adverse effects on the users. However, the authors of the Whitlock, Powers, et al. study (2006) fail to take into account the reasons that adolescents seek out these boards, the social experience of the person who self-injures, or differentiate adequately between the possibilities of the boards for helping compared to harming. It is irresponsible to ignore the risks of participating in these boards. However, it is unhelpful and unenlightening to ignore the context for people seeking out this support and what needs it may fulfill. Therefore, in studying this phenomenon, it is important to take into account the reasons that people are likely drawn to these boards in the first place.

Qualitative research addresses these issues in more depth than quantitative research can. Williams (2006) found that participants report engaging in self-injury support groups is conducive to feeling that one belongs to a community and is accepted, and that these feelings allow for greater self-acceptance. However, contrary to the implications Whitlock, Powers et al. (2006) draw from their findings, a substantial subset of participants did discuss ways that being active in a self-injury Internet forum had made changes in their offline worlds, in that they were able to be more open about scars, tell family or significant others, seek help more easily, and be more honest with those they were seeking help from. This was in spite of the fact that all participants were able to articulate negative experiences with discussing self-injury with a person in a face-to-face context (Williams, 2006). When asked about experiences talking about self-injury in

face-to-face contexts, participants reported having their intentions misunderstood, finding that others were unable to understand them, experiencing a variety of unhelpful responses, and articulated experiences of isolation and embarrassment (Williams, 2006). Indeed, based on the responses of the Williams (2006) study regarding what has happened when participants spoke about self-injury face-to-face, it would be quite surprising if Whitlock, Powers et al. (2006) had not found conversations about the merits and drawbacks of disclosing the information, as well as information on concealment. Disclosing that one self-injures is an activity that can be difficult to negotiate, and a person is unlikely to want casual acquaintances to be aware of the behavior (Williams, 2006). This means that questions are going to come up about how to refuse to go swimming during the summer, what to do when all the prom dresses are sleeveless, and how many times one can credibly blame the cat.

Although qualitative research provides a more inside look at the lived experiences of people immersed in a phenomenon, this form of study does have some drawbacks. Perhaps most relevantly, it is important to note that the Williams (2006) study only focused on Internet forums which were somewhat helpful in nature, in that they were not “Pro-SI” or “SI-Positive.” That is, the sites were accepting of the behavior without being overtly encouraging of it. While it appears there is the possibility for markedly positive outcomes in life for people who engage in these forums, the question as to whether these forums might also have the potential for increasing self-injurious behavior is important to address. It is possible that these websites allow members to incorporate a more positive view of self which would alleviate some of the negative affect associated with self-injury.

However, it is also possible to see participation in websites – especially “pro-SI” websites – as being detrimental to “recovery” from self-injury.

An example of a reason this may be of concern may be found in the “pro-ana” (anorexia) and “pro-mia” (bulimia) movements on the Internet. These encompass Internet websites that characterized eating disorders as a lifestyle, and provide tips for surviving with an eating disorder without recovering from it. They may be characterized by giving tips about starving or purging oneself, photos of extremely thin celebrities used as “thinspiration” and an anti-recovery stance taken towards eating disorders. Qualitative research has found that for those who participate in these, it is seen as a positive community in that it is an accepting forum where they feel able to express themselves (Fox, Ward, & O’Rourke, 2005). However, if the research by McKenna and Bargh (1998) holds true, and the important Internet-identity becomes more important within one’s self-concept, such websites do have the potential to lead to dangerous outcomes.

Also, the salience of group norms online may encourage destructive behavior if such behavior seems to be a natural part of the group. Spears, Postmes, Lea, and Wolbert (2002) note that due to the deindividuation that occurs on the Internet, identification with the group will increase and adherence to group norms becomes all the stronger. Whether this is positive or negative likely depends a great deal on the type of group involved. In reviewing discussion forums for general psychiatry, weight and eating disorders, and abuse, Johnsen, Rosenvinge, and Gammon (2002) discovered that while all forums had negative posts, these were almost always responded to with reassurance and positive support. However, within the eating disorders forum, they found twice as many

“destructive” posts as in the other two forums and found these appeared to have a negative effect on the group as a whole.

These notes about the pro-ana movement and the possibilities for identification with destructive behavior are somewhat worrisome. As applied to self-injury forums, it is quite possible that participation in self-injury related websites will increase members’ tendencies to utilize self-injury as a primary coping skill and reduce their ability or desire to identify other ways of handling emotional distress. On the other hand, it may be that having the acceptance of a support group may increase one’s functioning offline, as it seems that active engagement and joining with an Internet group (especially a more therapeutic group) may act in such a way as to build the self-capacities that Deiter, et al. (2000) posit as being impaired in the lives of self-injurers. That is, these forums may increase a sense of connectedness, increase self-acceptance and self-esteem, and may provide a place in which one can express oneself in a healthier way, thereby improving ability to tolerate or cope with strong affect. The ability of the forums to do that is likely greatly influenced by the climate and values of the group. Differentiation of group type and norms is an area that has been neglected in both literature about eating disorder forums and self-injury related forums.

Rationale and Purpose

In recent years, many advances have been made in our understanding of the functions of both self-injury and Internet-based support. Interest in the phenomenon of web-based self-injury support groups has begun to rise. Thus far, however, our knowledge about these groups is primarily descriptive (Whitlock, Powers, et al., 2006) and qualitative (Williams, 2006). The proposed statistical models of Internet-identity put

forth by McKenna and Bargh (1998) and McKenna, et al. (2001) have yet to be verified by observation or applied to groups experiencing stigma due to psychological or behavioral problems. Also, differential effects of belonging to Internet support groups of different types have not been examined.

Therefore, the purpose of this study was to identify a model that explains the effects of Internet-based support groups. This study examines the variables of initial response, group engagement, group identity, and variables related to social and psychological distress of participants in Internet-based NSSI support groups using structural equation modeling. This study examines the variables of initial response to the group, group dynamics, negative face-to-face experiences, group identity, social difficulties, NSSI disclosure, and psychological distress. Additionally, the study examines the effects of membership in different types of websites on group identity, social difficulties, and psychological distress.

Structural equation modeling was chosen as the best approach to this study due to its ability to model mediating variables. Further, it has the advantage of providing means of managing complex relationships within the data. It also allows better model visualization. Finally, the study was based in great part on the work of McKenna and Bargh (1998). Their study was limited in that there were very few measures per variable, and variables used were generally not established measures. This study seeks to use multiple measures of important variables to reduce measurement error and better understand the model conceptualization.

The Hypothesized Model

Initial Response

McKenna and Bargh (1998) hypothesized that between members who posted and lurked on newsgroups related to marginalized-concealable identities, group participation was required for the identity to increase in import. Williams (2006) found that all participants remarked upon their feelings of initially being accepted into the group as something important that they had received from the group. It is possible that the difference between people who posted and people who lurked in that study was such a feeling of acceptance. Therefore, it was hypothesized that the initial response to the group (i.e., strong feelings of initially being understood and accepted by the group) would be related positively to importance of the group to identity, such that initial response was an exogenous variable that preceded group identity in the model (see Figure 1 for hypothesized placement of all latent variables within the model).

Group Dynamics

In the work of Williams (2006) it was found that participants often remarked about the import of self-expression in a group of people who understand as well as the importance of feeling that the group was a community. Additionally, a minority of participants brought up feelings of discomfort and desire to keep distance from conflict that had occurred in the group. Therefore, it was hypothesized that those group members who have greater experiences of the group as being healthier, more cohesive, and a place in which they can express themselves freely will be more likely to experience group membership as an important aspect of their identity. This is an exogenous variable. It was

expected that it would covary with initial response to group and similarly have a positive relationship with group identity.

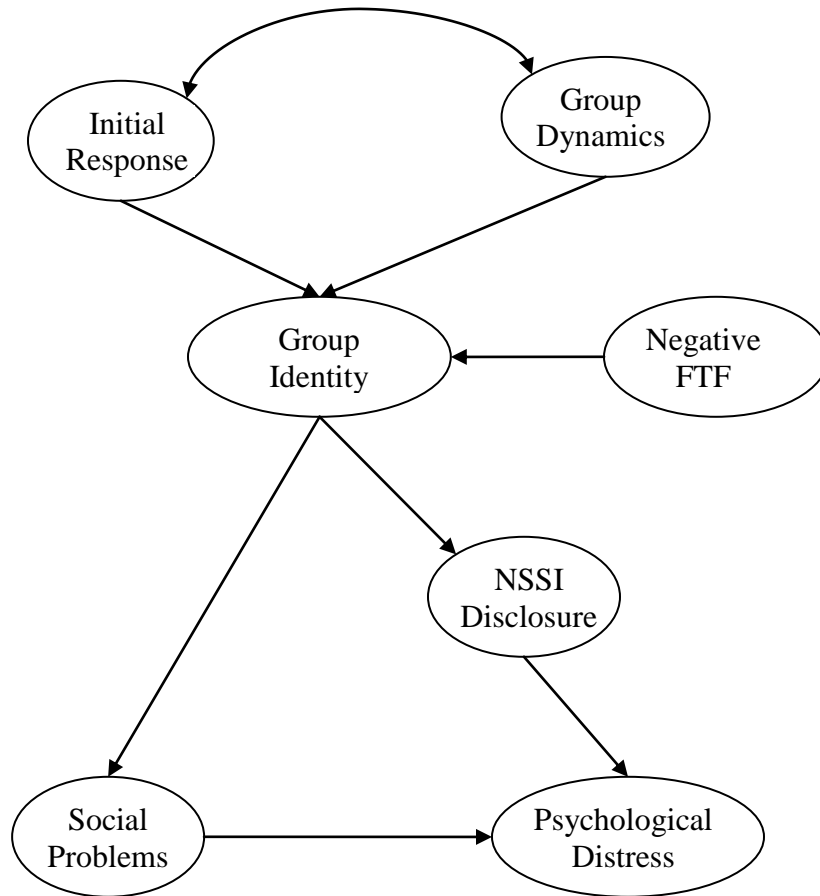


Figure 1. The hypothesized model of relationships between latent variables.

Negative Face-to-Face Experiences

The work of McKenna, Green and Smith (2001) used variables regarding motivation for joining the group in their model of incorporation of online identity into the self. However, the variables used in that model regarding sexuality are unlikely to be applicable in this model. Therefore, it was thought that motivation for joining the group might be created by face-to-face experiences. These may have an impact on the

importance of the group to the identity such that those who have had more negative experiences in discussing self-injury face-to-face may attach more importance to the online group.

Williams (2002) found that in discussing negative face-to-face experiences, participants' responses tended to focus on feeling misunderstood by people who did not self-injure, unhelpful responses of people when self-injury was disclosed, and experiences of feeling isolated and embarrassed due to their self-injury. This variable was created to assess the extent to which participants feel they have had negative experiences in face-to-face settings in regards to their self-injury. Likert-scale questions were created based on the categories from Williams (2006) of Misunderstanding, Unhelpful Responses, and Embarrassment and Isolation which specifically queried about how negative participants have felt their offline interactions around self-injury to be. This is an exogenous variable. It was hypothesized not to covary with the other exogenous variables and to have an impact on group identity such that more negative face-to-face experiences would increase the importance of the group identity.

Group Identity

This variable represents the importance participants attach to their membership to the group and its role in their lives. This variable was indicated by responses to questions adapted from the Importance Index of the McKenna and Bargh (1998) study, the Identity subscale of the Collective Self-Esteem Scale, and the Real Me scale created by McKenna, Green, & Gleason, 2002. It was hypothesized that this variable would mediate all effects between initial response, group dynamics, negative face-to-face experiences and outcomes in psychological distress, social difficulties, and disclosure to others.

Social Difficulties

Social support (or lack thereof) and loneliness was measured by the Multidimensional Scale of Perceived Social Support, the UCLA Loneliness Scale – 10 Item version, and the Fear of Disclosure Index from the Interpersonal Trust Questionnaire. It was hypothesized that positive changes in these variables would be observed with increases in importance of group identity, and that the effect of group identity import on this variable would be direct.

Disclosure Behaviors

It is expected based on the work of McKenna & Bargh (1998), McKenna, Green, and Smith (2002), and Williams (2006) that import of the group to identity may increase the likelihood of disclosing the behavior to family and friends. This variable was assessed by asking about disclosure behaviors since joining the forum, asking about comfort level discussing the topic of self-injury with significant others, and amount of concealment behavior. It was hypothesized that increase in importance of group identity would have a direct increase on disclosure behaviors.

Psychological Distress

Emotional difficulties including depression and stress will be measured based on the Stress scale from the Depression Anxiety Stress Scale – 21. It is expected that decreases in social difficulties and increases in disclosure behavior will be related to lower degrees of depression and stress. Further, it was expected that the effect of group identity import on this variable would be indirect, mediated by social difficulties and disclosure behaviors.

Summary of Expected Findings of the Study

By analyzing the variables listed above via structural equation modeling, it was expected that an overall model would emerge wherein the effects of joining an Internet-based support group for self-injury would be largely dependent upon the importance of the group to identity. Therefore, it was anticipated that all relationships that the exogenous variables of negative face-to-face experiences, initial response to the group, and group safety and dynamics have on the variables of social difficulties and disclosure of self-injury would be mediated by the variable of group identity import. Further, it was expected that the variable of NSSI disclosure would mediate the effect of group identity import on psychological distress. (See Figure 1 for the full hypothesized model.)

CHAPTER III

METHODS

Participants

Participants for this study were recruited from three Internet forums whose purpose was to provide a community for people who engaged in self-injury. One website was rated by three independent raters as being safer in nature, while two others were rated as being more risky. The total number of participants who began the survey across all websites was 225. Of these, 151 completed enough of the survey for their data to be considered usable (fewer than five missing responses). Eighty-eight were from the safe website, and 63 were from the two risky websites (16 from one and 47 from the other). The large majority of dropouts from participants occurred at points where they were required to click to go to another page of the survey.

Of the respondents who completed the survey, 134 identified as female and 14 as male. One identified as transgender, and two did not report gender. Participants ranged in age from 13 to 53, with a mean age of 23.7 ($SD = 7.5$, median = 22.0). About 75% were under the age of 26. A preponderance of participants identified as White/Caucasian (85.43%, $n = 129$), with 6.62% ($n = 10$) identified as multiracial, 3.97% ($n = 6$) as Latino/Hispanic, 1.99% ($n = 3$) as Black/African American, and 1.99% ($n = 3$) as Asian. With regards to sexual orientation, 58.9% ($n = 89$) identified as straight or heterosexual, 19.2% ($n = 29$) identified as bisexual, 9.3% ($n = 14$) identified as gay or lesbian, 7.9% (n

= 12) identified as questioning, and 4.6% ($n = 7$) identified as other. The majority of the participants were from the United States (52.9%, $n = 80$), with 30.4% from the United Kingdom ($n = 46$), and the rest from other countries (mainly Canada and Australia).

Most participants did belong to at least one Internet group other than the one from which they were recruited (70.9%, $n = 107$). Of these, the median number of groups was 2.0 (mean = 2.70, SD = 2.0). Number of groups ranged from 1–12, with 80% of participants belonging to three or fewer. Of those participants who belonged to other forums, 80.4% had belonged to a non-mental health related forum, 32.7% had belonged to another forum related to self-injury, 29.9% to a forum supporting people with mental illness, and 21.5% to a forum related to eating disorders. Most participants (84.8%) reported finding the forum after searching on the Internet for general information about self-injury. No other method of finding the website had even 10%, with the closest being hearing about the site from another website related to self injury (8.60%).

The participants mainly reported that they began self-injuring during adolescence (mean age of onset = 14.31, SD = 4.72). The ages of onset ranged from 5 - 46; however, 77.48 percent had begun between the ages of 11-17. When asked how often they currently engage in self-injury, 4.0% indicated daily or more, 9.9% indicated several times a week, 13.9% indicated approximately weekly, 9.9% indicated once every two weeks, 7.9% indicated monthly, 23.2% indicated less than once a month, and 30.5% indicated they had not self-injured in more than six months.

Instruments

Information was collected via the Internet through a professional survey site. Participants were asked a total of 115 questions including questions based on previous

research, questions from previously developed measures, questions developed for this particular study, and 16 questions regarding demographics, Internet usage, and history and frequency of self-injury. The instruments used for each latent variable are described in further detail below. The informed consent and full questionnaire presented to participants are included in Appendices A and B.

Initial Response

The latent variables of initial response and negative face-to-face experiences were based on the qualitative work of Williams (2006) which identified these two variables as being particularly pertinent to group members' experience. Questions for these two variables were derived from the data of that study. The questions were piloted on a website with a bulletin board style forum for support of people with eating disorders. Participation was open to anyone above the age of 18. Thirty-seven participants completed all questions. All participants were female. The mean age was 31.8 (SD = 11.8, median = 27).

There were originally six questions tested related to initial response. (See Appendix B for all items originally included in the scales.) It had been decided a priori that three items which performed best as a scale would be used as indicators for the latent variable. The six items initially yielded a Cronbach's alpha of .86. The three items which were contributing the least to the alpha were removed, leaving three questions for the final variable which yielded an alpha of .85. The final items included in the main study were, "When I first joined, I was amazed to find so many people like me." "I instantly felt understood when I started using this forum," and "I felt an immediate connection with other people on this forum." The items were answered on a 5-point Likert scale

ranging from “Strongly Agree” to “Strongly Disagree.” Item correlations in the final study were significant and positive (see Results).

Total post count was initially intended to be an indicator for this variable. The participants were asked to give an estimate of exactly how many times they had posted. On each of the bulletin boards studied, there was a counter under the users’ names activated each time he or she posted which yielded a total post count. Therefore, it is likely these estimates were accurate as each participant had access to the total number. This gave a range from 0 to 25,000. The median number of posts was 774 ($M = 2395.44$, $SD = 4037.11$). The first quartile was 70 posts, the third quartile was 3000.

In their 1998 study, Bargh and McKenna used post/lurk status as an exogenous variable predicting identification (i.e., whether a person had ever actually made a post to the forum or not). However, there were very few people with no posts who responded to the present survey ($n = 4$), making this impractical for analysis. Also, data regarding how long participants were members prior to posting was not ascertained. Therefore, total number of posts might or might not be related to initial response. Also, the post count data was non-normal with an extremely large range, making analysis impractical (see Results). Therefore, post count was not included in the model.

Negative Face-to-Face Experiences

The negative face-to-face experiences items were piloted on the eating disorder forum along with the items in the initial response variable. There were originally seven items regarding negative face-to-face experiences related to self-injury. (In the pilot study, the questions were asked about negative experiences related to eating disorders.) The seven items, measured as a scale, initially yielded an alpha of .312. The four items

which were contributing the least to the alpha and/or had the lowest item-to-scale correlations were removed, which yielded a final scale with three items which had an alpha of .681. The final items included as indicators were “I have been distressed by the way someone offline has reacted to my self injury.” “I have been embarrassed by someone’s response to self-injury in my offline life,” and “I have been afraid that if I tell someone about my self-injury, they will not understand what I am talking about.” These items were answered using the same Likert scale described above. In the main study, the three items had an alpha of .733 and strong significant correlations with one another (see Results).

Group Dynamics

Group Climate Questionnaire – Short Form

The Group Climate Questionnaire – Short Form (GCQ-S) is a 12 item self-report measure commonly used in the literature (Johnson, et. al., 2006). For the purposes of this study, two subscales of this measure were used to indicate perceived dynamics within the online groups. The GCQ-S was created to measure group members’ perceptions of the therapeutic environment of a group (the group climate). Participants rate their agreement with items on a seven-point Likert scale ranging from “not at all” (0) to “extremely” (6). The measure has three scales: Engagement, Conflict, and Avoidance, which are considered to be non-theoretically overlapping. Separate scores are obtained for each scale (Johnson et al., 2006).

For the purposes of this study, data from the Engagement and Conflict scales were utilized. The Avoidance scale has been shown to have inconsistent internal reliability with coefficient alphas found as low as .36 (Johnson et al., 2005) and reviews of the

literature have found it less predictive than the other two scales of group outcomes (Johnson et al., 2005; Kivlighan & Goldfine, 1991). For the purposes of this study the constructs measured by Engagement and Conflict appeared to be more relevant, as they measure degrees factors related to group connectedness and group conflict, respectively. The Engagement subscale measures therapeutic work, including positive working atmosphere, cognitive understanding, group cohesion, confrontation, and self-disclosure (Johnson, 2006). An example of an item from this scale is, “The members liked and cared about each other.” (Johnson et al., 2006). The Conflict scale measures interpersonal anger, distancing, distrust, and tension (e.g., “the members were distant and withdrawn from each other”) (Johnson et al., 2006). Coefficient alphas for the Engagement scale have been found in the literature to range from .70 to .94, and from .69 to .88 for the Conflict scale (Johnson et al., 2005; Kivlighan & Goldfine, 1991). Construct validity has been assessed fairly extensively. The Engagement scale has been found to be predictive of positive outcomes in groups, whereas the Conflict scale tends to be negatively related to positive group outcomes (Johnson et al., 2005). Also, people in different stages of the group tend to score differently on the Engagement and Conflict subscales in ways that would be theoretically expected (Kivlighan & Goldfine, 1991), which speaks to the validity of the measure.

In the present study, the Conflict subscale had a coefficient alpha of .74, which was consistent with expectations. The Engagement scale for this study had a coefficient alpha of .56, which was quite a bit lower than expected. Scale analysis indicated that two of the five questions (“The members challenged and confronted one another in an effort to sort things out,” and “The members revealed sensitive personal information or

feelings.”) had very low item-total correlations. The mean of the first question listed was substantially lower than the others, and the mean of the second question was substantially higher. This may be due to differences between the online group environment as compared to face-to-face groups, as norms around confrontation and self-revelation may be different. When the two items were deleted from the scale, the alpha obtained was .69. The three-item scale was used in the final model due to the significant improvement in alpha.

Curative Climate Instrument

The Curative Climate Instrument (CCI) (Fuhriman, Drescher, Hanson, Henrie, & Rybicki, 1986) was developed based on Yalom’s (1995) 12-Factor theory regarding curative influences in groups. The authors reviewed the literature, and concluded that catharsis, insight, cohesion, and interpersonal learning tend to be the most valued factors across groups (Fuhriman et al., 1986). Using a confirmatory factor analysis procedure, they created the 14 item CCI, which has the three subscales of Catharsis, Insight, and Cohesion (Fuhriman, 1986). Items are rated on a five point Likert scale ranging from (1) “not helpful” to (5) “extremely helpful.” For the purposes of measuring feelings of connectedness and safety within the group, the five-item Cohesion and Catharsis subscales were used.

Cohesion is defined as “the collection of forces within a group that draw it together... (p. 189, Fuhriman et al., 1986).” An example of an item from this scale is “Belonging to and being valued by a group” (Johnson et al., 2006). The original study found a coefficient alpha for the Cohesion subscale of .87, and a more recent study found an alpha of .93 (Fuhriman et al., 1986; Johnson et al., 2006). This subscale has also been

found to be related to the Engagement subscale of the GCQ-S discussed above (Johnson et al., 2006). In this study, the Cohesion subscale had an alpha of .88.

Within the CCI, the construct of catharsis has been defined as “a spontaneous, intense emotional expression of self. It involves the releasing of emotionally laden material that has been previously suppressed, repressed, or in other ways controlled or restricted (p. 189, Fuhriman et al., 1986).” A sample of items on this subscale includes, “Being able to say what was bothering me instead of holding it in.” Also, several scale items deal with being able to constructively express feelings towards other group members, e.g., “learning how to share, in an honest and responsible way, how group members are coming across to me.” (Johnson et al., 2006). When created, the Catharsis subscale was found to have a coefficient alpha of .81, and has more recently been found to have an alpha level of .87 (Fuhriman et al., 1986; Johnson et al., 2006). In this study, the Catharsis subscale had a coefficient alpha of .75.

Group Identity

Importance Index

Two of the indicators for the latent variable of group identity were taken from the McKenna & Bargh (1998) study upon which the present study is based. These included a question regarding daily time engaged with the forum and three Likert-scale questions regarding the forum’s import. Participants were asked to rate approximately how much time they spend on the Internet reading, writing, or responding to activity on the forum. Analysis indicated that 20.5% ($n = 31$) spent less than 15 minutes, 29.1% ($n = 44$) spent 15-30 minutes, 14.6% ($n = 22$) spent 30-45 minutes, 15.2% ($n = 23$) spent between 45

and 60 minutes, 12.6% ($n = 19$) spent between one and two hours, and 7.9% ($n = 12$) spent more than two hours engaged in forum-related activities.

The three 5-point Likert scale questions were as follows: 1) How important is expressing yourself on self-injury forums to you? 2) Does expressing yourself on self-injury forums make being able to talk about self-injury more important to you? 3) How much importance do you place on how the other members of this group perceive you? In the original study, time per day spent online was part of the total index, which had an alpha level of .81 and all items were significantly correlated with $r > .05$. However, using all four items in this study yielded an alpha of .58. Additionally, while the three questions were all correlated with one another at $p < .01$, time online only had significant correlations with questions one and three ($r = .19, p < .05$; $r = .35, p < .01$). It had no correlation with question two ($r = .11, p > .05$). Therefore, time online was used as a separate indicator. The three Likert-scale items yielded a coefficient alpha of .61.

Real Me Variable

This study adapted the Real Me variable used by McKenna, Green, and Gleason (2002) to assess the latent variable group identity import. This variable originally had two yes/no questions (Do you think you reveal more about yourself to people you know from the Internet than to face-to-face friends? Are there things your Internet friends know about you that you cannot share with face-to-face friends?). It was thought that these questions might introduce some bias towards more Internet-identity answers. Therefore, three dichotomous questions were used to try to tease this out, as follows: “Do you think you reveal more about yourself to people you know from the Internet or to face-to-face friends?” “Are there things your Internet friends know about you that you cannot share

with face-to-face friends?” and “Are there things your face-to-face friends know about you that you cannot share with your Internet friends?” Two questions answered on a seven-point Likert scale adapted directly from the McKenna, Green, and Gleason (2002) study were also used (To what extent do you reveal more about yourself to people you know from the Internet than to people you know face to face? To what extent would your family and friends be surprised to read what you post on the Internet?). The questions were coded in such a way that lower scores indicated more location of the self in the face-to-face world, and higher scores indicated greater locus online. The three dichotomous variables were dummy coded so that -3 was a score indicating a face-to-face answer and +3 indicated more of an Internet locus. Finally, the two seven-point scales were coded so that they ranged from -3 to +3 with 0 as the median. These were then added together for the final scale total. This yielded an alpha of .65.

Collective Self-Esteem Scale – Revised

Collective self-esteem can be conceptualized as the value a person places on his or her social groups. The Collective Self-Esteem Scale (CSES) was developed by Luhtanen and Crocker (1992) to assess individuals’ levels of social identity based on group membership in both ascribed (e.g., race, SES) and achieved (e.g., employment, club membership) group status. The entire scale consists of 16 items rated on a 7-point Likert scale. The total scale has four four-item subscales, including Membership esteem, Private collective self-esteem, Public collective self-esteem, and importance to Identity (Luhtanen & Crocker, 1992). The Identity subscale, used in this study, measures the degree to which social groups are important to a person’s sense of self, as opposed to judgments of the value or worthiness of either the group or the self (Luhtanen & Crocker,

1992). For example, one item is “The social groups I belong to are an important reflection of who I am.”

The Identity subscale demonstrated has adequate internal reliability, showing coefficient alphas ranging from .74 to .86 across three studies performed during initial creation and validation of the scale (Luhtanen & Crocker, 1992). It has also shown a six-week test-retest reliability correlation of .68. In the present study, the scale had an alpha of .76. With regards to validity, the Identity subscale of the CSES is the only subscale which does not correlate with scales of individual self-esteem, indicating that the scale is differentiated from feelings of self-worth or valuation (Luhtanen & Crocker, 1992). Also, this subscale was correlated more strongly than other subscales with measures of collectivism, indicating that how important one’s group is to one’s identity is slightly related (as would be predicted) to more collectivistic orientations. However, the correlation, though significant, was still rather low (Luhtanen & Crocker, 1992).

Though the CSES was originally created to look at ascribed social identities, the authors modified the instructions and tested the scale with confirmatory factor analysis to determine if achieved identities could also be measured with the scale. None of the psychometric properties of the CSES-R were different from the CSES. The scale authors suggest that the scale can be altered for specific purposes without compromising its reliability (Luhtanen & Crocker, 1992). Indeed, since the scale was initially developed, several studies have used such a strategy. The CSES-R has been altered for use with specific ethnicities, genders, and artificially created “blue” and “green” groups (Aberson, 1999; Burn, Aboud, & Moyles, 2000; Giang & Wittig, 2006). Although most of these studies do not report coefficient alpha, Giang & Wittig reported an alpha of .69 when

changing to scale to specifically reflect ethnic group membership. Although some evidence has shown questionable reliability for this subscale and the validity of the CSES for use with Black Americans (Utsey & Constantine, 2006), the Identity scale remains a brief, relevant, and increasingly commonly used measure of the construct at hand.

NSSI Disclosure

The variable of self-injury disclosure behaviors was assessed by asking about specific behaviors of disclosure as well as questions about how comfortable they would be disclosing their self-injury to other people and discussing the subject with others. Participants were asked whether, before joining the forum, they had discussed their self-injury with a mental health professional or with any friends or family face-to-face. They were then asked whether after joining the forum they had disclosed it to either a mental health professional or friends or family who did not know about it previously.

One aspect of McKenna and Bargh's 1998 model was the degree to which group participation affected members' abilities to discuss their identities offline. In the present study, participants were asked two questions regarding their comfort level with their identity related to face-to-face situations. Participants were asked to what degree that they keep their scars or injuries hidden from others (a five-point Likert scale ranging from Never to Always) and how comfortable they are discussing self-injury when it comes up in general conversation (a five-point Likert scale ranging from Very Comfortable to Not at All Comfortable). Answers to these questions were ranked such that higher scores indicate more comfort with face-to-face disclosure of self-injury, and used as separate indicator variables in the model.

Social Difficulties

UCLA Loneliness Scale

Loneliness was measured by the ten-item version of the UCLA Loneliness Scale (Version 3) (Russell, 1996). This scale was originally developed as a twenty-item scale which assesses loneliness. Examples of items include, “How often do you feel that you have a lot in common with the people around you?” and “How often do you feel that no one really knows you well?” Participants rank their answers on a 4-point Likert scale ranging from “Never” to “Always.” The ten-item scale has five negatively (non-lonely) worded items and six positively (lonely) worded items. It is scored by reversing the appropriate items and adding the scores. It has been shown to have good reliability with a variety of populations including college students, nurses, teachers, and elderly populations with coefficient alpha ranging from .89 in the samples of teachers and older people to .94 in the sample of nurses (Russell, 1996). The shortened version of the test was shown to have an alpha of .89 in a sample of teachers. The full-length test was re-administered one year later with the older population and a test-retest reliability correlation of .73 was found. A coefficient alpha of .89 was also found in a study which looked at women with breast cancer who sought support via the Internet (Fogel, Albert, Schnabel, Ditkoff, & Neugut, 2002). In the current study, a coefficient alpha was found of .87, indicating good reliability comparable to previous studies.

With regards to construct validity, the scale has shown adequate convergent validity as it correlates strongly and positively with other loneliness scales such as the NYU Loneliness Scale ($r = .65$) and Differential Loneliness Scale ($r = .72$) (Russell, 1996). It is also moderately negatively correlated with the three factors of the Social

Support Questionnaire (r range from $-.39$ to $-.56$) (Russell, 1996). The scale has also been shown to be significantly and moderately correlated with measures of neuroticism and introversion. The correlation with Social Desirability was significant, but low ($r = .21$), indicating that loneliness scores are unlikely to be affected by social desirability (Russell, 1996). These moderate to low correlations indicate that there is adequate divergent validity. Similarly, in the present study, there was a significant correlation of $r = -.64$ ($p < .001$) with a measure of social support.

Multidimensional Scale of Perceived Social Support (MSPSS)

Social support was measured using the MSPSS as an indicator for the social difficulties variable. The MSPSS (Zimet, Dahlem, Zimet, & Farley, 1988) is a 12-item measure of social support which assesses perceived support from friends, family, and a significant other. Participants respond to each of the questions on a 7-point Likert scale, with higher numbers indicating a greater degree of social support. (For the present study, the scale was reverse scored such that higher scores indicated less social support.)

Examples of scale items include “There is a special person who is around when I am in need” and “My family really tries to help me” (Zimet et al., 1988). Each of the questions includes the phrase “my family” “my friends” or “a special person” which correspond to the Family, Friends, and Significant Other subscales. The original publication of this scale used a sample of 276 undergraduate students and showed Cronbach’s coefficient alpha r ranged from $.85$ to $.91$ for the three subscales, with a total scale r of $.88$. It has shown similar excellent reliability in a variety of studies, including studies with psychiatric outpatients and adolescents in inner city areas. In addition, 69 subjects were given the test again 2 and 3 months after the initial test. Cronbach’s coefficient alpha

ranged between $r = .72$ to $r = .85$, with the total coefficient alpha $r = .85$ (Zimet et al., 1988). This demonstrates adequate test-retest reliability for the time period indicated (Zimet et al., 1988). In the current study, the total MSPSS had a coefficient alpha of .89, with .95 on the Special Person subscale, .91 for the Family subscale, and .93 for the Friends subscale.

The three-factor structure of Friends, Family, and Significant Other has been supported by confirmatory factor analysis (Clara, Cox, Enns, Murray, & Torgrudc, 2003). Factor analyses performed in several studies over widely varied groups of subjects indicate that it is useful to conceptualize the total score as a global factor of social support overarching three factors corresponding to the subscales (Clara et al., 2003; Kazarian & McCabe, 1991; Zimet, Powell, Farley, Werkman, & Berkoff, 1990; Zimet et al., 1988), and accounts for over 70% of scale variance (Clara et al., 2003).

Several studies have provided support to the validity of the MSPSS. The original study (Zimet et al., 1988) found small but significant correlations between the MSPSS and scales of depression, which was expected due to previous research that showed links between the two. Although the means found on the MSPSS for all scales tend to be above the theoretical mean, studies have found that there is no relationship between the MSPSS and a scale of social desirability (Kazarian & McCabe, 1991; Dahlem, Zimet, & Walker, 1991). Kazarian and McCabe (1991) also found convergent evidence between the MSPSS and the Social Support Behaviors scale (SS-B), a 90-item scale with subscales including Family and Friends.

Fear of Disclosure Index

The Fear of Disclosure Index (FDI) subscale of the Interpersonal Trust Questionnaire was also used as an indicator of social difficulties. This is an instrument that considers the ability of a person to confide in others (Forbes & Roger, 1999). The instructions were modified in this study such that participants were asked to think about the questions specifically as they pertain to face-to-face interactions. This subscale is 28 questions which are answered on a four-point Likert scale ranging from “strongly agree” to “strongly disagree.” Higher scores indicate more fear of disclosure. The FDI was found to in previous studies have a coefficient alpha of .88, indicating good internal reliability as well as good test-retest reliability ($r = .85$ after 10 weeks) (Forbes & Roger, 1999). This variable has been found to correlate moderately with emotional inhibition and social support, as would be expected (Forbes & Roger, 1999). In the current study, coefficient alpha was found to be .87, indicating good reliability consistent with previous use.

Psychological Distress

The indicators of psychological distress were the three subscales of Depression, Anxiety, and Stress from the Depression Anxiety Stress Scales -21 Item version (DASS-21). Each scale contains seven items. Participants use a four point Likert scale to indicate how severely each item has been experienced over the past week (Antony, Bieling, Cox, Enns, & Swinson, 1998). A study by Henry and Crawford (2005) which examined the factor structure of the DASS-21 indicated that, while each of the three scales are separate from one another they do each tap into an overall construct of psychological distress or negative affectivity. The Depression subscale of the DASS-21 measures symptoms indicative of dysphoric mood. It has been shown to correlate well with the Beck

Depression Inventory, indicating good construct validity. It has demonstrated alphas of between .88 and .94 (Antony et al., 1998; Henry & Crawford, 2005). The Anxiety subscale focuses more on autonomic symptoms of arousal as well as subjective reports of anxiety. It has shown strong correlation with the Beck Anxiety Inventory, and has been reported to have alpha levels ranging from .87 to .90 (Antony et al., 1998; Henry & Crawford, 2005). The Stress subscale measures symptoms of stress such as tension, irritability, difficulty relaxing, and a tendency to overreact. It is significantly and moderately correlated with anxiety, depression, and negative affect, but not highly correlated, indicating that it is a separate but related construct (Antony et al., 1998; Henry & Crawford, 2005). It has demonstrated alpha coefficients of .91 and .90 (Antony et al., 1998; Henry & Crawford, 2005). In the present study, the DASS-21 total scale had an alpha of .94. It attained an alpha of .92 on the Depression subscale, .83 on the Anxiety subscale, and .85 on the Stress subscale.

Procedure

Forum Selection and Participant Recruitment

The principle investigator of this study initially used an online search engine to locate potential online communities by searching for several terms including, “self-injury support,” self-mutilation,” “SI positive,” etc. An initial list of potential sites was generated and disseminated along with a ranking rubric to three graduate students with interest in NSSI (rubric located in Appendix C). It was found that interrater reliability on several variables which appeared to be fairly concrete (e.g., are there rules in place about what is appropriate to report? Are pictures of wounds allowed?) was quite low.

There appeared to be the greatest amount of rater agreement on whether or not protections were in place for the members (e.g., “trigger warnings”). For the purposes of the study, sites with such protections are referred to as “safe” sites, and the ones which did not were referred to as “risky.” The moderators of eight forums (four in each domain) were contacted. All forums had recent posts indicating that they had active membership. Four initially responded affirmatively, four did not respond or denied permission. Due to technological difficulties re-accessing one of the sites (a safe site), this was not included. Several attempts were made to re-establish contact, but no response was received.

A post in the designated part of the forum was made by the principle investigator of this study. The post gave a brief description of the study and a link to the website which hosted it. This link took participants to an informed consent page. Participants were asked to click a link certifying that they had read the informed consent and were over the age of 13. Each site was given a different link, in order to track which site the responses came from. The two risky websites had questions presented in slightly different order. Participants from one site first completed questions related to face-to-face interactions and one completed questions first related to Internet interactions. This counterbalance was used to try to remove any potential effects of bias created by reading one type of question first.

Data Analysis

Data from participants who had completed the survey was downloaded and analyzed using SPSS 18.0 and Amos Structured Equation Program 18.0. Appropriate variables were reverse scored, and Cronbach’s alpha calculated for all measures intended

to be used as scales (see above). The small amount of missing data was then replaced series mean-replacement and score totals were calculated.

Analysis of Group Differences

A series of planned one-way ANOVAs was completed to determine if there were significant differences between the three Internet groups from which the data was gathered on the variables of interest. This analysis supported collapsing the two risky websites into one group (see Results). Also, a linear curve analysis was run between participants' age and the variables of interest to see if this variable might affect the model in some way. Univariate and multivariate normality issues were monitored throughout analysis.

Due to small sample size, it was not feasible to compare structural models between the two types of forums. Two MANOVAs were completed to determine if differences existed between the two groups on several variables of interest. The first MANOVA included several of the indicator variables related to group response, dynamics, and identity. The second MANOVA included variables related to social difficulties, psychological distress, and negative face-to-face experiences. Additionally, an independent samples t-test was performed to analyze potential differences in self-injury frequency.

Structural Equation Modeling

Model Theory

The structural equation modeling process followed the two-step outline given by Anderson and Gerbing (1988). In this process, the measurement model is assessed using confirmatory factor analysis (CFA). This allows the investigator to see whether or not the

indicator variables are, in fact, accurately specified and predictive of their latent variables. Following this assessment, the structural model itself is assessed for fit with the data.

Estimates of Fit

In the present study, maximum likelihood estimation (MLE) was used for both the confirmatory factor analysis and structural modeling procedures. Model fit was assessed with the use of multiple indicators, as suggested by numerous authors (Hu & Bentler, 1999; Jackson, 2007; McDonald & Ho, 2002). Chi-square and the standardized root mean square residual (SRMR) were used as measures of goodness of fit. Hu and Bentler (1999) suggest that adequate models have an SRMR of approximately .08 or less. The Akaike Information Criterion (AIC) was used for comparison of models (smaller scores indicating better fit). The comparative fit index (CFI) and the root mean square error of approximation (RMSEA) were selected for use due to being two of the indexes least affected by small sample size (Fan, Thompson, & Wang, 1999). Additionally, the Tucker-Lewis index (TLI) was selected due to being relatively independent of sample size and also since it penalizes for model complexity and therefore was likely to be a conservative estimate of the model hypothesized. CFI and TLI scores closer to one indicate a better fitting model, and Hu & Bentler (1999) suggested a cutoff score of approximately .95. For the RMSEA, scores less than or equal to .05 indicate good fit, and scores of less than .08 may indicate adequate fit if the upper bound of the confidence interval is not higher than .10 (Hu & Bentler, 1999).

Structural Equation Modeling Procedure

For the first step of the procedure, a CFA was performed to assess the originally hypothesized measurement model. Following this, minor modifications were made to the measurement model based on data and theory. Anderson and Gerbing (1988) recommended that the two preferred methods of managing faulty indicators are to move them to a different factor or to delete them from the model. These were the two methods used throughout this study. The modified measurement model (Measurement Model 1) was analyzed and deemed adequate to continue with the structural modeling procedure. The originally hypothesized structural model (Model A) was then calculated and analyzed for fit. Then, an alternative model (Model B) was proposed based on data and theory. This model was calculated using the same measurement model as the original and compared to the first model. Finally, one indicator variable that was loading consistently poorly was used to create a new latent variable. A CFA was performed on the new measurement model (Measurement Model 2) and deemed to have adequate fit. A final structural model (Model C) was estimated and compared to the other models.

Due to the small sample size, bootstrapping was used throughout the procedure to create confidence intervals for significance testing of regression weights, factor loadings, and the total, direct, and indirect effects of the latent variables. Bootstrapping treats the entire sample as a population and randomly draws a large number of samples (in this case, $N = 1000$) with replacement. It is often useful in situations with moderately small sample size or when assumptions of normality have been violated (Shrout & Bolger, 2002).

CHAPTER IV

RESULTS

Preliminary Analyses

All cases in which participants did not answer more than five questions were deleted from analysis (see Methods). Inspection of the data indicated that a very small amount of data appeared to be missing at random. No variable had more than three missing answers. Series mean replacement was used to manage this missing data. Thus, all 151 viable surveys were used in the final analysis.

The kurtosis and skew of all variables were analyzed throughout the data process to ensure that normality and linearity assumptions would not be violated. The kurtosis and skew statistics of all variables were well within normal limits, with the exception of post count. For this variable, kurtosis was 11.27 and skewness was 3.05. Due to the extremely large range and normality difficulties with this variable, it was removed from subsequent analysis and time spent online per day was used instead to indicate level of group involvement. Multivariate normality was assessed by the software to be 13.03 for Measurement Model 1, 9.53 for Model A, and 3.06 for Model B. Measurement Model 2 and Model C each had a multivariate normality statistic of 3.03. The larger variations from normality seen in Measurement Model 1 and Model A are likely due to the inclusion of the latent variable Negative FTF. The variation from normality for the models which did not incorporate this variable was only slight. Use of bootstrapping was

used to manage this variation from normality, as was the choice of the Maximum Likelihood Estimation procedure, which is robust to small violations of normality. Examination of Mahalanobis distance indicated that there were no outliers among the data set.

Linear curve estimation for all dependent variables was performed using age as the predictor variable to determine if this might impact subsequent data analysis. Age was not significantly predictive of any of the dependent variables ($p > .05$). Given the extremely small number of men in the sample, gender differences were not analyzed.

A series of planned one-way ANOVAs were done with Internet forum as the grouping variable and all indicators as dependent variables. This was done in order to determine whether collapsing the data from the two “risky” websites was justified or whether these two forums might differ in some potentially important way. It also indicated differences between the “risky” sites versus the “safe” site. Significant differences were found in the following variables: Initial Response scale ($F = 4.33; p = .02$), UCLA Loneliness Scale ($F = 3.18; p = .04$), Anxiety ($F = 3.44; p = .04$), Stress ($F = 3.38; p = .04$), MSPSS ($F = 5.06; p = .007$). LSD post-hoc analysis indicated that the only significant difference between the two risky groups was on the Initial Response scale ($p = .06$). There was also a significant difference between the safe and the larger of the risky groups ($p = .048$). Of the other significant differences, all were between the safe group and a risky group ($ps < .05$). Given that the preponderance of the variables showed no significant differences between the two risky groups, it was determined that for subsequent planned comparative analyses, the two would be collapsed.

Effect of Group Type

Social Problems and Psychological Distress

Two MANOVAs were conducted to determine whether there were significant differences in the variables comprising the final structural model based on type of group. Based on previous literature, it was hypothesized that there would be no difference in the variables related to group engagement or group identity; however, there would be significant differences in variables related to social support and psychological distress with participants in risky groups performing more poorly on these variables. These hypotheses were confirmed.

The first MANOVA analyzed whether or not there were differences in the variables related to participation in the forum. Specifically, the variables tested included the total scores of the Initial Response, Identity, Engagement, Cohesion, Catharsis, and Collective Self-Esteem scales as well as time online. The Hoetelling's Trace multivariate test of overall differences was not significant ($F = 1.19$; $p = .315$). This indicates group type did not have a significant effect on participants' reactions to the group, degree of group engagement, identification with the group, or time spent online.

The second MANOVA was conducted to analyze differences in participants' offline reactions to others, social problems, and psychological distress. Variables included the three subscales of the DASS, the Fear of Disclosure Index, the MSPSS total score, the total score for the three negative face-to-face experience items, and the UCLA Loneliness scale. The Hoetelling's Trace omnibus multivariate test of overall group differences was significant ($F = 2.38$; $p = .025$; partial eta squared = .11). Univariate between-subjects tests showed that group type was significantly related to loneliness,

depression, anxiety, and stress at the level of $p < .05$ and to social support with $p < .01$. In all situations, membership in the risky groups was associated with worse outcomes than membership in the safe group. Group type was not significantly related to fear of disclosure or negative face-to-face experiences ($p > .05$) (see Table 1 for means and effect sizes). Additionally, an independent samples t-test indicated no significant difference in how frequently participants engaged in self-injury in the safe vs. risky forums ($t = 1.073, p = .79$).

Table 1
Means, Standard Deviations, and Univariate Comparisons Between Group Types

Variable	Safe	Risky	<i>F</i>	<i>p</i>	Partial eta-squared
	Mean (<i>SD</i>)	Mean (<i>SD</i>)			
Time Online	2.8 (.25)	3.1 (.29)	.835	.362	---
Engagement	14.17 (2.50)	14.37 (2.25)	.255	.614	---
Cohesion	18.65 (4.74)	19.15 (3.84)	.474	.492	---
Catharsis	18.43 (3.60)	18.06 (3.66)	.388	.534	---
CSES	16.24 (5.34)	15.54 (4.20)	.761	.385	---
Initial Response	11.90 (2.37)	11.54 (2.37)	.837	.362	---
Group Import	10.34 (2.55)	10.44 (2.33)	.065	.799	---
FOD	37.53 (14.53)	38.24 (13.63)	.09	.759	.001
Negative FTF	12.25 (2.57)	12.07 (2.55)	.19	.663	.001
UCLA	27.77 (4.83)	29.72 (5.01)	5.83	.017	.038
Depression	11.35 (5.90)	13.54 (6.55)	4.62	.033	.030
Anxiety	7.00 (5.23)	9.14 (5.56)	5.85	.017	.038
Stress	10.38 (4.91)	12.39 (5.04)	5.97	.016	.038
MSPSS	43.69 (13.26)	50.05 (15.25)	7.44	.007	.048

Note. $N = 151$. Partial eta-squared is not provided where omnibus MANOVA was not significant. CSES = Collective Self-Esteem Scale, FOD = Fear of Disclosure Index from the Interpersonal Trust Questionnaire, UCLA = UCLA Loneliness Scale, MSPSS = Multidimensional Scale of Perceived Social Support. Higher scores for the MSPSS are indicative of less support.

Face-to-Face Discussion of NSSI

Participants were asked whether they had ever talked with someone, either a mental health professional, family member, or friend about their self-injury prior to joining the forum. They were also asked whether, since joining, they had talked with anyone with whom they had not spoken previously. A small percentage of participants reported that they had talked with someone prior to joining the group but not disclosed to anyone new after. It is unknown whether this is an effect of joining the group or if it is because there was no one else significant to tell. It is possible that some or most of these participants continued to have conversations following joining the group with others. Therefore, in order to avoid drawing unwarranted conclusions, it was decided to perform a simple chi-square analysis on whether or not the participants in each type of group (safe vs. risky) had ever spoken with someone, either before or after joining. The chi-square was significant, $\chi^2 (1, n = 150) = 6.6, p = .017$. Examination of the data indicates that fewer people than statistically expected had never talked with someone in the safe groups ($n = 2, 2.3\%$ of group; expected count = 5.9), whereas more people than expected in the risky groups had never talked with someone ($n = 8, 12.9\%$ of group; expected count = 4.1). It is worth noting that the vast majority of the sample in both groups had spoken to at least one person in their face-to-face life about NSSI at the time of the study. In contrast, 64 of the participants (43%) reported that they had talked to no one face-to-face prior to joining the group (39.8% of the safe group and 46.8% of the non safe group). More specifically, prior to joining the group, 52% of the total sample had never spoken to a friend or family member, and 53% had never spoken to a mental health professional. At

the time of the study, 29.3% had still never spoken to a friend or family member, and 26.5% had never spoken to a mental health professional.

Structural Equation Modeling

Bivariate correlations between all observed variables are shown in Table 2, as well as total group means and standard deviations. Structural equation modeling was used to examine the hypothesized model using the two-step model (Anderson & Gerbing, 1988). The fits of the measurement and structural models were tested using maximum likelihood estimations in AMOS 18.0.

Original Measurement Model

CFA was conducted to test the overall fit of the measurement model. This was intended to assess the degree to which the underlying structure of the latent variables was accurate. Latent variables were allowed to covary freely. The initial measurement model showed a poor fit to the data on multiple measures, $\chi^2 (189, n = 151) = 373.70, p < .001$; CFI = .85; SRMR = .09, RMSEA = .08 (90% CI = .07-.09). (See Table 3 for comparison of fit indices for all models and recommended cutoffs.) Examination of factor loadings indicated that the Conflict and Real Me scales had factor loadings that were unacceptably low (standardized weights of -.30 and .10, respectively) (See Table 4). Therefore, they were removed from the measurement model, which was reassessed (see Tables 4 and 5).

Measurement Model 1

The corrected measurement model had a better fit to the data, with several fit indices at approximately the levels specified by Hu and Bentley (1999), $\chi^2 (149, n = 151) = 230.15, p < .001$; CFI = .93; SRMR = .08, RMSEA = .06 (90% CI = .04-.08) (see Table 3). As would be expected, the exogenous variables Initial Response and Group Dynamics were

Table 2
Means, Standard Deviations, and Correlations of All Indicator Variables

Variable	<i>M</i>	<i>SD</i>	1	2	3	4	5	6	7	8	9	10	11
1. Ini1	4.04	0.90	—										
2. Ini2	3.97	0.94	.55+	—									
3. Ini3	3.74	1.00	.46+	.62+	—								
4. Neg1	3.94	1.10	.18*	.03	-.04	—							
5. Neg2	3.79	1.18	.33+	.09	.10	.67+	—						
6. Neg3	4.45	0.84	.23+	.17*	.12	.31+	.39+	—					
7. Engage	14.25	2.39	.36+	.44+	.34+	.04	.12	.26+	—				
8. Conflict	8.76	2.91	-.23+	-.42+	-	.00	.07	-.11	-	—			
				.29+					.49+		—		
9. Cath	18.28	3.61	.28+	.35+	.30+	.07	.10	.23+	.36+	-.10	—		
10. Coh.	18.86	4.38	.38+	.45+	.44+	.10	.09	.28+	.44+	-.21*	.71+	—	
11. CSES	15.95	4.90	.44+	.40+	.44+	.10	.12	.25+	.41+	-.24+	.43+	.55+	—
12. Real Me	6.23	7.02	.04	-.06	.06	.02	.10	.17*	-.08	.05	.22+	.22+	.04
13. Import	10.38	2.45	.32+	.36+	.38+	.16*	.11	.30+	.45+	-.21+	.45+	.54+	.59+
14. Posts	2395	4037	.01	.09	-.02	-.13	-	-.08	-.02	.14	.14	.12	.10
							.17*						
15. Time	2.94	1.58	.17*	.13	.13	-.14	-.05	.01	.17*	-.03	.16*	.26+	.35+
16. Hide	3.94	1.10	.07	-.04	-.01	.05	.09	.12	.13	.02	.01	-.05	-.04
17. Comfort	2.49	1.23	-.06	.06	.06	-.15	-	-	-.05	.06	.01	.05	.02
18. MSPSS	46.34	14.42	-.03	-.04	-.03	.14	.12	.18*	-.06	-.03	-.06	-.07	-.14
19. FOD	37.83	14.12	.19*	.10	.01	.24+	.32+	.24+	.04	.08	.13	.07	.14
20. Lonely	28.58	5.00	.11	.16*	.08	.11	.15	.18*	.02	.11	.01	.01	.06
21. Dep.	12.26	6.26	.10	.07	.06	.09	.08	.04	.07	.15	.00	.05	.07
22. Anxiety	7.89	5.46	.22+	.11	.11	.15	.12	.01	.11	.12	.14	.05	.09
23. Stress	11.23	5.05	.15	.07	.09	.18*	.18	.12	.21*	.11	.14	.10	.12

Table 2 (cont.)

Variable	12	13	14	15	16	17	18	19	20	21	22	23
12. Real Me	—											
13. Import	.02	—										
14. Posts	.10	.04	—									
15. Time	.08	.30+	.26+	—								
16. Hide	.17*	-.04	-.24+	-.15	—							
17. Comfort	-.21*	.00	.19*	.15	.33+	—						
18. MSPSS	.38+	-.05	-.11	-.21+	.36+	-.32+	—					
19. FOD	.35+	.08	.11	-.01	.22+	-.17*	.41*	—				
20. Lonely	.33+	.03	.07	-.03	.31+	-.19*	.64+	.53+	—			
21. Dep.	.17*	.15	-.04	.15	.14	-.04	.23+	.39+	.42+	—		
22. Anxiety	.16*	.16	.03	.22+	.13	-.02	.16*	.36+	.39+	.58+	—	
23. Stress	.18*	.24+	.00	.21+	.08	-.05	.15	.33+	.34+	.66+	.73+	—

Note. *N* = 151. Ini1 = Initial response question “Understood,” Ini2 = Initial response question “Amazed,” Ini3 = Initial response question “Connected,” Neg1 = Negative FTF question “Distressed,” Neg2 = Negative FTF question “Afraid,” Neg3 = Negative FTF question “Embarrassed,” Cath = Catharsis subscale of the Curative Climate Instrument, Coh = Cohesion subscale of the Curative Climate Instrument, CSES = Collective Self-Esteem Scale identity subscale, Posts = total number of posts made since joining forum, MSPSS = Multidimensional Scale of Perceived Social Support, FOD = Fear of Disclosure scale from the Interpersonal Trust Questionnaire, Lonely = UCLA Loneliness Scale, Dep = Depression subscale of the Depression Anxiety Stress Scale. Variables 16 and 18 were reverse scored such that higher scores on 16 indicate less likelihood of making effort to hide scars and high scores on 18 indicate less social support. **p* < .05, +*p* < .01.

Table 3
Fit Indices for Measurement, Hypothesized, and Alternative Models

Model	χ^2	Df	CFI	TLI	SRMR	RMSEA (90% CI)	AIC
Original Measurement Model	373.70***	189	.85	.81	.09	.08 (.07-.09)	501.70
Measurement Model 1	230.15***	149	.93	.90	.08	.06 (.04-.08)	352.15
Model A	279.54***	163	.89	.87	.11	.07 (.06-.08)	373.54
Model B	156.34**	113	.95	.94	.07	.05 (.03-.07)	236.34
Measurement Model 2	147.39**	101	.95	.93	.07	.06 (.04-.08)	251.39
Model C	138.45	113	.97	.97	.07	.04 (.00-.06)	218.45
Recommended cutoffs (Hu and Bentler, 1999)			≥.95	≥.95	≤.08	≤.06	

Note. $N = 151$. Df = degrees of freedom; CFI = comparative fit index; TLI = Tucker-Lewis index; SRMR = standardized root-mean-square residual; RMSEA = root-mean-square error of approximation; CI = confidence interval; AIC = Akaike Information Criterion. ** $p < .01$, *** $p < .001$.

Table 4
Measurement Model Factor Loadings for Original and Corrected Versions

Variable and Measures	Original Measurement Model			Measurement Model 1		
	Unstandardized Factor Loading	Standardized Factor Loading	p	Unstandardized Factor Loading	Standardized Factor Loading	p
Initial Response						
Amazed	1.28	.82	.003	1.27	.82	.002
Understood	1.00	.67	.003	1.00	.67	.003
Connected	1.23	.74	.001	1.22	.74	.002
Group Dynamics						
Engagement	.49	.56	.003	.46	.52	.002
Cohesion	1.44	.89	.003	1.46	.91	.003
Catharsis	1.00	.75	.001	1.00	.76	.002
Conflict	-.33	-.30	.003	--	--	--
Group Identity						
Time Online	.34	.41	.002	.35	.41	.002
CSES	2.02	.77	.002	2.03	.78	.002
Import	1.00	.77	.002	1.00	.76	.002
Real Me	.38	.10	.383	--	--	--
NSSI Disclosure						
Converse	.69	.56	.004	1.00	.53	.002
Less Hiding	.58	.50	.001	1.06	.63	.002
Social Difficulties						
FOD	1.99	.61	.002	1.99	.61	.002
Lonely	1.00	.87	.002	1.00	.87	.002
MSPSS	2.36	.71	.002	2.37	.71	.002
Psych Distress						
Depression	1.03	.74	.003	1.031	.74	.003
Anxiety	.99	.82	.001	.992	.82	.001
Stress	1.00	.89	.005	1.00	.89	.005
Negative FTF						
Distress	1.00	.76	.002	1.00	.76	.002
Embarrass	2.87	.90	.001	2.89	.91	.001
Afraid	2.25	.44	.003	2.26	.44	.002

Note. $N = 151$. Bootstrap estimates using $N = 1000$, bias-corrected percentile method. CSES = Identity subscale of the Collective Self-Esteem Scale; FOD = Fear of Disclosure Index from the Interpersonal Trust Questionnaire; MSPSS = Multidimensional Scale of Perceived Social Support.

Table 5
Latent Variable Correlations for Original and Corrected Measurement Model

Latent Variable	Original Measurement Model							Measurement Model 1						
	1	2	3	4	5	6	7	1	2	3	4	5	6	7
1. Initial Response	--	.66	.65	.05	.14	.16	.19	-	.63	.65	.04	.13	.16	.19
2. Group Dynamics		--	.81	.04	-.00	.12	.15		--	.78	.05	-.00	.12	.15
3. Group Identity			--	.08	.03	.26*	.18			--	.10	.02	.25*	.18
4. NSSI Disclose				--	-.59	-.15	-.31*				--	-.59	-.16	-.26
5. Social Diffs					--	.48	.25*					--	.48	.25*
6. Psych. Distress						--	.20						--	.20
7. Neg. FTF							--							--

Note $N = 151$. Correlations and significance level based on boot-strapped sample of 1000 using the bias-corrected percentile model.

Bolded print indicates $p < .01$, $*p < .05$

strongly and significantly correlated, and thus were allowed to covary in subsequent structural models. The Negative Face-to-Face variable was uncorrelated to other exogenous variables and the relationship with Initial Response and Group Dynamics was therefore constrained to zero in the structural models.

Model A – Hypothesized Structural Model

The originally hypothesized structural model (Model A) was a poor fit for the data on several measures, $\chi^2 (163, n = 151) = 279.54, p < .001$; CFI = .89; SRMR = .11, RMSEA = .07 (90% CI = .06-.08). In addition to being a poor fit, several parameters quite important to the model were not significant (see Figure 2). Specifically, Group Identity had no significant direct or indirect effect on Social Problems, NSSI Discussion, or Psychological Distress. Given that the measurement model was a better fit for the data than the structural model, it was apparent that the model in this form did not capture the variance in the data.

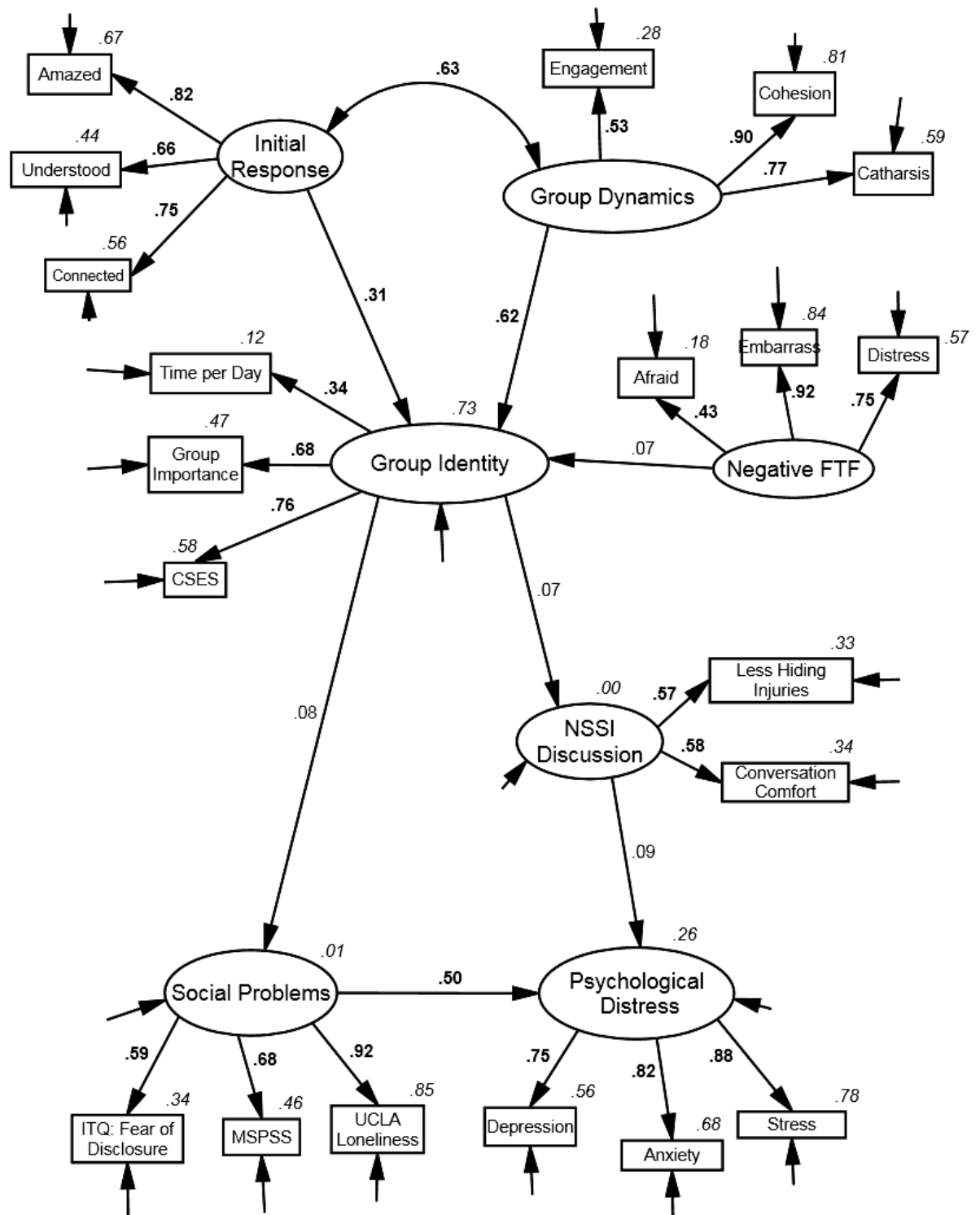


Figure 2. Model A. ($N = 151$). The structural model based on the originally hypothesized relationships. Numbers beside the arrows are standardized regression weights. Path coefficients and squared multiple correlations are averages from 1,000 bootstrap samples using the bias-corrected percentile method. CSES = Collective Self Esteem Scale – Identity Subscale; FTF = Face-to-face; MSPSS = Multidimensional Scale of Perceived Social Support; ITQ = Interpersonal Trust. Arrows without labels are error terms. Regression weights in bold are significant at a minimum of $p < .05$. Italicized numbers above predicted variables are squared multiple correlations, all of which were significant at $p < .05$.

Model B – Group Identity Directly Affecting Distress

An alternative model was tested which hypothesized that Group Identity would have a direct impact on Psychological Distress and that it would have an indirect effect on Social Problems mediated by a direct relationship with Comfort with Discussion (See Figure 3). That is, greater degree of forum identification would directly increase psychological distress. However, it would also increase comfort with the topic of self-injury, which would decrease problems in social functioning (and, thus, indirectly decrease psychological distress). For the sake of parsimony, the Negative Face-to-Face Experiences variable was dropped from this analysis since it did not contribute to the first model and since it was the variable least similar to those included in prior studies.

This alternative model was a better fit to the data. Results of the fit indices indicated a moderately good fit on multiple measures, $\chi^2 (113, N = 151) = 156.34, p = .004$; CFI = .95; TLI = .94; SRMR = .07; RMSEA = .05 (90% CI = .03 - .07). (See Table 3) The majority of parameters in the model were significant, with the exception of the paths from Group Identity to NSSI Discussion ($p = .79$) and from Group Identity to Psychological Distress ($p = .06$). The majority of indicator variables loaded acceptably onto their respective latent variables, with the exception of Time Online (see Figure 3).

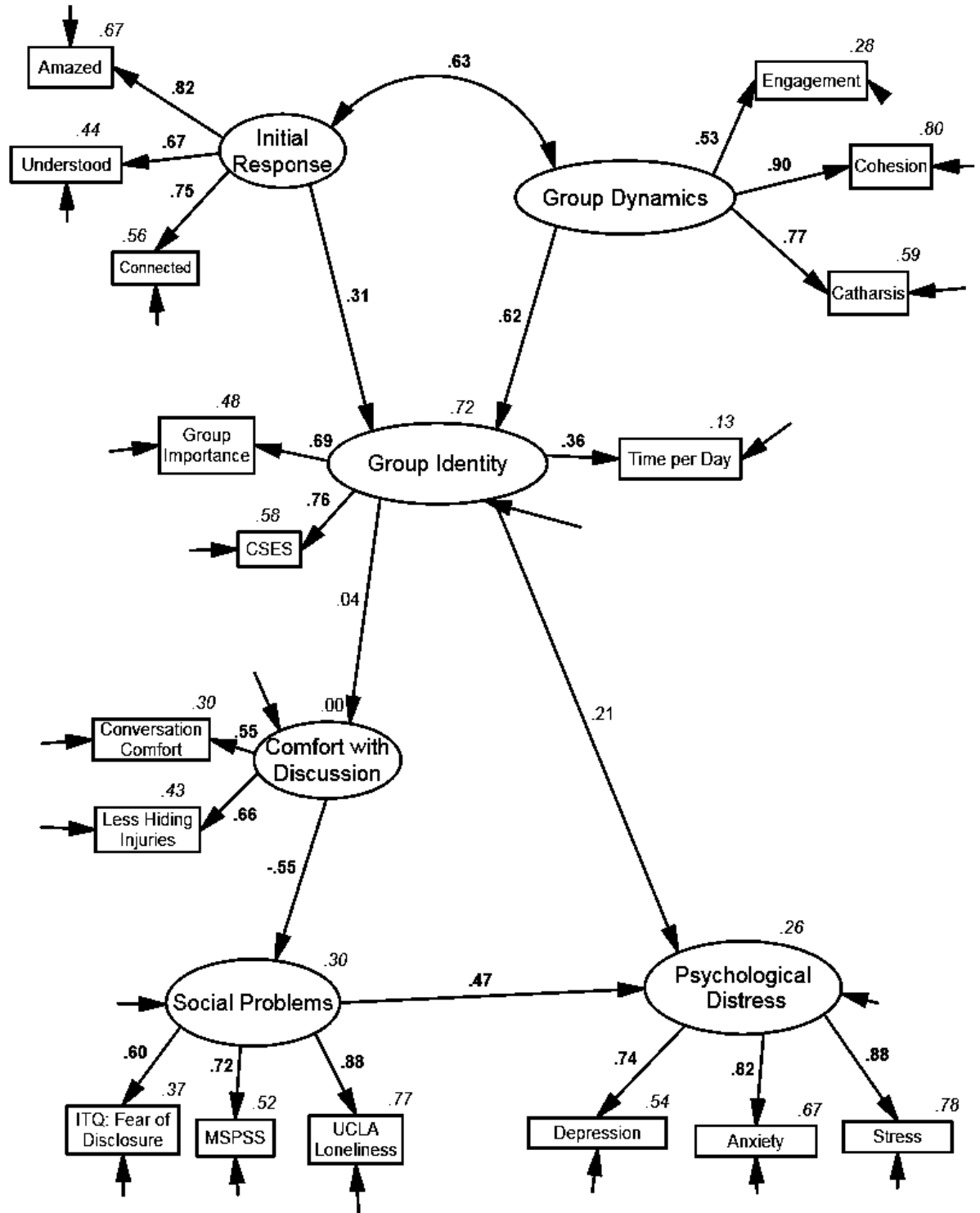


Figure 3. Model B ($N = 151$). Alternative model in which Group Identity had a direct effect on Psychological Distress. Numbers beside the arrows are standardized regression weights; bold indicates $p < .05$ at a minimum. Numbers above predicted variables are squared multiple correlations, italics indicate significance of at least $p < .05$. Path coefficients and squared multiple correlations are averages from 1,000 bootstrap samples. CSES = Collective Self Esteem Scale – Identity Subscale; MSPSS = Multidimensional Scale of Perceived Social Support; ITQ = Interpersonal Trust Questionnaire. Higher scores on the MSPSS indicate less social support. Arrows without labels are indicative of error terms.

Model C – Time Online as Mediator Variable

Due to the poor loading of Time Online, a final model was created post-hoc and tested. It was noted that, although amount of time online per day had satisfactory, though marginal, loadings on Group Identity in the measurement model, its standardized loading on the latent variable in the first and second structural models were only .38 and .36, respectively. However, analysis also indicated it had significant and moderate bivariate correlations with the two other variables that made up the Group Identity variable. It was therefore hypothesized that the amount of time spent online per day might be a separate variable, though related, that would mediate the effects of Group Identity on offline variables. That is to say, strength of identification with the group would increase the amount of time spent online per day. This increased exposure to people discussing NSSI would likely increase social comfort with the topic and therefore be negatively related to social distress. However, based on previous literature (van den Eijnden 2008), it was also possible that people who spent greater amounts of time online would be more likely to use the Internet compulsively or in ways that led to increased depression, even if the amount of loneliness was not increased due to greater amount of time spent online.

Based on this prior work, an alternative model was tested in which Time Online was a latent variable with the estimated amount of time participants spent on the forum per day as sole indicator variable (see Table 6). Confirmatory factor analysis was used to evaluate the accuracy of the new measurement model, and had acceptable fit, $\chi^2(101, N = 151) = 147.39, p = .002$; CFI = .95; TLI = .93; SRMR = .07; RMSEA = .06 (90% CI = .04 - .08). (See Tables 3, 6, and 7 for information on Measurement Model 2).

Table 6
Factor Loadings for Measurement Model 2

Latent Variable and Measures	Unstandardized Factor Loading	Standardized Factor Loading	<i>p</i>
Initial Response			
Amazed	1.06	.83	.003
Understood	.80	.66	.003
Connected	1.00	.74	.002
Group Dynamics			
Engagement	1.00	.53	.002
Cohesion	3.16	.91	.003
Catharsis	2.18	.76	.001
Group Identity			
CSES	3.37	.69	.002
Import	2.21	.91	.001
NSSI Disclosure			
Converse	.67	.56	.002
Less Hiding	.70	.64	.004
Social Difficulties			
Trust	1.96	.61	.002
Lonely	1.00	.86	.002
MSPSS	2.36	.71	.002
Psych Distress			
Depression	1.04	.74	.003
Anxiety	1.01	.82	.001
Stress	1.00	.88	.004
Time Online			
Time per Day	1.00	.77	.001

Note. *N* = 151. *N* = 1000 bootstrap using bias-corrected percentiles. CSES = Identity subscale of the Collective Self-Esteem Scale; FOD = Fear of Disclosure Index from the Interpersonal Trust Questionnaire; MSPSS = Multidimensional Scale of Perceived Social Support.

Table 7
Latent Variable Correlations for Measurement Model 2

Latent Variable	1	2	3	4	5	6	7
1. Initial Response	--	.63	.56	.04	.14	.16	.19
2. Group Dynamics		--	.71	.05	.00	.13	.35
3. Group Identity			--	.05	.03	.25	.47
4. NSSI Disclose				--	-.56	-.15	.32*
5. Social Diffs					--	.48	-.11
6. Psych. Distress						--	.31
7. Time Online							--

Note: *N* = 151. Correlations in bold reflect *p* < .01, **p* < .05.

Once again, Initial Response and Group Dynamics were highly correlated in the measurement model and were therefore allowed to covary during analysis of the structural model (See Figure 4). The model was initially tested with both a direct path from Group Identity to Psychological Distress as well as an indirect path mediated by Time Online. In the new model, the direct path was non-significant and closely approached zero (unstandardized weight = .006; standardized weight = .002; $p = .98$). This indicates that the effect of Group Identity on Psychological Distress is completely mediated by Time Online. Therefore, the direct path was removed from the final model. The final model provided a good fit to the data on all fit indices, $\chi^2 (113, N = 151) = 138.45, p = .056$; CFI = .97; TLI = .97; SRMR = .07; RMSEA = .04 (90% CI = .00 - .06). (See Table 3.) Additionally, it had a smaller AIC (218.45) than either Model A (AIC = 373.54) or Model B (236.34) indicating a better fit for the data than the other two models.

Analysis of Direct and Indirect Effects

Bootstrapping was used to obtain estimates of the total, direct, and indirect effects and the significance of these effects (see Table 7). Bootstrapping was considered to be a more appropriate method for such estimation than the Sobel method due to small sample size (Shrout & Bolger, 2002).

As shown in Table 8, the total effects of Group Identity, Time Online, and NSSI Discussion on both Social Problems and Psychological Distress were significant (See Figure 4 for pathways). The effect of Group Identity on Psychological Distress is fully mediated by Time Online, as discussed previously. The effect with the largest magnitude was the one between comfort with discussion of NSSI and decreases in social distress (Total Effect = -.55, $p < .01$). This, in turn, means comfort with NSSI discussion has a

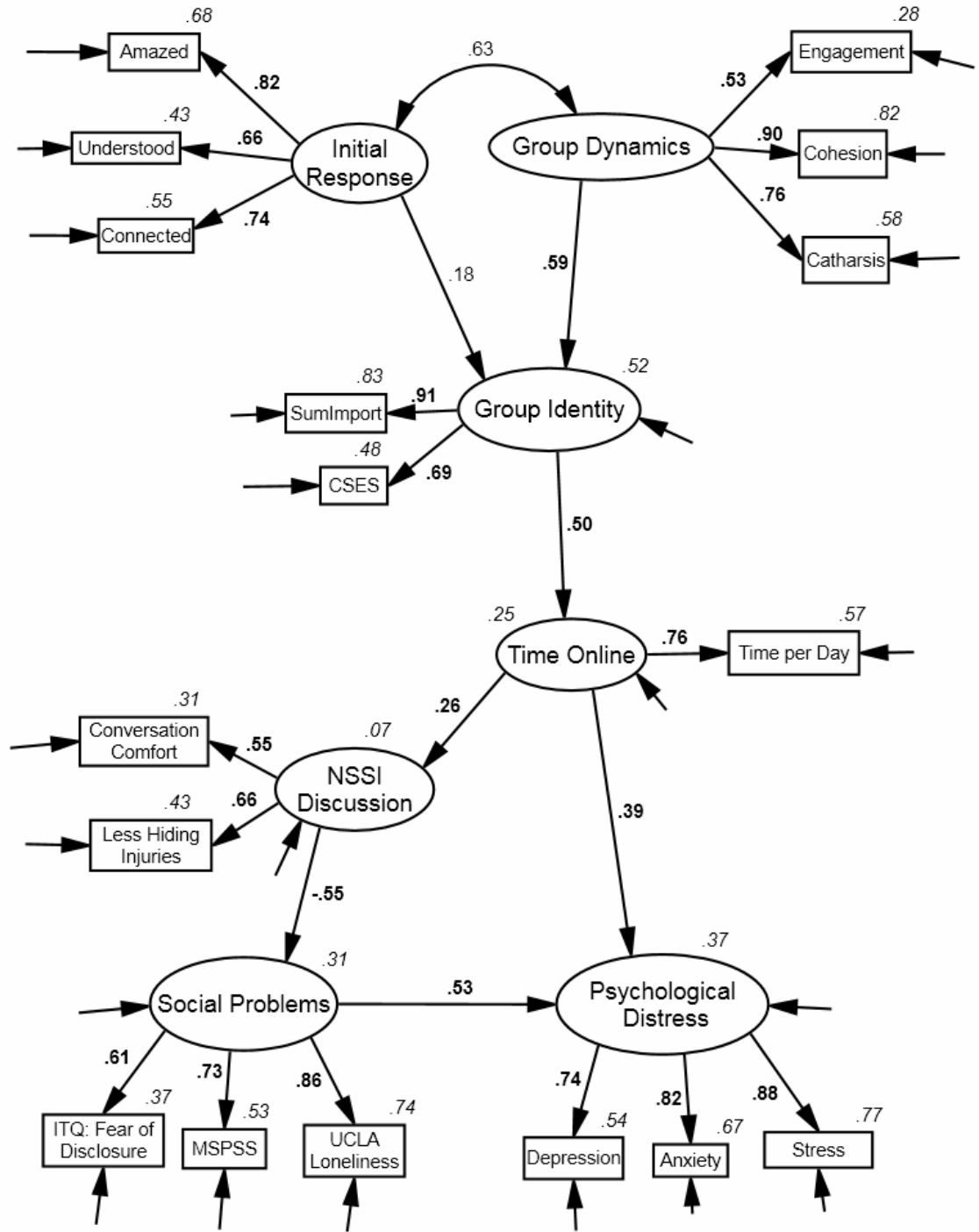


Figure 4. Model C ($N = 151$). The final model with Time Online as a latent mediator variable. Numbers beside the arrows are standardized regression weights. Numbers in bold were significant at a minimum of $p < .01$, except for the arrow between Time online and NSSI discussion which was significant at $p < .05$. Italicized numbers above predicted variables are squared multiple correlations, all of which were significant at $p < .01$. Path coefficients and squared multiple correlations are averages from 1,000 bootstrap samples. Significance was calculated using the bias-corrected percentile method. CSES = Collective Self Esteem Scale – Identity Subscale; MSPSS = Multidimensional Scale of Perceived Social Support; ITQ = Interpersonal Trust Questionnaire. Higher scores on the MSPSS indicate less social support. Arrows without labels indicate error terms.

significant indirect effect of less psychological distress (Total Effect = $-.29$, $p < .01$). It appears that the ability to feel comfortable with the topic of self-injury, as well as not feeling compelled to hide indications of self-injury ultimately is associated with better social and psychological adjustment.

Also, it appears that strong identification with an online group is not, in itself, related to greater psychological distress. In fact, such identification can have a slightly ameliorating effect on social problems (Total Effect = $-.08$, $p < .05$). However, group identification associated with an increase in daily time spent online is associated with greater psychological distress (Total Effect = $.16$, $p < .01$). Additionally, Group Dynamics and Group Identity both significantly influence the amount of time spent on the forum, as would be expected. (That is, if one is in a group with which one strongly identifies, and which has positive dynamics, one would be expected to spend more time there.)

Table 8
Standardized Total, Direct, and Indirect Effects on Social Problems, Psychological Distress, and Time Online

Mediated Effect	Total Effect (90% CI)	Indirect Effect (90% CI)	Direct Effect (90% CI)
Initial Response → Social Problems	-.02* [-.06, .00]	-.02* [-.06, .00]	--
Group Dynamics → Social Problems	-.05* [-.11, -.04]	-.05* [-.11, -.04]	--
Group Identity → Social Problems	-.08* [-.16, -.02]	-.08* [-.16, -.02]	--
Time Online → Social Problems	-.15* [-.31, -.04]	-.15* [-.31, -.04]	--
NSSI Discussion → Social Problems	-.55** [-.74, -.34]	--	-.55** [-.74, -.34]
Initial Response → Psych Distress	.04* [.01, .10]	.04* [.01, .10]	--
Group Dynamics → Psych Distress	.10** [.04, .20]	.10** [.04, .20]	--
Group Identity → Psych Distress	.16** [.08, .30]	.16** [.08, .30]	--
Time Online → Psych Distress	.31** [.15, .51]	-.08* [-.18, -.02]	.39** [.22, .59]
NSSI Discussion → Psych Distress	-.29** [-.42, -.16]	-.29** [-.42, -.16]	--
Initial Response → Time Online	.09 [-.01, .20]	.09 [-.01, .20]	--
Group Dynamics → Time Online	.30** [.18, .45]	.30** [.18, .45]	--
Group Identity → Time Online	.50** [.36, .61]	--	.50** [.36, .61]

Note. $N = 151$. Bias-corrected confidence intervals (CIs) and corresponding p values are reported. Effects are reported for Model C. Reported effects are averages from 1000 bootstrap samples using bias-corrected percentile method. Dashes indicate that there was no pathway in the model (see Figure 4).

* $p < .05$, ** $p < .01$.

CHAPTER V

DISCUSSION

The effects of Internet-based interactions on day-to-day life and emotional health are complicated and multifaceted things. This study was undertaken to understand what causes a person to identify with an online group, and to test and expand on the model put forth by McKenna & Bargh, 1998. Furthermore, groups who had protections from graphic content in place for their users were compared to those that did not on the variables of interest. This chapter reviews the findings related to each variable of the model in light of the 1998 study and initial hypotheses of this study, as well as puts their placement in the final model into context of theory. Next, reasons for the similarities and differences between types of groups are discussed. Finally, implications for research and practice are explored and limitations of the study noted.

Findings in Relation to Initial Hypotheses

The findings of this study provided some support for the application of the basic model put forth by McKenna and Bargh (1998) and its expansion. An important hypothesis that was supported was that group dynamics are important to group identification, along with participation in the group. However, the original hypotheses regarding the effects of group identity on offline functioning were not supported.

The final model, developed post-hoc, tentatively suggests that time online, one of the indicator variables used in the 1998 study for the latent variable of group identity,

may be better understood as a variable in its own right. If true, this potentially leads to a new interpretation of the 1998 model. Additionally, it was found that comfort with discussion of self-injury and a decreased need to conceal its effects has positive benefits for social support, ability to trust, and feelings of loneliness, which leads to a decrease in psychological distress. This has interesting implications for future research as well as for clinicians and others who work with those who engage in NSSI.

The following section discusses the original hypotheses related to the latent variables initially proposed, the actual findings, and the implications of the effects found.

Exogenous Variables: Initial Response, Group Dynamics, and Negative FTF

To begin with, the final model provided a new understanding of what contributes to making an online group important to a person's sense of identity. In the 1998 study, McKenna and Bargh simply used the dichotomous variable of post/lurk to predict the degree to which group identity would be considered important. It was theorized that, since the identity was invisible in the offline world, active participation in a group was necessary in order to be impacted by group membership. While this may be true, the present study introduced other variables that were shown to have an impact on identification with the online group.

In the Williams 2006 study, the finding that generalized across all participants was that they experienced strong feelings of being accepted by their online group, both as an immediate reaction to the group and as an enduring property of belonging to the group. This was the basis for positing that initial response to the group and group dynamics would have an impact in the importance of the group to a person's sense of identity. This was confirmed in the present study. The degree to which a person initially

had a positive reaction to the group and the degree to which the group interactions were viewed as positive both had significant effects on the importance of group identity. Also, somewhat intuitively, these two variables were strongly correlated with one another (i.e., a person is perhaps more likely to have a strong, initially positive response to a group where they dynamics are positive and accepting.) Previous studies have noted that a good deal of what makes up group interactions are messages of informal support (Whitlock, 2006). The McKenna and Bargh (1998) study noted that groups of people with marginal-concealable identities were more likely to receive positive responses to their posts than people in other types of online groups. The findings of this study are consistent with those of previous studies. It seems that people are naturally more likely to feel bonded and strongly identify with a community where they perceive members as cohesive, engaged, and willing to accept others and provide positive feedback.

The Williams (2006) study was also the basis for including the Negative FTF variable as an exogenous variable. Findings from that study indicated that people in the Internet groups typically reported being misunderstood by people in their face-to-face lives and receiving responses that were unhelpful when they disclosed their self-injury. It was hypothesized that having such interactions would increase the salience of an accepting Internet group to one's identity. The findings of this study did not bear this out. Contrary to the original hypothesis, the negative face-to-face experiences variable did not significantly affect group identity importance. Participants rated the degree to which they had ever felt distressed, embarrassed, or afraid that others would not understand their self-injury. The items in this variable were viable as a latent variable; however, it did not contribute to the model. It is possible that online group identification is not related to

negative offline experiences. It is also possible that the items did not tap the aspects of offline experience that would cause a person to identify more closely with a group of similar people online. The variable asked participants to rank the degree to which they had ever had the experience of being distressed, embarrassed, or afraid due to conversation with others regarding their self-injury. However, 42.7% of participants indicated that they had never discussed their self-injury with anyone prior to joining the forum, compared to 78.1% who had spoken to someone afterwards. It may be that participants are avoidant of such conversations unless they feel secure in discussing it with another person. Therefore, it may be beneficial for future studies to follow up with a study on whether perceived stigma or shame regarding self-injury predicts group identity import, rather than actual negative experiences.

The Group Identity Import Variable

This variable, as it came to be measured in the final model, was something of a departure from the original. Yet, in the model's final form, it does provide some support to the original theories of Bargh and McKenna (1998). In 1998, the authors tested the hypothesis that group identity would have a direct effect on social isolation, estrangement, self-acceptance, and coming out. This study's original model used time online as an indicator of the variable of group identity import rather than a separate variable. This context of the original variable must be understood in order to appreciate the potential similarities and differences between those results and these. The McKenna and Bargh study findings indicated that group identity significantly affected all dependent variables except for social isolation, which was directly affected by group participation (i.e., posting vs. lurking) rather than group identity.

In this study, group identity import was examined for direct effects on NSSI discussion and concealment (analogous to the “coming out” variable in the 1998 study) and social problems (analogous to estrangement and social isolation). Model A and Model B did not replicate the effects found in the 1998 study. However, the Model C provided some indication as to why this relationship was not supported as originally conceptualized and does support the existence of important relationships between the variables included.

Model C tested a variation on the 1998 model such that group identity was hypothesized to directly affect daily time spent online, rather than including time online as a part of group identity import. Time online was, in fact, significantly predicted by group identity. In turn, time online was shown to directly affect NSSI discussion positively and psychological distress negatively. NSSI discussion related to decreased social problems, and thus indirectly decreased psychological distress.

The actual standardized path coefficient between time online and NSSI discussion in this study, $r = .26$, was quite close to that found between the group identity and coming out variable in the McKenna and Bargh (1998) study, wherein $r = .24$. This raises the possibility that their inclusion of time online in the group identity variable may be the reason for the associations found and the differences between the findings of that study and this. This would suggest that future research change this model to take into account time spent online daily as a variable separate from how important the group is to one’s sense of self.

McKenna & Bargh (1998) asked questions that differentiated self-acceptance with disclosure to others (i.e., coming out). In this model, that was measured by comfort

talking about NSSI and the decision not to conceal scars. Group identity did not affect this directly. It may be that if questions about self-acceptance related to NSSI had been asked more directly in this study, a direct relationship between group identity import and self-acceptance would have been found. It would be useful for future studies to explore more fully the relationships of self-acceptance and NSSI disclosure with loneliness and social support.

Social Problems

Interestingly, and contrary to hypothesis, it was found that neither group identity nor time online directly affected social problems. Rather, all variables in the model affected it indirectly, mediated by NSSI disclosure. The direct effect of NSSI disclosure on social support was the strongest effect found in the model (see Table 8). Although NSSI disclosure was only weakly (though significantly) predicted by the other variables in the model, this finding has serious clinical significance. Social problems were a significant predictor of psychological distress. If reducing shame and increasing comfort with the topic of NSSI reduces loneliness and increases social support, this provides an avenue for positive therapeutic intervention. The relationship between NSSI discussion and social problems is unclear and is a ripe topic for future research. Although it is possible that fewer social problems would predict more confidence in NSSI discussions, an attempt to modify the model so that social problems predicted NSSI disclosure was not a good fit. This would indicate that feelings regarding self-injury lead positive social outcomes, and not the other way around.

Psychological Distress

Psychological distress was not studied in the McKenna and Bargh (1998) model. It was added to this model due to the strong relationship documented between self-injury and negative emotionality. There were two variables within the study that had a significant impact on psychological distress – social problems and time online. Time online fully mediated the relationship between group identity and psychological distress. That is to say, for the sample as a whole, identification with a forum as a community is not distressing except to the degree that such identification increases the amount of time daily participating in the community. Although time online has a slightly ameliorating effect in that it decreases social problems, the relationship with psychological distress is stronger.

As would be expected, NSSI discussion had a significant and relatively strong indirect effect on psychological distress, mediated through social problems. In other words, people who were more comfortable discussing NSSI and felt less need to hide it exhibited fewer problems in their social lives, which led to a decrease in psychological distress.

Online Group Type: Similarities and Differences

The two MANOVAs performed between the two group types showed interesting results. As predicted, there were no differences between the safe and risky groups in terms of the degree to which they identified with the group, group dynamics, or initial response to the group. Thus, group norms around content and protecting members from potential triggers do not appear to affect identification with the group or group dynamics. However, there were significant differences in loneliness, social support, depression,

anxiety, and stress levels such that the “risky” groups had more negative scores on all of these measures. It may be that, due to lack of warning, participants in these groups routinely expose themselves to more triggering or emotionally distressing material than members of the “safe” groups. This would potentially lead to more time spent ruminating on distressing or anxiety-provoking material. It could also be the case that the posting of more positive, hopeful, distracting, or conversational material on the forum is not encouraged to the same degree. Future studies would do well to distinguish in content between forums of different types and the emotions aroused by reading such content.

It is also interesting to note that group type did not have an effect on fear of disclosure or having had negative face-to-face experiences with discussing self-injury. All three indicators for negative FTF experiences had significant bivariate correlations with fear of disclosure at the $p < .01$ level (see Table 2). These were the strongest correlations the negative FTF items had with any variables but one another. It may be that the negative experiences with disclosure decrease ability to trust and increases fear of disclosure uniformly across groups, and that group interactions of any type have limited power to mitigate this fear.

It is important to note that there was no non-Internet control group used in this study. It is therefore unknown whether either or both of the two groups have significantly different degrees of distress than people who have not joined or participated in an Internet-based support group.

Implications for Research, Practice, and Theory

Implications of the Structural Model

The final model suggested that psychological distress associated with participation in self-injury related online forums had more to do with the amount of time spent online per day than with the strength of group identification. That is to say, greater identification with an online group does not increase depression, anxiety, and stress by itself. Rather, strong identification with the group is associated with increase in time spent online, and the increase in time is directly associated with negative psychological health. This is consistent with research from van den Eijnden (2008). That study found that participation in online messenger activities among people high in trait loneliness actually was associated with decreased loneliness, but with increased depression and compulsive Internet use. People are likely drawn to such groups due to alienation and loneliness, and such groups provide powerful reinforcement for remaining. This may be a community where one is able to be engaged and express things that cannot be said out loud. However, such powerful reinforcement may lead to negative patterns of Internet use to the exclusion of face-to-face contacts and healthy behaviors.

Group identity may be beneficial for one's sense of social support and connectedness to the degree that it influences greater self-acceptance and less self-consciousness regarding NSSI. Since group identity had no effect on NSSI disclosure without the mediation of time online, it seems that this process is accomplished through exposure to the forum. (Group identity did have a small but significant indirect effect on social problems with time online as a mediator. See Table 7.) However, it is unclear if

there is a point at which the potential social benefits become outweighed by psychological risk factors.

The only variable which had the effect of decreasing both social problems and psychological distress was NSSI disclosure. Time online did have a significant, if relatively small, value in predicting such disclosure. This is consistent with the findings of both the McKenna and Bargh (1998) and McKenna, Green, and Smith (2001) findings. They suggested that the more involved a person was with an online group, the more likely it would be that a person would bring aspects of that identity into their face-to-face life. It is also consistent with the previous study by Williams (2006), which found that the majority of respondents described positive changes in their interactions with others based on their membership in the group, such as being more confident when discussing their self-injury face to face. Additionally, the strength of the relationship of NSSI disclosure behaviors to social problems indicates that people who do not feel comfortable with the topic of NSSI or who go to serious efforts to hide its effects are more likely to be lonely and have less social support. Thus, shame regarding NSSI does have the potential to increase psychological distress. Providing factual information about the behavior and how to respond in an appropriate and helpful manner to people likely to encounter the behavior – teachers, school counselors, dorm advisors, etc. – may have benefits for this population.

Also, although NSSI disclosure was significantly predicted in the model, only a small amount of variance was accounted for. Other factors which predict this are a potential avenue of further exploration. This is a major point at which educators, therapists, and other helping professionals may be able to intervene in order to improve

social and psychological outcomes. Increasing education regarding the reasons for self-injury and providing an environment in which the topic can be discussed without shame may reduce the social and psychological burden of feeling alienated by the behavior. This in turn may lead to a decrease in depression, stress, and anxiety. Certainly, the relationship between self-consciousness about self-injury and psychological sequelae is one the research would do well to explore further.

Different Group Types

Two types of forums were examined in this model, those labeled safe in which participants were required to police their postings and warn others of potential triggers, and those labeled risky in which participants had fewer rules about what to post and did not have to warn others before posting. Although the sample was not big enough to compare the performance of the structural model based on the two types of forums, the MANOVAs conducted did have interesting results. It was found that participants had no differences in the variables related to the Internet group, including time spent online. However, they did significantly differ on several variables related to social problems and depression. It appears that belonging to groups in which one is not encouraged to monitor emotional tone or graphic nature of postings may be related to poorer outcomes relative to those who do have such protections. However, there is also potential that apparently unhealthy sites can be used in a healthy manner, such as a person making individual friends who are encouraging of healthy behavior. It is also possible for a person to use apparently neutral or healthy websites in a manner that is unhealthy. If a person is compulsively using the Internet to the exclusion of real life activities or connections, it probably doesn't matter if the website is something as apparently harmless as a book

club, the outcomes may be harmful. It is important for people who work with this population to be aware of this and to be able to ask sensitive questions regarding the nature of the online forum being used and the meaning the individual using it gets from it. Different styles of web forum have potential to encourage or discourage emotional regulation. This is a topic yet to be explored by the research. Additionally, although the results are not definitive, it does seem that people who belong to riskier groups may be less likely to talk about self-injury with others, and thus feel more isolated. One possibility is that such groups may be more discouraging of disclosing NSSI to others.

A question that remains open is whether the model is equally applicable to both group types. For example, it is possible that time online is more strongly associated with decreases in social problems for people involved in more protected groups, and more associated with social problems and psychological distress for people in riskier groups.

Limitations

The current study does have several limitations that need to be kept in mind. To begin with, sample size was relatively small for the statistical procedure of SEM, in which several authorities recommend sample sizes of at least 200 or use general rules of a certain number of subjects per parameter (e.g., 10-20 per parameter) (Gore & Weston, 2006; Martens 2005). As this model is very complex with multiple estimated parameters, those guidelines obviously were not followed in this study. However, recent research by Jackson (2007) indicates that in samples of less than 200, the number of subjects per parameter does not appear to have an effect on the accuracy of model fit estimation. Furthermore, he found that both overall sample size and number of subjects per parameter were far less important than the reliability of the measures used. All measures

used in this study had at least moderate to good reliability. Additionally, bootstrapping was used to create parameter estimates, confidence intervals, and to assess the effects of the variable upon one another. This is a way of checking that the models' effects were not simply artifacts of sample size (Shrout & Bolger, 2002).

However, bootstrapping is not a panacea in that it is limited to creating its distribution from the sample at hand, and if that sample is not representative of the population being studied, the bootstrapped sample will not be either. The demographics of the study are consistent with previous studies, indicating it is not likely that the sample was terribly different in terms of gender and age from populations studied previously. All variables included in the models did demonstrate good univariate normality, which also suggests the sample was representative. Even so, there is no way to be absolutely certain that there are not important differences between group members who participated and those who did not. A further limitation is that the previously published measures used were originally developed for offline populations and have not been extensively studied with online groups. While, in terms of reliability, the measures behaved the same as they have in previous studies, this is something of which to be aware.

The initially proposed model was not a good fit for the data. The final alternative model was developed post hoc. It is important that these findings considered exploratory. Follow-up studies are necessary to confirm the usefulness this current model.

The participants in this study were all members of discussion boards, which are online forums used anonymously. In recent years, social networking (e.g., Facebook) has become an increasingly popular means of using the Internet to connect to others in a way

that is far less anonymous. It is possible that these findings may not generalize to participants who connect with others through such sites.

Conclusion

Self-injury is a behavior that often causes people who engage in it to feel alienated and ashamed. The Internet has provided a natural haven for these people to discuss the day-to-day realities of the behavior and provide one another with support. However, such forums also open the doors to such activities as the sharing of methods and untrammelled negative emotions. Membership in such group has the potential for both benefits and risk. It seems that people who initially feel strongly connected to the group where they are safe to express themselves are more likely to come to view group belonging as important to their identity. The group may be viewed as a community in its own right of which they are a contributing member. However, this incorporation of the group into identity may also lead to an increase into time spent in group-related activities, and this appears to have a complex relationship with outcomes.

Spending a great deal of time on such groups may be associated with increases in depression, anxiety, and stress. On the other hand, some portion of this time may have the positive effect of decreasing shame and increasing comfort with discussion of NSSI. This, in turn, increases social support and decreases loneliness. It is important that clinicians and others who work with people in such groups are aware of this function, so exploration of pros and cons of belonging to such a group is done in a balanced way. Furthermore, professionals may have their own part to play in aiding people who self-injure in feeling less self-conscious regarding the topic. This may decrease the

psychological burden of secrecy and increase the chance for accepting support from others.

APPENDICES

Appendix A

Participant Informed Consent: Main Study

You are being asked to participate in a research investigation as described in this form. The principal investigator of this project is Kirsten L. Williams, a doctoral student in Counseling Psychology at the University of North Dakota. A basic explanation of this study is given below. If, after reading this explanation, you agree to participate in this study, please indicate this by clicking on the SUBMIT button below which states your intent and consent to participate. You may print this consent form for your records.

This study seeks to understand the experience of people who engage in self-injurious behavior and are members of online groups composed of people who self-injure. You are being asked to participate in this study based on your use of an online support group for people who self-injure. In order to participate, you must be 13 years of age or older.

Specifically, I am interested in the differences between different types of Internet groups and the effects participation in these groups has on loneliness, social support, group identity, and emotional distress. In order to understand this, I am looking for participants who are willing to answer questions about these issues, themselves, and their use of the Internet.

The amount of time it takes to complete this questionnaire may vary, but I anticipate it will take approximately 10-20 minutes. You will initially be taken to a demographics questionnaire. You will then be asked questions about your use of an Internet support group. You will then be asked questions from several different questionnaires about your emotions over the past few weeks, your feelings about the self-injury forum you belong to, and various other things. At no time will you be asked questions about methods of self-injury, abuse or sexual history, and there is no graphic content.

Possible risks to you from the study include are primarily emotional in nature. Self-injury can be a sensitive topic for many people, as can issues about mood and social support. If you anticipate that answering such questions will cause you to feel the urge to self-injure, we ask that you not participate in this study.

Other possible risks to you include risks of confidentiality. Although your email address and IP address will not be attached to your answers to ensure your anonymity, it must be remembered that no information sent via the Internet can be completely secured. It is possible for this questionnaire to be intercepted. In order to minimize the risks of this, the questionnaire is being collected by a secure, professional website. The questionnaire is encrypted, as are your responses. The data will not be retrievable from your computer

once you have entered it, nor will it be stored on a webpage. It will only be accessible to the primary investigator of the study and the people responsible for IRB procedures at her university. Any printed responses will not have identifying information on them, and will be stored in a locked file cabinet for three years, at which time they will be shredded.

Possible benefits to you from this study include the experience of reflecting on your own experiences in being supported. Additionally, at the end of the study, a list of resources such as crisis lines will be provided. At a societal level, knowledge may be gained about the kind of Internet support available for people who self-injure and the impact of such support. Mental health professionals may be given a better understanding of the experience of discussing self-injury, and about the role Internet support groups can play in the lives of people who self-injure. This study has potential to increase understanding about the experience of people who engage in an often misunderstood behavior.

We ask that you not participate in this study if you are under the age of 13. We ask that while participating in this study, you keep yourself as safe from self-injury as possible (e.g., have a plan for talking to someone if triggered by a question, not answering or dwelling on questions which are too uncomfortable, call a crisis line such as 1-800-784-2433). If you begin to participate in this study and find there are questions to which you do not wish to respond, you are not required to respond to those questions or complete the survey.

You are responsible for any and all financial expenses associated with any additional services you receive as a result of participating in this study.

If you have questions concerning your rights as a participant, you may find these at www.und.edu/dept/rdc. If you have questions regarding the study, you may contact Kirsten L. Williams at kirsten.williams@und.edu, or her advisor, Dr. Cindy Juntunen, at 701-777-3740. If you have questions regarding your rights as a research participant, or if you have any concerns or complaints about the research, you may contact the University of North Dakota Institutional Review Board at (701) 777-4279. Please call this number if you cannot reach research staff or you wish to talk to someone else.

If you agree to participate, please read the following statement and click on the “Submit” button below.

I CERTIFY THAT I AM 13 YEARS OF AGE OR OLDER. I CERTIFY THAT I HAVE READ AND UNDERSTAND THE INFORMED CONSENT FOR THE INVESTIGATION CONDUCTED BY KIRSTEN L. WILLIAMS “Functions of Self-Injury Internet-Based Support Groups” AND WILLINGLY CONSENT TO PARTICIPATE. I UNDERSTAND THAT I HAVE THE RIGHT TO WITHDRAW PARTICIPATION AT ANY TIME DURING THE STUDY.

Submit

Very Uncomfortable

1

2

3

4

Very Comfortable

5

Please choose the answer that best indicates how much you agree with the following statements.

1. Strongly Agree, 2. Somewhat Agree, 3. Neutral, 4. Somewhat Disagree, 5. Strongly Disagree

1. When I joined, I was amazed to find so many people like me.
2. I instantly felt understood when I started using this forum.
3. I felt an immediate connection with other people on this forum.

Please choose the answer that best indicates how much you agree with the following statements.

1. Strongly Agree, 2. Somewhat Agree, 3. Neutral, 4. Somewhat Disagree, 5. Strongly Disagree

1. I have been distressed by the way someone offline has reacted to my self-injury.
2. I have been embarrassed by someone's response to self-injury in my face-to-face life.
3. I have been afraid that if I tell someone about my self-injury, they will not understand what I am talking about.

Before you joined this forum, did you talk about your self-injury to any friends or family members?

Yes

No

Since joining this forum, have you talked about your self-injury to anyone friends or family members who did not know about it previously?

Yes

No

Before joining the forum, had you spoken to any mental health professionals about your self-injury?

Yes

No

Since joining the forum, have you spoken to any mental health professionals about your self-injury who did not know about it previously?

Yes

No

Please indicate how strongly you agree or disagree with each of the following statements. Please think about these questions in regards to how you feel about your face-to-face interactions.

1 = Strongly Agree

2 = Agree

3 = Disagree

4 = Strongly Disagree

Sometimes I am unable to confide even in someone who is close to me.

Sometimes I want to talk things over with a friend but just cannot.

To discuss my problems with somebody feels good at the time but afterwards I worry about what I have said.

I regret having told somebody something that is personal.

I worry too much about what others think of me to confide in them.

There are some situations which I am unable to confide in anybody.

I worry about what I have told people.

People will not be interested in my problems.

People will not want to know me if they know what I am really like.

I am afraid that if I confide in someone they will tell my problems to others.

I am afraid that people will laugh at me if I tell them my problems.

Everybody seems so sure of themselves they will think that I am being foolish.

I feel vulnerable if I have to ask other people for help.

Instructions: The following statements describe how people sometimes feel. For each statement, please indicate how often you feel the way described by clicking on a number. Here is an example.

How often do you feel happy?

If you never felt happy, you would respond “never”; if you always feel happy, you would respond “always.”

NEVER

1

RARELY

2

SOMETIMES

3

ALWAYS

4

How often do you feel that you lack companionship?

How often do you feel that you have a lot in common with the people around you?

How often do you feel close to people?

How often do you feel left out?

How often do you feel that no one really knows you well?

How often do you feel isolated from others?

How often do you feel that there are people who really understand you?

How often do you feel that people are around you but not with you?

How often do you feel that there are people you can talk to?

How often do you feel that there are people you can turn to?

Please indicate how strongly you agree with each statement by clicking on a number that best corresponds to how much you agree.

1 = Very strongly disagree

2 = Strongly disagree

3 = Somewhat disagree

4 = Neutral

5 = Somewhat agree

6 = Strongly agree

7 = Very strongly agree

There is a special person who is around when I am in need.

There is a special person with whom I can share my joys and sorrows.

My family really tries to help me.

I get the emotional help and support I need from my family.

I have a special person who is a real source of comfort to me.

My friends really try to help me.

I can count on my friends when things go wrong.

I can talk about my problems with my family.

I have friends with whom I can share my joys and sorrows.

There is a special person in my life who cares about my feelings.

My family is willing to help me make decisions.

I can talk about my problems with my friends.

Think about the time you have spent as a member of the Internet forum you joined this study from and how the members have gotten along with one another in that time. Please click on the number corresponding to the degree you think each

- 2 = Disagree
- 3 = Disagree somewhat
- 4 = Neutral
- 5 = Agree somewhat
- 6 = Agree
- 7 = Strongly Agree

Overall, my membership in this group has very little to do with how I feel about myself.

Belonging to this group is an important reflection of who I am.

Belonging to this group is unimportant to my sense of what kind of a person I am.

In general, belonging to this group is an important part of my self-image.

How important is expressing yourself on self-injury forums to you?

- Very Important
- Somewhat Important
- Neither Important nor Unimportant
- Somewhat Important
- Very Important

How much importance do you place on how other members of this group perceive you?

- Very Important
- Somewhat Important
- Neither Important nor Unimportant
- Somewhat Important
- Very Important

Does expressing yourself in a self-injury forum make being able to talk about self-injury more important to you?

- Definitely
- Probably
- Neutral
- Not really
- Definitely Not

Please read each statement and click beside a number 0, 1, 2 or 3 that indicates how much the statement applied to you over the past week. There are no right or wrong answers. Do not spend too much time on any statement.

The rating scale is as follows:

0 Did not apply to me at all

1 Applied to me to some degree, or some of the time

2 Applied to me to a considerable degree, or a good part of time

3 Applied to me very much, or most of the time

I was aware of dryness of mouth.

I couldn't seem to experience any positive feelings at all.

I experienced breathing difficulty.

I tended to over-react to situations.

I found it difficult to relax.

I felt that I had nothing to look forward to.

I felt that I was using a lot of nervous energy.

I felt I wasn't worth much as a person.

I felt I was rather touchy.

I felt scared without any good reason.

I found it hard to wind down.

I was aware of the action of my heart in the absence of physical exertion.

I felt down-hearted and blue.

I felt I was close to panic.

I was unable to become enthusiastic about anything.

I was intolerant of anything that kept me from getting on with what I was doing.

I felt that life was meaningless.

I found myself getting agitated.

I was worried about situations in which I might panic and make a fool of myself.

I experienced trembling.

I found it difficult to work up the initiative to do things.

How old are you?

What is your gender?

Male
Female
Other (please specify)

What is your race? (Check as many as apply)

American Indian/Native American
Native Hawaiian/Pacific Islander
Asian
Black/African American
Latino/Hispanic
White/Caucasian
Multiracial
Other (specify)

What is your nationality?

United States of America
United Kingdom
Other (specify)

What is your sexual orientation?

Straight/Heterosexual
Gay/Lesbian
Bisexual
Questioning
Other (specify)

What is your relationship status?

Married/Living together in a committed relationship
In a committed relationship not living together
In a tentative relationship
Not in a specific relationship
Neither in nor seeking a relationship

Do you have any physical or mental disabilities?

No
Yes
If Yes, please specify

Do you currently, or have you in the past, belonged to any other Internet groups (not including the one from which you came to this study)?

Yes
No

If so, how many?

What kind? Check all that apply.

- A. Other self-injury forum
- B. Eating disorder forum
- C. Forum supporting people with mental illness
- D. Non mental-health related

How did you decide to seek out this forum (check all that apply)?

A. I was looking on the Internet for general information about self-injury and found it

- B. A friend or family member in my face-to-face life told me about it
- C. A teacher/counselor/mental health professional told me about it
- D. Heard about it in the media (television, magazine, etc.)
- E. From another forum that I was on related to self-injury
- F. From another forum that I was on that was unrelated to self-injury
- G. Other (Specify)

How old were you when you first engaged in an act of self-injury?

Approximately how often do you self-injure?

- 1. One or more times per day
- 2. Several times per week
- 3. Once or twice a week
- 4. Once every couple of weeks
- 5. Once a month
- 6. Less than once per month
- 7. Have not self-injured in six months or more

How many times have you posted on this forum since joining the group?

- 1. Never or only once
- 2. Two to five times
- 3. Six to ten times
- 4. Eleven to twenty times
- 5. Twenty to fifty times
- 6. More than fifty times

Please given an approximate number of the times you have posted.

On average, how much time per day do you spend reading and/or posting on the forum?

- 1. Less than 15 minutes
- 2. 15 -30 minutes
- 3. 30 – 60 minutes
- 4. 1 – 2 hours
- 5. More than two hours.

Appendix C Informed Consent: Pilot Study

You are being asked to participate in a research investigation as described in this form. The principal investigator of this project is Kirsten L. Williams, a doctoral student in Counseling Psychology at the University of North Dakota. A basic explanation of this study is given below. If, after reading this explanation, you consent to participate in this study, please indicate this by clicking on the SUBMIT button below which states your intent and consent to participate. You may print this consent form for your records.

This study seeks to understand Internet users' feelings about the groups they have joined. It is also looking at their feelings about face-to-face interactions around potentially sensitive topics. You are being asked to participate in this study based on your use of an online support group about eating disorders. In order to participate, you must be 18 years of age or older.

The amount of time it takes to complete this questionnaire may vary, but I anticipate it will take less than 15 minutes. You will initially be taken to a demographics questionnaire. You will then be asked questions about your feelings about your Internet group and feelings about face-to-face interactions.

Possible risks to you from the study include negative feelings arising from reflecting on these issues. We ask that you not participate if you believe such feelings may cause you significant distress.

Other possible risks to you include risks of confidentiality. Although your email address and IP address will not be attached to your answers to ensure your anonymity, it must be remembered that no information transmitted via the Internet can be completely secured. It is possible for this questionnaire to be intercepted. In order to minimize the risks of this, the questionnaire is being collected by a secure, professional website. The questionnaire is encrypted, as are your responses. The data will not be retrievable from your computer once you have entered it, nor will it be stored on a webpage. It will only be accessible to the primary investigator of the study and the people responsible for IRB procedures at her university. Any printed responses will not have identifying information on them, and will be stored in a locked file cabinet for three years, after which time they will be shredded.

We also ask that you not participate in this study if you are under the age of 18. If you begin to participate in this study and find there are questions to which you do not wish to respond, you are not required or obligated in any way to respond to those questions or complete the survey. You are responsible for any and all financial expenses associated with any additional services you receive as a result of participating in this study.

Possible benefits to you from this study include the experience of reflecting on your own experiences involved in this group and your reactions to people face-to-face. This research will be helpful to the scientific community in that we hope to gain knowledge about what impacts people's use of Internet groups.

If you have questions concerning your rights as a participant, you may find these at www.und.edu/dept/rdc. If you have questions regarding the study, you may contact Kirsten L. Williams at 701-777-6407, or her advisor, Dr. Cindy Juntunen, at 701-777-3740. If you have questions regarding your rights as a research participant, or if you have any concerns or complaints about the research, you may contact the University of North Dakota Institutional Review Board at (701) 777-4279. Please call this number if you cannot reach research staff or you wish to talk to someone else.

If you agree to participate, please read the following statement and click on the "Submit" button below.

I CERTIFY THAT I AM 18 YEARS OF AGE OR OLDER. I CERTIFY THAT I HAVE READ AND UNDERSTAND THE INFORMED CONSENT FOR THE INVESTIGATION CONDUCTED BY KIRSTEN L. WILLIAMS "Internet-Based Support Group Questionnaire" AND WILLINGLY CONSENT TO PARTICIPATE. I UNDERSTAND THAT I HAVE THE RIGHT TO WITHDRAW PARTICIPATION AT ANY TIME DURING THE STUDY.

Submit

Appendix D
Participant Questionnaire: Pilot Study

How old are you?

What is your gender?

- Male
- Female
- Other (please specify)

What is your race? (Check as many as apply)

- American Indian/Native American
- Native Hawaiian/Pacific Islander
- Asian
- Black/African American
- Latino/Hispanic
- White/Caucasian
- Multiracial
- Other (specify)

What is your nationality?

- United States of America
- United Kingdom
- Other (specify)

What is your sexual orientation?

- Straight/Heterosexual
- Gay/Lesbian
- Bisexual
- Questioning
- Other (please specify)

What is your relationship status?

- Married/Living together in a committed relationship
- In a committed relationship not living together
- In a tentative relationship
- Not in a specific relationship
- Neither in nor seeking a relationship

Do you currently, or have you in the past, belonged to any other Internet groups (not including the one from which you came to this study)?

Yes
No

If so, how many?

What kind? Check all that apply.

- A. Eating disorder forum
- B. Self-injury forum
- C. Forum supporting people with mental illness
- D. Non mental-health related

Please choose the answer that best indicates how much you agree with the following statements.

1. Strongly Agree, 2. Somewhat Agree, 3. Neutral, 4. Somewhat Disagree, 5. Strongly Disagree

I immediately felt welcome in this forum.

I was excited about finding a forum where people seemed so similar to me.

Finding this forum let me know I was not alone.

When I joined, I was amazed to find so many people like me.

I instantly felt understood when I started using this forum.

I felt an immediate connection with other people on this forum.

Most people do not understand eating disorders.

At least one person has misunderstood my eating disorder.

People who do not have an eating disorder cannot understand eating disorders.

I have been distressed by the way someone offline reacted to my eating disorder.

I have been embarrassed by someone's response to my eating disorder in my face-to-face life.

I have been afraid if I tell someone about my eating disorder, they will not understand what I am talking about.

If it weren't for my Internet group, I would feel really alone with my eating disorder.

REFERENCES

- Aberson, C.L. (1999). Low self-esteem and ingroup bias. *Social Behavior and Personality* 27, 17-28.
- Adler, P.A. & Adler, P. (2008). The cyberworlds of self-injurers: Deviant communities, relationships, and selves. *Symbolic Interaction*, 1, 33-56.
- Alexander, N. & Clare, L. You still feel different: The experience and meaning of women's self-injury in the context of a lesbian or bisexual identity. *Journal of Community and Applied Social Psychology*, 14, 70-84.
- American Psychiatric Association, DSM-5 Task Force (2010). *American Psychiatric Association DSM-5 Development: Non-Suicidal Self Injury*. Retrieved from <http://www.dsm5.org/ProposedRevisions/Pages/proposedrevision.aspx?rid=443#>
- Bargh, J.A. & McKenna, K.Y.A. (2004). The Internet and social life. *Annual Review of Psychology*, 55, 573-590.
- Bargh, J.A., McKenna, K.Y.A., & Fitzsimmons, G.M. (2002). Can you see the real me? Activation and expression of the "true self" on the Internet. *Journal of Social Issues*, 58, 33-48.
- Bishop, R. (2001). The pursuit of perfection: A narrative analysis of how women's magazines cover eating disorders. *The Howard Journal of Communications*, 12, 221-240.

- Burn, S.M., Aboud, R., & Moyles, C. (2000). The relationship between gender social identity and support for feminism. *Sex Roles, 42*, 1081-1089.
- Canty-Mitchell, J., & Zimet, G.D. (2000). Psychometric properties of the multidimensional scale of social support in urban adolescents. *American Journal of Community Psychology, 28*, 391-401.
- Caplan, S.E. (2003). Preference for online social interaction. *Communication Research, 30*, 625-648.
- Carlbring, P., Nilsson-Ihrfelt, E., Waara, J., Kollenstam, C., Buhrman, M., Kaldo, V., Soderberg, M., Ekseius, L., & Andersson, G. (2005). Treatment of panic disorder: Live therapy vs. self-help via the Internet. *Behaviour Research and Therapy, 43*, 1321-1333.
- Cecil, H., Stanley, M.A., Carrion, P.G., & Swann, A. (1995). Psychometric properties of the MSPSS and NOS in psychiatric outpatients. *Journal of Clinical Psychology, 51*, 593-602.
- Chang, T. (2005). Online counseling: Prioritizing psychoeducation, self-help, and mutual help for counseling psychology research and practice. *The Counseling Psychologist, 33*, 881-890.
- Clara, I.P., Cox, B.J., Enns, M.W., Murray, L.T., & Torgrude, L.J. (2003). Confirmatory Factor Analysis of the multidimensional scale of perceived social support in clinically distressed and student samples. *Journal of Personality Assessment, 81*, 265-270.

- Dahlem, N.W., Zimet, G.D., & Walker, R.R. (1991). The multidimensional scale of perceived social support: A confirmation study. *Journal of Clinical Psychology, 47*, 756-761.
- Davison, K.P., Pennebaker, J.W., & Dickerson, S.S. (2000). Who talks? The social psychology of illness support groups. *American Psychologist, 55*, 205-217.
- Deiter, Nichols, and Pearlman (2000) Self-injury and self-capacities: Assisting an individual in crisis. *Journal of Clinical Psychology, 56*, 1173-1191.
- Favazza, A.R. (1998). Coming of age of self-mutilation. *Journal of Nervous and Mental Disease, 186*, 259-268.
- Favazza, A. R. (1996). *Bodies Under Siege: Self-Mutilation and Body Modification in Culture and Psychiatry, 2nd ed.* Baltimore: The Johns Hopkins University Press.
- Favazza, A.R. & Conterio, K. (1988). Self-mutilation and eating disorders. *Suicide and Life-Threatening Behavior, 19*, 352-361.
- Favazza, A.R., & Rosenthal, R.J. (1993). Diagnostic issues in self-mutilation. *Hospital and Community Psychiatry, 44*, 134-140.
- Fennig, S., Carlson, G.A., & Fennig, S. (1995) Contagious self-mutilation (Letter to the Editor). *Journal of the American Academy of Child and Adolescent Psychiatry, 34*, 402-403.
- Fogel, J., Albert, S.M., Schnabel, F., Ditkoff, B.A., Neugut, A.I. (2002). Internet use and social support in women with breast cancer. *Health Psychology, 21*, 398-404.
- Forbes, A. & Roger, D. (1999). Stress, social support, and fear of disclosure. *British Journal of Health Psychology, 4*, 165-179.

- Fox, N., Ward, K. & O'Rourke, A. (2005). Pro-anorexia, weight-loss drugs and the internet: An 'anti-recovery' explanatory model of anorexia. *Sociology of Health and Illness*, 944-971.
- Giang, M.T. & Wittig, M.A. (2006). Implications of adolescents' acculturation strategies for personal and collective self-esteem. *Cultural Diversity and Ethnic Minority Psychology*, 12, 725-739.
- Gladstone, G., Parker, G., Wilhelm, K., Mitchell, P., & Austin, M-P. (1999). Characteristics of depressed patients who report childhood sexual abuse. *The American Journal of Psychiatry*, 156, 431-437
- Griffiths, M. (2005). Online therapy for addictive behaviors. *CyberPsychology & Behavior*, 8, 555-561.
- Gross, E.F., Junoven, J., & Gable, S.L. (2002). Internet use and well-being in adolescence. *Journal of Social Issues*, 58, 75-90.
- Guertin, T., Lloyd-Richardson, E., Spirito, A., Donaldson, D., and Boergers, J. (2001). Self-mutilative behavior in adolescents who attempt suicide by overdose. *Journal of the American Academy of Child and Adolescent Psychiatry*, 40, 1062-1069.
- Haines, J. & Williams, C.L. (1997). Coping and problem solving of self-mutilators. *Journal of Clinical Psychology*, 53, 177-186.
- Haines, J., Williams, C.L., Brain, K.L., & Wilson, G.V. (1995). The psychophysiology of self-mutilation. *Journal of Abnormal Psychology*, 104, 471-489.
- Harris, J. (2000). Self-harm: Cutting the bad out of me. *Qualitative Health Research*, 10, 164-173.

- Hodgson, S. (2004). Cutting through the silence: A sociological construction of self-injury. *Sociological Inquiry, 74*, 162-179.
- Jeffery, D. & Warm, A. (2002). A study of service providers' understanding of self-harm. *Journal of Mental Health, 11*, 295-303.
- Johnson, J.E., Burlingame, G.M., Olsen, J.A., Davies, D.R., & Gleave, R.L. (2005). Group climate, cohesion, alliance, and empathy in group psychotherapy: Multilevel structural equation models. *Journal of Counseling Psychology, 52*, 310-321.
- Johnson, J.E., Pulsipher, D., Ferrin, S.L., Burlingame, G.M., Davies, D.R., & Gleave, R. (2006). Measuring group processes: A comparison of the GCQ and CCI. *Group Dynamics: Theory, Research, and Practice, 10*, 136-145.
- Johnsen, J.-A. K., Rosenvinge, J.H. & Gammon, D. (2002). Online group interaction and mental health: An analysis of three online discussion forums. *Scandinavian Journal of Psychology, 43*, 445-449.
- Kahan, J., & Pattison, E. M. (1984). Proposal for a distinctive diagnosis: the deliberate self-harm syndrome. *Suicide and Life-Threatening Behavior, 14*, 17-35.
- Kazarian, S.S. & McCabe, S.B. (1991). Dimensions of social support in the MSPSS: Factorial structure, reliability, and theoretical implications. *Journal of Community Psychology, 19*, 150-160.
- Kim, J., LaRose, R., & Peng, W. (2009). Loneliness as the cause and effect of problematic Internet use: The relationship between Internet use and psychological well-being. *CyberPsychology & Behavior, 12*, 451-455.

- Kivlighan, D.M. Jr. & Goldfine, D.C. (1991). Endorsement of therapeutic factors as a function of stage of group development and participant interpersonal attitudes. *Journal of Counseling Psychology, 38*, 150-158.
- Kettlewell, C. (1999). *Skin game*. New York: St. Martin's Press.
- 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.
- Luhtanen, R., & Crocker, J. (1992). A collective self-esteem scale: Self-evaluation of one's social identity. *Personality and Social Psychology Bulletin, 18*, 302-318.
- Mallen, M.J., Day, S.X., & Green, M. A. (2003). Online versus face-to-face conversations: An examination of relational and discourse variables. *Psychotherapy: Theory, Research, Practice, Training, 40*, 155-163.
- Martens, M.P. (2005). The use of structural equation modeling in counseling psychology research. *The Counseling Psychologist, 33*, 269-298.
- McAllister, M.M. (2001). In harm's way: A postmodern narrative inquiry. *Journal of Psychiatric and Mental Health Nursing, 8*, 391-397.
- McKenna, K.Y.A. & Bargh, J.A. (1998). Coming out in the age of the Internet: Identity "demarginalization" through virtual group participation. *Journal of Personality and Social Psychology, 75*, 681-694.
- McKenna, K.Y.A. & Green, A. (2002). Virtual group dynamics. *Group Dynamics: Theory, Research, and Practice, 6*, 116-127.
- McKenna, K.Y.A., Green, A.S., & Gleason, M.E.J. (2002). Relationship formation on the Internet: What's the big attraction? *Journal of Social Issues, 58*, 9-31.

- McKenna, K.Y.A., Green, A.S., & Smith, P.K. (2001). Demarginalizing the sexual self. *The Journal of Sex Research, 38*, 302-311.
- Murphy, R., Frost, S., Webster, P. & Schmidt, U. (2004). An evaluation of web-based information. *International Journal of Eating Disorders, 35*, 145-154.
- Murray, C., Warm, A. & Fox, J. (2005). An Internet survey of adolescent self-injurers. *Australian e-Journal for the Advancement of Mental Health 4*(1)
www.auseinet.com/journal/vol4iss1/murray.pdf
- Muehlenkamp, J.J., Hoff, E.R., Licht, J-G., Azure, J.A., & Hazenzahl, S.J. (2008). Rates of self-injury: A cross-sectional analysis of exposure. *Current Psychology, 27*, 234-241.
- Nock, M.K. & Prinstein, M.J. (2004). A functional approach to the assessment of self-mutilative behavior. *Journal of Consulting and Clinical Psychology, 72*, 885-890.
- 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.
- Shrout, P.E. & Bolger, N. (2002). Mediation in experimental and nonexperimental studies: New procedures and recommendations. *Psychological Methods, 7*, 422-445.
- Utsey, S.O. & Constantine, M.G. (2006). A confirmatory test of the underlying factor structure of scores on the collective self-esteem scale in two independent samples of Black Americans. *Journal of Personality Assessment, 86*, 172-179.

- Van den Eijnden, Meerkerk, G.-J., Vermulst, A.A., Spijkerman, R., & Engels, R.C.M.E. (2008). Online communication, compulsive Internet use, and psychosocial well-being among adolescents: A longitudinal study. *Developmental Psychology, 44*, 655-665.
- Whitlock, J.L., Eckenrode, J., & Silverman, D. (2006). Self-injurious behaviors in a college population. *Pediatrics, 117*, 1939-1948.
- Whitlock, J.L., Powers, J.L., Eckenrode, J. (2006). The virtual cutting edge: The Internet and adolescent self-injury. *Developmental Psychology, 42*, 1-11.
- Williams, K.L. (2006). *Experience of online support groups among people who self-injure*. Unpublished master's thesis, University of North Dakota, Grand Forks.
- Zimet, G.D., Dahlem, N.W., Zimet, S.G., & Farley, G.K. (1988). The multidimensional scale of perceived social support. *Journal of Personality Assessment, 52*, 30-41.
- Zimet, G.D., Powell, S.S., Farley, G.K., Werkman, S., & Berkoff, K.A. (1990). Psychometric characteristics of the multidimensional scale of perceived social support. *Journal of Personality Assessment, 55*, 610-617.