

EMOTION DYSREGULATION AND THE INTERPERSONAL THEORY OF SUICIDE IN
ADOLESCENTS

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EMOTION DYSREGULATION AND THE INTERPERSONAL THEORY OF SUICIDE IN
ADOLESCENTS

By

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DISSERTATION

Presented to the Faculty of the Graduate School of Biomedical Sciences

The University of Texas Southwestern Medical Center at Dallas

In Partial Fulfillment of the Requirements

For the Degree of

DOCTOR OF PHILOSOPHY

The University of Texas Southwestern Medical Center at Dallas

Dallas, Texas

August 2017

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Publication No. _____

Michael E. Eaddy, Doctor of Philosophy
The University of Texas Southwestern Medical Center at Dallas, 2017

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PRIOR PUBLICATIONS

Stewart, S., **Eaddy, M.**, Horton, S., Hughes, J., & Kennard, B. (2015). The validity of the interpersonal theory of suicide in adolescence: A review. *Journal of Clinical Child & Adolescent Psychology*, 1-13.

King, J.D., Horton, S.E., Hughes, J.L., **Eaddy, M.**, Kennard, B.D., Emslie, G.J., & Stewart, S.M. (2017). The interpersonal-psychological theory of suicide in adolescents: A preliminary report of changes following treatment. *Suicide and Life Threatening Behavior*.

Matney, J., Westers, N.J., Horton, S.E., King, J.D., **Eaddy, M.**, Emslie, G.J., Kennard, B., Stewart, S.M. (2017). Frequency and methods of non-suicidal self-injury in relation to acquired capability for suicide among adolescents. *Archives of Suicide Research*.

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OVERVIEW & STRUCTURE OF THE DISSERTATION

The lack of progress in suicide prevention has been attributed to fractured investigations of disparate risk factors and inadequate theoretical frameworks. Adolescents are different from adults in ways that are likely to influence suicide ideation and acts. The Interpersonal Theory of Suicide (IPTS) is a promising theory that proposes three “final common pathways”, perceived burdensomeness, thwarted belongingness, and acquired capability, as the most proximal risk factors to suicidal ideation and attempts. There is a growing body of literature that demonstrates that many known risk factors for suicidality are associated with these three IPTS variables, and that the IPTS variables account for the relationship between these known risk factors and suicidality. The current pair of studies was guided by two areas of interest in the current literature. First, emotional dysregulation has been consistently linked to suicide attempts, and appears to have a complex relationship with IPTS constructs in adults, but has been under-investigated in clinical adolescents when it may have particular relevance to suicidality. Second, little is known about the IPTS variables in relation to response to treatment, and whether individual characteristics interact with IPTS variables to promote or hinder changes in suicidality. This work is an examination of the relationship between emotion dysregulation and suicidality within the IPTS framework in a clinical sample of adolescents. The questions it will address are a) whether emotion dysregulation accounts for variance in suicidality independently of IPTS variables, and b) whether emotion dysregulation influences response to treatment for suicide ideation, and if so, whether this influence occurs in the context of the IPTS framework. This work will be structured as follows: An initial introductory context relevant to both studies will be provided. The measures used are the same in both studies and will be described next.

These shared components will be followed by the study-specific components: abstract, introduction, aims of the study, study-specific methods, results and discussion. There is significant overlap in the references for each study and these will be condensed at the end.

INTRODUCTION

Significance

Suicide is a significant global public health issue; yet despite increased efforts in suicide research and prevention, suicide remains the second leading cause of death among people ages 15 to 24 (CDC, 2014). One explanation for lack of progress in decreasing suicide rates is the underutilization of theoretical frameworks to drive research and organize findings (Klonsky & May, 2014). Emotion dysregulation may be particularly important as a risk factor for adolescent suicidality, given that this developmental period is characterized by heightened emotional reactivity (Ernst et al., 2005). Variables that might explain the relationship between emotion dysregulation and suicide risk in adolescents are understudied within a theory-driven context. The Interpersonal Psychological Theory of Suicide (IPTS; Joiner, 2005), a promising theory which has promoted a parsimonious organization of a number of risk factors for suicide, may offer a framework to understand the role of emotion dysregulation in suicidality. This study examined the relationship between emotion dysregulation and suicide risk in adolescents recently hospitalized on an inpatient psychiatric unit. The primary research question was whether the IPTS framework explained emotion dysregulation's relationship with suicide risk.

Emotion Dysregulation

Emotion regulation is defined as “the intrinsic and extrinsic processes involved in monitoring, evaluating, and modulating emotional reactions to accomplish one's goals” (Thompson, 1994). According to Gratz and Roemer (2004) who have provided a comprehensive framework for the construct, emotion regulation is a multidimensional construct that includes: awareness, understanding and acceptance of emotions, controlling impulsive

behaviors to engage in goal-directed behaviors when experiencing aversive emotions, and the use of adaptive strategies to regulate the intensity and duration of affective response.

Emotion dysregulation underlies many diagnoses and behaviors, and thus is a transdiagnostic clinical characteristic (Berking et al., 2008; Gross & Munoz, 1995). Emotion dysregulation is a well-established risk factor for suicidal ideation, with some suggestion that it is also an underlying mechanism for suicidal ideation (Arria et al., 2009). Arria and colleagues (2009), people with poor emotion regulation skills have been found to have suicide ideation despite having low levels of depressive symptoms. Furthermore, children with depression who also have deficits in emotion regulation are at greater risk for suicide ideation, suicide intent, suicide plans, as well as suicide attempts (Kovacs, Joormann, & Gotlib, 2008).

Adolescence as a Unique Developmental Context

Adolescence is a particularly important developmental period for understanding emotion regulation and dysregulation, as significant cognitive, relational, neurological and behavioral changes that affect emotion processing typically occur during adolescence (Spear, 2000; Casey, Jones, & Hare, 2008). Neurologically, in adolescence there are discrepancies in the growth of the prefrontal cortex regions and the subcortical limbic system (Ernst et al., 2005). The prefrontal cortex, responsible for cognitive control, is not yet fully matured, in contrast to the more fully developed subcortical limbic system, responsible for processing emotional stimuli (Ernst et al., 2005; Galvan et al., 2006). This incongruity impairs effective top-down control of the subcortical limbic system, which can then manifest in the emotional reactivity and risk-taking behaviors commonly associated with adolescence (Casey & Jones, 2010; Romer, 2010). This imbalance could be a potential vulnerability in the development of mood disorders and suicidality.

The Interpersonal Theory of Suicide

The IPTS has gained interest as an organizing framework because it integrates many known risk factors and accounts for some poorly understood aspects of suicidality, such as the role of sleep and eating disorders (Joiner, 2005). According to the IPTS, people are at greatest risk for a lethal suicide attempt when they possess both the desire for suicide (indicated by heightened levels of perceived burdensomeness and thwarted belongingness) and have developed the acquired capability for suicide (Joiner, 2005). Acquired capability for suicide is the third IPTS construct and is key in the capacity to act on the suicidal desire. Acquired capability is comprised of two components: fearlessness about death and increased pain tolerance (Joiner 2005; Van Orden et al., 2010). Furthermore, people acquire the capability for suicide over time via exposure to events that are painful and/or provocative. Acquired capability represents a unique contribution of the IPTS as it provides an explanation for how people progress from suicide ideation to suicide attempts.

A strength of the IPTS is that it provides a testable theory regarding the advancement from ideation to attempts through the “final common pathways” model, where thwarted belongingness, perceived burdensomeness, and acquired capability are proximal risk factors to suicidal ideation and behaviors. All other risk factors are proposed to be distal risk factors and act through one of the three IPTS variables.

IPTS and Adolescents

Although, most of the empirical studies seeking to validate or extend the IPTS have utilized community adult samples (Ribeiro & Joiner, 2009; Ma et al., 2016), there has been a recent increase in direct examinations of the IPTS with adolescent samples that have found

general support for the central hypotheses (Stewart et al., 2015). Horton et al. (2015) and Miller and colleagues (2016) were the first to utilize direct measures of the IPTS variables using clinical adolescent samples and found support at the cross-sectional level for the generalization of the IPTS measures with adolescents.

The relationship between emotion dysregulation and suicidal ideation and behavior may be explained within the framework of the IPTS. Emotion dysregulation has been consistently linked with interpersonal difficulties (Adrian et al., 2011; Gross & Munoz, 1995). As a result, adolescents may experience feelings of thwarted belongingness and perceived burdensomeness during these elevated states of distress, which then result in suicidal ideation. Emotionally dysregulated adolescents may also engage in impulsive and dysregulated behaviors that increase their acquired capability for suicide and enhance the likelihood of suicide attempt in the presence of ideation (Anestis et al., 2013; Anestis et al., 2014).

Shortcomings in the Literature

Our study was guided by multiple gaps in the literature investigating the association of emotion dysregulation and risk in the framework of the IPTS. First, there are currently no studies examining the relationship among IPTS variables, emotion dysregulation, and suicide risk in adolescents. Second, there are no longitudinal studies of the relationship between emotional dysregulation and risk. Finally, as the IPTS becomes more widely tested, it is important to consistently control for depressive symptoms, which are commonly believed to be primary causal factors in suicide (e.g., Berman et al., 2006). There are at least two reasons to do so. First, a new theory is most valuable if it explains variance after accounting for known contributors to the phenomenon of interest. Second, an important strength of the IPTS is its parsimony and specification that the three IPTS variables offer the final common pathway. If

depressive symptoms retain a direct association with suicidal phenomena after accounting for the IPTS variables, the final common pathway clause comes under question.

MEASURES

Perceived Burdensomeness and Thwarted Belongingness

Perceived burdensomeness and thwarted belongingness were assessed using the 15-item Interpersonal Needs Questionnaire (INQ; Van Orden et al., 2008). The 15-item INQ consists of nine items evaluating thwarted belongingness and six items measuring perceived burdensomeness. The scale is scored on a Likert Scale from 1 (*not at all true of me*) to 7 (*very true for me*), with higher ratings indicating more elevated levels of perceived burdensomeness or thwarted belongingness. Horton et al. (2015) reported initial evidence for reliability and validity on the use of this scale with clinical adolescents. Consistent with Horton and colleagues' findings, the internal consistency in the current sample was excellent for perceived burdensomeness ($\alpha = .93$) and good for thwarted belongingness ($\alpha = .88$).

Acquired Capability for Suicide

Acquired capability for suicide was assessed using the Acquired Capability for Suicide Scale-Fearlessness about Death scale, which consists of seven items that are meant to measure a participant's fearlessness about death (Ribeiro et al. 2014). The items were scored on a Likert scale from 0 (*not at all like me*) to 4 (*very much like me*) with higher ratings characterizing greater fearlessness about death. The internal consistency for this current sample was good ($\alpha = .84$), consistent with findings by Horton and colleagues (2015).

Depressive Symptoms

The Quick Inventory of Depressive Symptomatology – Adolescent Version Self-Report (QIDS-A-SR-17; Rush, Bernstein, & Trivedi, 2006; Rush et al., 2003) was used to assess

depressive symptoms. The QIDS-A-SR-17 is a 17-item self-report questionnaire created to measure the severity of the core symptoms of Major Depressive Disorder in the past week. Patients are asked to endorse or deny the presence of depressive symptoms on a scale ranging from 0 to 3, with level 3 responses being associated with severe impairment and 0 indicating normal functioning. The item assessing suicidal thoughts was not included in the QIDS-A-SR-17 total as suicide risk was the primary dependent variable for this study and the internal consistency for this current sample was good ($\alpha = .82$), similar to previous studies with this population (King et al., 2017)

Emotion Dysregulation

The Difficulties with Emotion Dysregulation Scale (DERS; Gratz & Roemer, 2004) was used to assess level of emotion dysregulation. The DERS is a 36-item self-report questionnaire that measures a participant's ability to experience, tolerate, and function in the context of negative emotional states. Reliability and validity for this scale has previously been demonstrated in an adolescent inpatient sample (Perez, 2012). Items are scored on a Likert scale from 1 (*almost never*) to 5 (*almost always*), with higher scores meaning greater emotion dysregulation. The internal consistency for this current sample was excellent ($\alpha = .93$).

Suicide Risk

The Concise Health Risk Tracking scale Self-Report (CHRT SR; Trivedi et al., 2011) was used to assess suicide risk. The CHRT SR consists of three items that comprise a risk score. This variable has evidence for utility as a predictor of imminent suicide risk (Trivedi et al., 2011) and was used as the primary risk score. The three items are: 1) "I have had thoughts of killing myself"; 2) "I have thoughts about how I might kill myself"; and 3) "I have a plan to kill

myself'. The items are scored on a four point Likert scale from 0 (*strongly disagree*) to 4 (*strongly agree*). The internal consistency for this current sample was excellent ($\alpha = .90$), consistent with previous findings with suicidal youth (King et al., 2017).

STUDY ONE

Abstract

Emotion dysregulation has been consistently linked to suicide risk, but an explanatory model of this relationship has not been adequately investigated in clinical samples of adolescents. This study examined the concurrent relationship among emotion dysregulation, variables from the Interpersonal Psychological Theory of Suicide (IPTS), and suicide risk among a psychiatric inpatient sample of adolescents. 151 adolescents (aged 12-17, primarily Caucasian [83.4%] girls [82.1%]), were recruited from an inpatient psychiatry unit of a pediatric hospital. Cross-sectional analyses were conducted to determine if the relationship between emotion dysregulation and suicide risk was explained by the variables of perceived burdensomeness, thwarted belongingness, and acquired capability, as proposed by the IPTS. Emotion dysregulation, IPTS variables, depression severity and risk were correlated. As hypothesized, the relationship between emotion dysregulation and suicide risk was explained by perceived burdensomeness and acquired capability. Depressive symptoms had an independent relationship with suicide risk after controlling for IPTS variables. The results from this study suggest that effective treatment strategies that reduce negative cognitions tied to perceived burdensomeness and depressive symptoms would address the most proximal variables related to suicide risk in adolescents. In addition, enhancing emotion management would serve to maintain low levels of proximal influences on risk.

INTRODUCTION

IPTS and Emotion Dysregulation

To date, emotion dysregulation has been examined in the IPTS framework only with adult samples. Anestis and colleagues (2011) examined the relationship between emotion dysregulation and suicidal desire (operationalized as thwarted belongingness and perceived burdensomeness) as well as acquired capability using a sample of undergraduate students. Emotion dysregulation was operationalized in Gratz and Roemer's (2004) framework as high negative urgency (difficulties controlling impulsive behaviors in response to aversive emotions) and low distress tolerance (the ability to experience, accept, and function while experiencing negative emotions). Emotion dysregulation was positively associated with suicidal desire as would be expected in the IPTS framework, with the explanation of the association being that this trait was associated with high thwarted belongingness and perceived burdensomeness. However, emotion dysregulation was also *negatively* related to acquired capability. The authors explained this unexpected finding by proposing that emotion dysregulation might serve as a protective factor because emotionally dysregulated individuals may avoid PPEs knowing these experiences are overwhelming for them, and thereby reduce the likelihood of high acquired capability. This finding has yet to be replicated in other studies.

It is well documented that psychiatric disorders characterized by emotion dysregulation such as borderline personality disorder, have an increased risk of suicide attempts. Anestis et al. (2013) further explored the relationship between emotion dysregulation and suicide attempts with an adult clinical population. NSSI was included in the study as a PPE experience due to its known association with emotion dysregulation and suicidality. NSSI accounted for the positive

relationship between emotion dysregulation (operationalized as having low distress tolerance) and lifetime suicide attempts. Anestis et al. (2014) had similar findings using four measures of emotion dysregulation (low distress tolerance, a broad measure of emotion dysregulation, distress tolerance, and low grit) and using three samples (two adult community samples and one adult clinical sample).

Although emotion dysregulation was examined within the framework of the IPTS, none of the studies above included the full set of variables necessary to test the final common pathway clause. For example, support was provided for the positive relationship between emotion dysregulation, and thwarted belongingness and perceived burdensomeness; however, because suicidal ideation was not included in the model it is not clear that the IPTS variables accounted for emotional dysregulation's association with suicidal ideation. Similarly, an independent measure of acquired capability was not included in the equation examining the relation among emotion dysregulation, NSSI (as PPE), and suicide attempts.

Aims and Hypotheses

The primary purpose of this study was to examine the concurrent relationship among emotion dysregulation, IPTS variables, and suicide risk in a clinical sample of adolescents. Our hypotheses were derived from the IPTS framework. We anticipated that there would be positive relationships among emotion dysregulation, thwarted belongingness, perceived burdensomeness, acquired capability and suicide risk. We further hypothesized that consistent with the IPTS, the positive relationship between emotion dysregulation and suicide risk would be explained by perceived burdensomeness, thwarted belongingness, and/or acquired capability.

PARTICIPANTS AND CONTEXT

One hundred and fifty-one adolescents (ages 12-17) were recruited from an inpatient psychiatry unit of an urban pediatric hospital that provides services to children and adolescents who require a higher level of care. Participants were recruited from a pool of 405 patients enrolling in the inpatient unit over a total of 15 months with 247 patients (61 percent) meeting age and eligibility requirements. Information about recruitment and retention is provided in the consort diagram (Figure 1). Consent was obtained from parents, assent was obtained from participants, and data assessing IPTS constructs, emotion dysregulation, depressive symptoms, and suicide risk were collected during the first few days of hospitalization.

RESULTS

Table 1 presents demographic characteristics of the final sample used for analysis. Table 2 presents the correlations among the study variables, and their means and standard deviations. As predicted, thwarted belongingness, perceived burdensomeness, acquired capability, depression severity, and emotion dysregulation were significantly correlated with suicide risk in the expected direction. Additionally, there was a high correlation between thwarted belongingness and perceived burdensomeness, which is consistent with previous findings (Horton et al., 2015).

Relationship between Emotion Dysregulation as Accounted for by the IPTS

Table 3 shows the results of hierarchical linear regression analyses examining the unique effects of emotion dysregulation, depression severity, thwarted belongingness, perceived burdensomeness, and acquired capability on suicide risk. At Step 1, both depression severity and emotion dysregulation were significantly associated with suicide risk. When the IPTS variables were added at Step 2, suicide risk was significantly predicted by perceived burdensomeness, acquired capability, and depression severity, but not by emotion dysregulation or thwarted belongingness.

Additional regressions were run to test the possible interactions among emotion dysregulation, depression, thwarted belongingness, perceived burdensomeness, and acquired capability and their ability to predict suicide risk. Interaction terms and their lower order interactions were tested in separate equations. None were found to be significant.

Bootstrapping (Preacher and Hayes, 2008) was utilized to further examine the role of perceived burdensomeness, acquired capability, and depression in the relationship between

emotion regulation and suicide risk. Because depression severity remained significant in the hierarchical regression analyses, it was examined as potentially contributing direct effects to suicide risk instead of a control variable. Age and sex were included in the model as covariates. Perceived burdensomeness, acquired capability and depressive symptoms had significant direct effects on suicide risk. The total effect of emotion dysregulation on suicide risk (total effect = 2.70, $p < .001$) was significant; however, there was no direct effect of emotion dysregulation on risk (direct effect = .65, $p = .19$). Analyses demonstrated that the total indirect effect of emotion dysregulation's relationship to suicide risk was significant (total indirect effect = 2.05) with a 95 percent bias corrected CI of 1.37 to 2.86. Perceived burdensomeness (indirect effect = .74, 95 percent bias corrected CI = .02 to 1.42) and acquired capability (.44, 95 percent bias corrected CI = .17 to 1.05) were significant. However, the indirect effect through depression severity (95 percent bias corrected CI = -.03 to 1.30) was not significant.

DISCUSSION

Brief Summation of the Findings

Consistent with our hypothesis, emotion dysregulation, depression severity, IPTS variables, and suicide risk were positively correlated with one another. Furthermore, thwarted belongingness and perceived burdensomeness were highly correlated as expected. Our overall findings indicate that the relationship between emotion dysregulation and suicide risk was explained by perceived burdensomeness and acquired capability, but not thwarted belongingness. This finding partially supported our hypothesis that the relationship between emotion dysregulation and suicide risk would be accounted for by the three proximal IPTS variables. Finally, depression severity maintained an independent relationship with suicide risk in the presence of IPTS variables, which was contrary to hypotheses derived from the IPTS.

Implications for the IPTS

The fact that perceived burdensomeness and thwarted belongingness were highly correlated ($r = .62$; $p < .01$) is consistent with previous studies (King et al., 2017; Horton et al., 2015) and leads to the question of whether to operationalize the two variables as separate constructs or to consider the variables as a single construct by creating a composite score. The decision to keep the variables as two constructs allowed us to examine the relative contribution of the two interpersonal variables in addition to acquired capability on suicide risk. The results that perceived burdensomeness and acquired capability were significant predictors in the multivariate relationship to risk, whereas thwarted belongingness was not, is consistent with the growing evidence that perceived burdensomeness supersedes the effects of thwarted belongingness on suicidal ideation when both are included in the same equation (Ma et al.,

2016). Our findings support perceived burdensomeness as an especially strong variable related to suicidality as well as the operationalization of both constructs as distinct interpersonal cognitions.

Our results support previous findings in which emotion dysregulation contributed to increased thwarted belongingness and perceived burdensomeness (Anestis et al., 2011). Our findings also provide support for Anestis and colleagues' (2014) suggestion that the relationship between emotion dysregulation and suicide attempts is possibly explained by acquired capability. Finally, no effect of perceived burdensomeness' interaction with thwarted belongingness was found. It is notable that a recent review of the literature (Ma et al., 2016) reported that there have been inconsistent findings about the relationship between this interaction and suicide risk, especially when either perceived burdensomeness or thwarted belongingness are not at very high levels.

In our study depression severity maintained a direct relationship with suicide risk, which is contradictory to the final common pathway model of the IPTS. These findings are also different from those of Kleiman and colleagues (2014), where the authors tested alternative models including depressive symptoms and interpersonal variables to determine which were most proximal to suicidal ideation. They found support for the model in which depression influenced suicide risk through increased thwarted belongingness and perceived burdensomeness, but the reverse model did not fit well. Methodological differences between Kleiman and colleagues' (2014) study and ours may be one explanation for the inconsistency. First, acquired capability was included in addition to perceived burdensomeness and thwarted belongingness, as our outcome of suicide risk included planning which is a step between ideation and attempt. However, acquired capability was not included in the study by Kleiman and

colleagues (2014). Second, we examined a clinical adolescent sample at higher levels of risk than their community undergraduate sample. These relationships may be more evident on the high end of the spectrum of risk.

Our findings regarding depression are also consistent with other studies examining the IPTS with clinical adolescent samples. Miller et al. (2016) found that thwarted belongingness influenced change in suicide risk through depression. King and colleagues (2017) also found that change in depressive symptoms influenced change in suicide risk. Finally, Horton et al. (2015) found that depression severity was independently related to recent suicide intent, while controlling for acquired capability. Given that thwarted belongingness and perceived burdensomeness can both be considered depressive cognitions, our findings support the need for further examination of the possibility that noncognitive symptoms of depression (such as sleep difficulties) have an independent pathway with this specific population and are exerting their influence in studies such as ours.

Implications for Assessment and Treatment

These findings are consistent the use of interventions tailored to reducing suicide risk in emotionally dysregulated adolescents. Given the theory-driven pathway modeled by our data, the most direct means of reducing suicidal ideation might be by addressing the social cognitions that are central to the IPTS. However, given that emotionally dysregulated individuals are likely to repeatedly elicit interpersonal rejection, it may be difficult for them to stay free of the negative interpersonal cognitions that rekindle suicidal ideation. It would also be helpful to utilize interventions that target means restriction as acquired capability was shown to be a significant factor in the effects of emotion dysregulation. Taking a multi-pronged approach, using strategies that manage negative cognitions related to thwarted belongingness and perceived

burdensomeness, depression severity, limit access to lethal means, and those that manage emotion dysregulation such as dialectical behavioral therapy, would be most likely to have success in making a long-term impact on reduced suicide risk.

Future Directions

Future directions include testing these models in a broader range of adolescents to increase the generalizability of the findings. Prospective designs would allow for greater understanding of the persistence and directionality of these relationships. Furthermore, as the relationship between emotion dysregulation and the IPTS have become clearer, examining how these variables respond to treatment and relate to reduced risk becomes an important and logical next step.

The results of this study should be interpreted within the context of the following limitations. First, the cross-sectional design limits conclusions about causality and directionality. Second, the generalizability of this study is limited because the sample consisted primarily of Caucasian girls. Third, given that our sample consisted of hospitalized adolescents, the results may reflect relationships that appear only in the context of acute and high levels of distress. Last, we used self-report data exclusively, which is dependent upon participants possessing insight and answering questionnaires in a forthcoming manner. Because the construct of suicide risk is captured by a self-report measure, the study is limited by not measuring prospective suicidal behavior.

Conclusion

In summary, this study extends the literature by examining the relationship among emotion dysregulation, IPTS variables, and suicide risk in a single model. This study also extends the literature by being the first study to investigate these relationships using an adolescent clinical sample. Our findings support the explanatory role played by perceived burdensomeness in the association between emotion dysregulation and risk, as would be predicted by the IPTS. Our findings also highlight the importance of depressive symptoms as an important and independent agent of suicide risk.

Figure 1. Consort Diagram

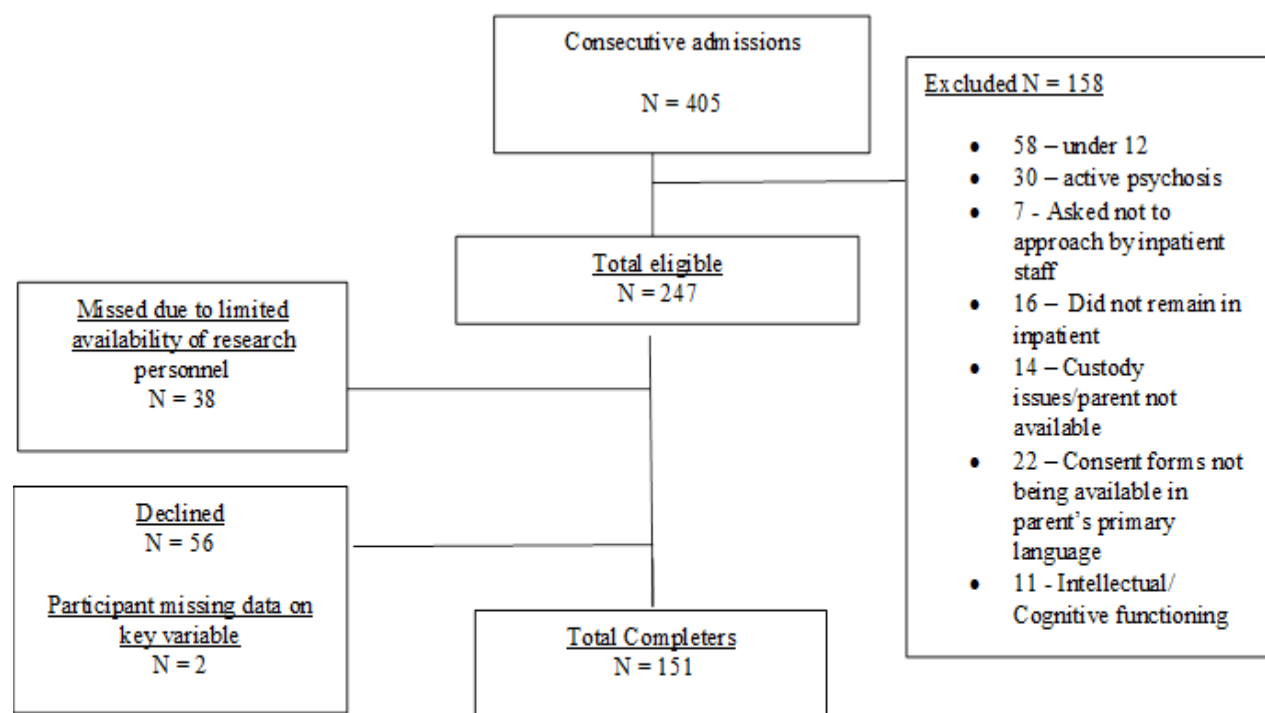


Figure 2. Paths Predicting Suicide Risk

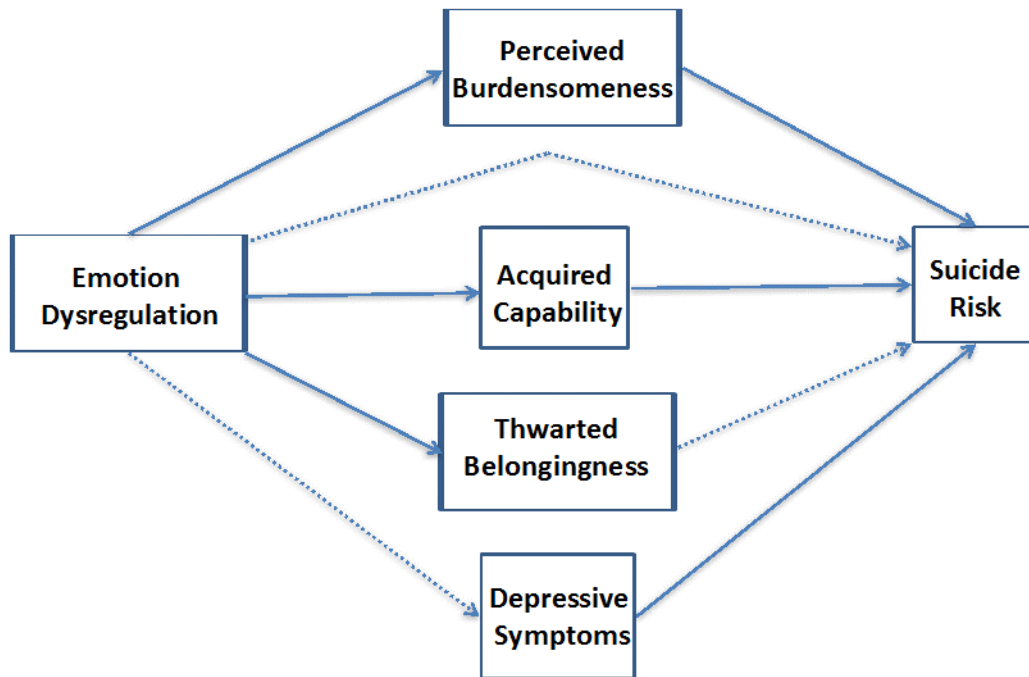


Figure 2. Paths predicting associations among emotion dysregulation, IPTS variables, and suicide risk. The dashed lines indicate nonsignificant associations.

Table 1.
Demographic Characteristics of the Sample and Variables (n = 151)

Variables	Inpatient Sample n (percent) or mean (standard deviation)
Admitting Diagnosis	
Major Depressive Disorder	120 (79.5%)
Other Mood Disorders	25 (16.6%)
Other Psychiatric Disorders	6 (4%)
Age	15.1 (1.41)
Sex	
Girls	124 (82.1%)
Boys	27 (17.9%)
Race	
Caucasian	126 (82.1%)
Other	25 (17.9%)
Ethnicity	
Non-Hispanic	133 (88.1%)
Hispanic	18 (11.9%)
Lifetime Suicidal Ideation	
None	5 (3.3%)
Death Wish	9 (6.0%)
Non-Specific Active Thoughts	25 (16.6%)
Active Ideation	12 (7.9%)
Ideation with Intent	34 (22.5%)
Plan	66 (43.7%)

Table 2.
Correlations Amongst Variables
 (N = 151)

Variables	Emotion Dysregulation	Depression Severity ^a	Thwarted Belongingness	Perceived Burdensomeness	Acquired Capability	Suicide Risk
Emotion Dysregulation	--	.61**	.60**	.62**	.24**	.49**
Depression Severity	--	--	.62**	.59**	.22**	.52**
Thwarted Belongingness	--	--	--	.62**	.26**	.49**
Perceived Burdensomeness	--	--	--	--	.28**	.56**
Acquired Capability	--	--	--	--	--	.34**
Suicide Risk	--	--	--	--	--	--
Mean, SD	3.12 (.77)	1.57 (.65)	3.80 (1.50)	3.40 (1.50)	2.27 (1.09)	5.52 (4.16)

*p < .01

^a Calculated using the Quick Inventory of Depressive Symptomatology without the suicide item.

Table 3.
Hierarchical Multiple Regression Predicting Suicide Risk
(n = 151)

Predictors entered in set	<i>F</i> for step	<i>R</i> ²	<i>f</i> ²	<i>R</i> ² Δ	t for predictors	df	β	S.E.	p	95% CI
Step 1	18.04	.31				4, 145			<.01	
Depression Severity ^a					4.01		.36	.07	<.001	.14 – .43
Emotion Dysregulation					3.44		.30	.47	.001	.68 – 2.52
Step 2	6.94	.39	.13	.08		3, 142			<.01	
Depression Severity ^a					2.13		.20	.08	.04	.01 – .31
Emotion Dysregulation					1.31		.12	.50	.19	-.33 – 1.64
Thwarted Belongingness					1.55		.14	.25	.12	-.11 – .90
Perceived Burdensomeness					2.36		.22	.21	.02	.08 – .92

Note: Age and sex were controlled in all analyses. ^a Calculated using the Quick Inventory of Depressive Symptomatology without the suicide item.

STUDY TWO

Abstract

Not all patients respond equally well to treatment. Emotion dysregulation merits further investigation as a predictor of treatment response due to its role in the development and maintenance of various psychiatric disorders and symptoms including suicidality. The Interpersonal Theory of Suicide (IPTS) would posit that emotion dysregulation is a risk factor for persistent suicide ideation given the greater likelihood of experiencing thwarted belongingness and perceived burdensomeness. Earlier studies have shown that lower levels of suicide ideation at the end of intensive outpatient treatment may be due to reductions in perceived burdensomeness and thwarted belongingness. However, because emotionally dysregulated individuals are more likely to elicit interpersonal rejection, they may have more difficulties keeping perceived burdensomeness and thwarted belongingness low. The sample in this study included 70 adolescents who were recruited from an intensive outpatient program and administered questionnaires measuring the IPTS variables, emotion dysregulation, depressive symptoms, and suicide risk at entry and at exit. Emotion dysregulation at entry was not associated with changes in IPTS variables, depressive symptoms, or suicide risk. However, *change* in emotion dysregulation was associated with *changes* in interpersonal variables, depressive symptoms, and suicide risk. The relationship between changes in emotion dysregulation and suicide risk was accounted for by changes in the interpersonal variables and depressive symptoms. This finding indicates that emotion dysregulation changes in tandem with precursor variables and with risk, but that precursor variables are most proximal to suicide risk. Results from exploratory analyses indicated that participants entering the program at higher suicide risk also had higher scores on most variables of the study (other than acquired capability) than did those who entered the program at lower risk. However, risk status interacted with time

such that participants at higher risk showed greater improvement on all measures except acquired capability by the end of the program. These findings provide preliminary evidence about patients most likely to benefit from treatment. The results also have implications for the IPTS, for the program, and for future research about examining the bases for risk status associated group differences in treatment response

INTRODUCTION

Research on treatment outcomes suggests that approximately 20 to 40 percent of patients do not benefit adequately from intervention (Barlow, 2002). Furthermore, an estimated 40 to 60 percent of patients with major depressive disorder experience symptom relapse despite initial response to treatment (Vittengl et al., 2007). Information about predictors of treatment response would have significant clinical utility as it would influence selection for treatment and inform the development of additional programs for non-responders. The Interpersonal Theory of Suicide (IPTS) offers a framework within which to examine discrepant treatment response. The theory predicts that response to treatment for suicide ideation would depend upon changes in cognitions related to burdensomeness and belongingness. Individual characteristics that limit the effectiveness of a treatment program's influence on the IPTS constructs would be less likely to respond with decreased suicidality. Emotion dysregulation merits further investigation because of its role in the development and preservation of various psychiatric diagnoses and symptoms. The IPTS would posit that reductions in suicide ideation would be expected to be effected through reduced thwarted belongingness and perceived burdensomeness. However, the extent to which emotionally dysregulated individuals are more likely to experience interpersonal rejection, they may have more trouble maintaining low levels of perceived burdensomeness and thwarted belongingness despite the skills that they have opportunities to acquire in treatment programs for suicidality. This study will examine whether emotion dysregulation as a predictor of response to treatment in suicidal adolescents in the context of the IPTS framework.

Longitudinal Examination of IPTS Variables in Clinical Samples of Adolescents

A major critique of IPTS studies with adults or adolescents is the overreliance on cross-sectional designs (Ma et al., 2016). Czyz et al. (2015) were among the first to examine the IPTS in adolescents using a prospective design with proxy measures for IPTS variables. The authors found that the interaction between perceived burdensomeness and history of suicide attempts (proxy for acquired capability) predicted suicide attempts in boys three months following discharge. Additionally, history of suicide attempts predicted suicide attempts one year following discharge. Miller, Esposito-Smythers, and Leichtweis (2016) utilized direct IPTS measures and investigated the relationship between thwarted belongingness and perceived burdensomeness, and suicide ideation, in adolescents in a partial hospitalization program. The authors found that neither levels of thwarted belongingness or perceived burdensomeness at intake predicted suicide ideation at discharge.

More recently, King and colleagues (2017) prospectively examined the IPTS and response to treatment in clinical sample of adolescents participating in an intensive outpatient program. Changes in thwarted belongingness, perceived burdensomeness, and depressive symptoms all had independent associations with suicide risk. Furthermore, thwarted belongingness was more responsive to change following treatment than was perceived burdensomeness.

The above studies emphasize the role of prospective and longitudinal designs as they provide a more nuanced understanding of the IPTS variables over time (Ma et al., 2016). For example, both Miller et al. (2016) and King and colleagues (2017) found that neither thwarted belongingness nor perceived burdensomeness at entry predicted suicide risk at exit. However, King et al. (2016) extended the literature by demonstrating that *change* in thwarted

belongingness, perceived burdensomeness, and depression are associated with *change* in suicide risk. It should be noted that change in depression exerted an independent effect on suicide risk, violating the final common pathways model of the IPTS. This finding also reinforced previous critiques of IPTS research regarding the need to control for traditional risk factors such as depression (Stewart et al., 2015).

Treatment Response

Studies of treatment outcome generally demonstrate the positive effects of evidence based therapies such as cognitive behavioral therapy, acceptance and commitment therapy, and dialectical behavior therapy on psychiatric disorders (i.e. depression, anxiety disorders, borderline personality disorders, substance use disorders, etc.). However, as previously stated, the variability of patient response to treatment has made understanding the influence of pretreatment characteristics on treatment success an important process in developing efficacious interventions (Aldao, Nolen-Hoeksema, & Schweizer, 2010; Burt et al., 2008; Segrin, 2000; Davies, Niles, & Pittig, 2015).

Specifically, it is important to gain a better understanding of the characteristics of patients that respond to treatment and remain well in comparison to those who have a negative response to treatment, or do not respond to treatment, and those that experience a relapse in symptoms following successful treatment. In a review of pretreatment factors that are thought to influence response to treatment Mohr (1995) identified the following: diagnosis of borderline personality disorder, poor interpersonal functioning, lack of motivation, and expectations of the process of therapy that are discrepant with the modality of treatment being offered.

Emotion Dysregulation and Treatment Response

Previous studies examining emotion dysregulation and treatment response have resulted in mixed findings. Empirical findings in support of baseline emotion dysregulation as a barrier to treatment response include higher pretreatment emotion regulation skills predicting better treatment outcomes for depressive symptoms (Fehlinger et al., 2013). Additionally, greater levels of emotion dysregulation were found to be associated with: alcohol use during treatment (Berking et al., 2012) and worse treatment outcomes for anxiety (Berking et al., 2008; Davies et al., 2015).

In contrast, the deficit-matching hypothesis has been proposed to explain why pretreatment deficits may be related to *better* outcomes because treatment can focus on these deficits (Miller et al., 2005). For example, Davies and colleagues (2015) found that participants rating themselves as high on a measure of experiential avoidance received the biggest benefit from acceptance and commitment therapy. Also, Miller and colleagues (year) found that matching treatment to patients with specific deficits (i.e. CBT to patients with high levels of cognitive distortions and family therapy with patients with high levels of family impairment) moderately improved treatment outcomes. This framework would suggest that individuals with high emotional dysregulation may benefit more from treatment because emotional regulation skills that are part of the treatment package might be most useful for them.

IPTS and Treatment Response

Information about predictors of treatment response would have significant clinical utility as it would influence selection for treatment and inform the development of additional programs for non-responders. The IPTS offers a framework in which to examine discrepant treatment response. The theory predicts that changes in suicide ideation are due to treatment effects on perceived burdensomeness and thwarted belongingness. Individual characteristics, such as emotion dysregulation, may influence treatment effects to the degree to which individuals have difficulties sustaining low levels of perceived burdensomeness and thwarted belongingness.

Emotion Dysregulation as a Pretreatment Predictor in the context of the IPTS

Emotion dysregulation warrants further investigation as a predictor of treatment response given its transdiagnostic nature in addition to its role in the development and preservation of various psychiatric disorders (Berking et al., 2008; Gross & Munoz, 1995). The IPTS would posit that emotion dysregulation is a risk factor for persistent suicide ideation given the higher likelihood of experiencing thwarted belongingness and perceived burdensomeness. This is consistent with the study by Fehlinger et al. (2013) that compared pretreatment levels of problem solving, social competence, relaxation ability, and emotion regulation. Fehlinger and colleagues (2013) found that only emotion dysregulation predicted depressive symptoms posttreatment. Based on the final common pathways clause of the IPTS, reduced suicide ideation occurs when perceived burdensomeness and thwarted belongingness decrease. However, emotionally dysregulated individuals may be more vulnerable to behaviors that result in continued interpersonal rejection. This may lead to ongoing difficulties with managing cognitions related to thwarted belongingness and perceived burdensomeness.

Shortcomings in the Literature

Previous studies of baseline emotion dysregulation as a predictor of treatment response have drawn primarily on adult samples. The literature examining IPTS and emotion dysregulation has relied heavily on cross sectional designs and the utilization of components of or proxies for emotion dysregulation (Anestis et al., 2011; Anestis et al., 2013). Inclusion of baseline emotion dysregulation as a prospective predictor of adolescent treatment response using the IPTS will allow for a more sophisticated understanding about determinants of change over time. Specifically, does high emotion dysregulation at baseline impair participants' capability to benefit from intensive outpatient treatment as measured by reduction in suicide ideation? Furthermore, do these findings link up with the IPTS such that baseline emotion dysregulation predicts changes in IPTS variables over treatment? Or does the targeted nature of intensive outpatient treatment mean that participants with higher levels of emotion dysregulation will benefit with the most reduction in suicide ideation as would be suggested from the deficit matching hypothesis? A link between treatment response and the IPTS would be suggested if there were parallel changes in suicide ideation and IPTS variables.

Aims and Hypotheses

The primary purpose of this study was to examine pretreatment emotion dysregulation as a predictor of changes in thwarted belongingness, perceived burdensomeness, and suicide ideation in response to treatment. We hypothesized that adolescents enrolled in a short-term treatment program with higher emotion dysregulation prior to beginning treatment would manifest less of a reduction in thwarted belongingness, perceived burdensomeness, and suicide ideation at the end of treatment. We proposed that consistent with the IPTS and with the

literature, changes in thwarted belongingness and perceived burdensomeness would be associated with changes in suicide ideation.

PARTICIPANTS AND CONTEXT

This study was approved by the university's Institutional Review Board. Written informed consent and assent were obtained prior to initiation of study procedures. Participants were adolescents (ages 12 – 17) recruited from an intensive outpatient program (IOP) in the ambulatory department of a medical school affiliated hospital. The participants were referred to the IOP from various sources including the hospital's psychiatric unit, emergency department, psychiatrists, and outpatient therapists. The IOP was developed for suicidal youth as an intermediate step between inpatient hospitalization and outpatient care. Participants and primary caregivers were English-speaking, as our measures did not have non-English norms. Adolescents were ineligible if they presented with (1) concomitant intellectual disability, active psychosis, and neurological disorders that would impact their ability to complete questionnaire, held back more than two years from age-appropriate grade level, or patient or primary caregiver was unable to read English.

RESULTS

The final sample included 75 adolescents who completed measures on key variables at entry and exit (see Figure 1). Initial inspection of the data indicated that several variables were not normally distributed (emotion dysregulation at entry, perceived burdensomeness at entry and exit, thwarted belongingness at entry and exit, and suicide risk at exit). For that reason, nonparametric analyses (Spearman rank correlation coefficient) were used to investigate simple relationships among variables, and bootstrapping was used when linear regression was conducted.

Complete demographic data are presented in Tables 1. The sample consisted predominantly of non-Hispanic Caucasian girls. Means and standard deviations of study variables are presented in Table 2. A repeated measures MANOVA was conducted and significant differences between key variables at entry and exit were identified. Similar to previous findings (King et al., 2017) there were significant differences from entry and exit in thwarted belongingness, perceived burdensomeness, and depressive symptoms. However, there was no significant difference in acquired capability from entry to exit.

Table 3 shows the intercorrelations among IPTS variables, emotion dysregulation, depressive symptoms, and suicide risk. There was a particularly high correlation between thwarted belongingness and perceived burdensomeness at exit, which is partially consistent with previous findings with clinical adolescents (Horton et al., 2015; King et al., 2017). Thwarted belongingness and perceived burdensomeness were maintained as separate constructs to test for interaction effects. At entry, there was a finding that was contrary to our expectations. First the Spearman's correlation analysis indicated that emotion dysregulation at entry was not associated

with suicide risk at entry; however, emotion dysregulation at exit was concurrently associated with suicide risk.

Baseline Emotion Dysregulation as a Predictor of Change in Suicide Risk, Perceived Burdensomeness, Thwarted Belongingness, Acquired Capability, and Depressive Symptoms from Entry to Exit from a Treatment Program

We hypothesized that adolescents enrolled in a short-term treatment program with higher emotion dysregulation prior to beginning treatment would manifest less of a reduction in variables proposed to be precursors of change in risk (thwarted belongingness, perceived burdensomeness, and depressive symptoms), as well as less of a reduction in suicide risk at the end of treatment. Five separate hierarchical multiple regressions were conducted to examine whether emotion dysregulation at entry was associated with changes in: 1) suicide risk (Table 4), and the precursors of suicide risk 2) perceived burdensomeness, 3) thwarted belongingness, 4) acquired capability, and 5) depressive symptoms (Table 5), at the end of treatment. Change was measured as the amount of variance contributed by the measure of interest at exit after controlling for the same variable at entry. For all five regressions, covariates (age, sex, and duration) and suicide risk at entry or precursors of risk at entry were entered at step one and emotion dysregulation at entry was entered at step two. Contrary to our hypothesis, emotion dysregulation at entry was not associated with change in any of the five dependent variables (see Figure 2).

Change in IPTS variables, Depressive Symptoms, and their Relationships with Change in Suicide Risk from Entry to Exit from a Treatment Program

We proposed that consistent with the IPTS, changes in thwarted belongingness and perceived burdensomeness would be associated with changes in suicide risk. In addition, we

proposed consistent with past findings (King et al., 2017; Horton et al., 2015) that changes in depressive symptoms would also be associated with change in suicide risk. Three separate hierarchical multiple regressions were performed to examine if changes in 1) perceived burdensomeness, 2) thwarted belongingness, and 3) depressive symptoms were associated with change in suicide risk (Table 6; Figure 3). Change was measured as the addition to variance contributed by the predictor of interest at exit after controlling for the predictor of interest at entry. For all three regressions, covariates (sex, age, and duration), suicide risk at entry were entered at step one.

For the first regression (Equation 1, Step 2, Table 6), perceived burdensomeness at entry and perceived burdensomeness at exit (to account for change in perceived burdensomeness) were added at step two with the second step accounting for an additional 18% of the variance in change in suicide risk over treatment. Perceived burdensomeness at exit (indicating change in perceived burdensomeness) was significantly related to change in suicide risk in the final model.

For the second regression, (Equation 2, Step 2, Table 6), thwarted belongingness at entry and thwarted belongingness at exit (to account for change in thwarted belongingness) were included at step two with the second step accounting for an additional 13% of the variance in change in suicide risk over treatment. Thwarted belongingness at exit (indicating change in thwarted belongingness) was significantly related to change in suicide risk in the final model.

For the third regression, (Equation 3, Step 2, Table 6) depressive symptoms at entry and depressive symptoms at exit (to account for change in depressive symptoms) were included at step two with the second step accounting for an additional 38% of the variance in change in suicide risk over treatment. Depressive symptoms at exit (indicating change in depressive symptoms) were significantly related to change in suicide risk in the final model.

Next, we investigated whether change in perceived burdensomeness and change in thwarted belongingness contributed independent variance in suicide risk after controlling for change in depressive symptoms as would be predicted by the IPTS (Table 7). Two hierarchical regressions were conducted to analyze change in: 1) perceived burdensomeness and 2) thwarted belongingness. For both regressions, covariates (sex, age, and duration) and suicide risk at entry were entered at step one. The variable of interest at entry and exit (to account for change) were added at step two.

For the first regression, depressive symptoms at entry and exit (to account for change in depressive symptoms) (Equation 1, Step 3, Table 7) were entered at step three and accounted for an additional 23% of the variance in change in suicide risk over treatment. Perceived burdensomeness at exit (indicating change in perceived burdensomeness) and depressive symptoms at exit (indicating change in depressive symptoms) were both significant in the final model.

For the second regression depressive symptoms at entry and exit (to account for change in depressive symptoms) (Equation 2, Step 3, Table 7) were entered at step three and accounted for an additional 28% of the variance in suicide risk over treatment. Thwarted belongingness at exit (indicating change in thwarted belongingness) and depressive symptoms at exit (indicating change in depressive symptoms) were both significant in the final model.

Exploratory Analyses

As discussed above, the first hypothesis that emotion dysregulation at entry would be related to change in precursor risk factors of suicide risk and change in suicide risk was not supported by the data. However, recent findings (King et al., 2017) suggest that it is *change* in

variables conceptualized as precursors to suicide risk that are associated with change in suicide risk. Thus, we conducted four separate hierarchical multiple regression to examine the relationship between emotion dysregulation at entry and exit and 1) perceived burdensomeness at entry and exit, 2) thwarted belongingness at entry and exit, 3) depressive symptoms at entry and exit, and 4) suicide risk at entry and exit (Table 8). For all four regressions, covariates (age, sex, and duration) and the variable of interest at entry were entered at step one.

For the first regression (Equation 1, Step 2, Table 8) emotion dysregulation at entry and at exit (accounting for change in emotion dysregulation) were entered at step two and accounted for an additional 37% of the variance in change in perceived burdensomeness. Emotion dysregulation at exit (indicating change in emotion dysregulation) was significant in the final model.

For the second regression (Equation 2, Step 2, Table 8) emotion dysregulation at entry and at exit (accounting for change in emotion dysregulation) were entered at step two and accounted for an additional 48% of the variance in change in thwarted belongingness. Emotion dysregulation at exit (indicating change in emotion dysregulation) was significant in the final model.

For the third regression (Equation 3, Step 2, Table 8) emotion dysregulation at entry and at exit (accounting for change in emotion dysregulation) were entered at step two and accounted for an additional 28% of the variance in change in depressive symptoms. Emotion dysregulation at exit (indicating change in emotion dysregulation) was significant in the final model.

For the fourth regression (Equation 4, Step 2, Table 8) emotion dysregulation at entry and at exit (accounting for change in emotion dysregulation) were entered at step two and accounted for an

additional 16% of the variance in change in suicide risk. Emotion dysregulation at exit (indicating change in emotion dysregulation) was significant in the final model.

Next, we conducted three hierarchical multiple regressions and examined whether the relationship between change in emotion dysregulation and change in suicide risk was accounted for by variables conceptualized as precursors to suicide risk including changes in 1) perceived burdensomeness, 2) thwarted belongingness, and 3) depressive symptoms (Table 9; Figure 3). For all three regressions, covariates (age, sex, and duration) and suicide risk at entry were entered at step one. Emotion dysregulation at entry and at exit (to account for change in emotion dysregulation) were entered at step two for all three analyses. Emotion dysregulation at exit (indicating change in emotion dysregulation) was significant and accounted for 10% of the variance

For the first regression (Equation 1, Step 3, Table 9), perceived burdensomeness at entry and exit were entered at step three and accounted for an additional 5% of the variance in change in suicide risk over treatment. Perceived burdensomeness at exit (indicating change in perceived burdensomeness) was significant in the final model and emotion dysregulation at exit (indicating change in emotion dysregulation) was no longer significant.

For the second regression (Equation 2, Step 3, Table 9), thwarted belongingness at entry and exit (to account for change in thwarted belongingness) were entered at step three and accounted for an additional 17% of the variance in change in suicide risk over treatment. Thwarted belongingness at exit (indicating change in thwarted belongingness) was significant and emotion dysregulation at exit was no longer significant in the final model.

For the third regression (Equation 3, Step 3, Table 9), depressive symptoms at entry and exit (to account for change in depressive symptoms) were entered at step three and accounted for an additional 44% of the variance in change in suicide risk over treatment. Depressive symptoms at exit (indicating change in depressive symptoms) was significant in the final model and emotion dysregulation at exit (indicating change in emotion dysregulation) was no longer significant. To summarize the findings, although change in emotion dysregulation was initially associated with change in suicide risk, the relationship was accounted for by change in the precursor risk factors (i.e., perceived burdensomeness, thwarted belongingness, and depressive symptoms).

Then, we conducted three separate hierarchical multiple regressions and examined whether emotion dysregulation at entry interacted with 1) perceived burdensomeness at entry, 2) thwarted belongingness at entry, and 3) depressive symptoms at entry to predict suicide risk at exit as well as precursors at risk at exit respectively (Table 10). These analyses were designed to test whether, for example, high levels of emotional dysregulation at entry into the program combined with high levels of depressive symptoms to limit improvement in depressive symptoms (and in a separate equation, in suicide risk) at the end of the program. For all three regression covariates (age, sex, and duration), suicide risk at entry, emotion dysregulation at entry, and the second variable of interest at entry were entered at step one. The interaction between emotion dysregulation at entry and the variable of interest at entry were entered at step two. For all three regressions, the interaction between emotion dysregulation and the variable of interest were non-significant indicating that emotional dysregulation did not synergistically combine with any other key variable to limit response in that key variable.

As part of our exploratory analyses, we examined whether any of the precursors of risk at entry including 1) perceived burdensomeness at entry, 2) thwarted belongingness at entry, and 3) depressive symptoms at entry predicted suicide risk at exit (indicating change in suicide risk). The purpose of these analyses was to extend our original question beyond emotional dysregulation. In other words we asked whether another key variable at baseline identifies youth who improve less at the end of the program. For all three regressions (analyses not shown), covariates (age, sex, and duration), the precursor risk variable at entry at entry, and suicide risk at entry were entered at step one. For all three regressions, the relationships between precursors of risk at entry and suicide risk at exit were non-significant.

Finally, we examined suicide risk as a possible predictor of treatment response as defined by change in precursors and suicide risk. We calculated the median score for the group (6.00), and then separated the participants into two groups: low risk and high risk at entry. Participants were categorized into the low risk group if their suicide risk score was at or below a total score of 6.00. Participants were categorized into the high-risk group if their suicide risk score was above 6. A two way repeated measure MANOVA was used to examine difference between risk status in changes in emotion dysregulation, depressive symptoms, perceived burdensomeness, thwarted belongingness, and acquired capability. Risk status (high and low) was the between subjects factor and time (at entry and at exit) was the within subjects factor. The multivariate Hotelling's $T = .52$, $F(6, 65) = 5.63$, $p = <.001$, supported examination of the univariate findings. We followed the guidelines provided by Cohen, Miles, and Shevlin (2001), which describe partial eta square effect sizes as small at .01, medium at .06, and large at .14. The partial eta square indicated a large effect size of .34. There was a significant difference between high and low risk status over time in all precursor variables except for depressive symptoms and

acquired capability. Patients who entered the program with a higher risk status as measured by the CHRT showed greater emotion dysregulation, more depressive symptoms, greater perceived burdensomeness, and greater thwarted belongingness. However, the slope of their change appeared steeper for emotion dysregulation, perceived burdensomeness, and thwarted belongingness. This indicates that the program resulted in greater improvement on measured risk as well as precursors of risk for those participants who were most suicidal at entry (see Table 11).

DISCUSSION

Research investigating emotion dysregulation as a pretreatment predictor of treatment response has primarily used adult samples. Additionally, literature investigating IPTS and emotion dysregulation has relied heavily on cross-sectional designs. This study contributes to the literature by investigating emotion dysregulation at entry to an intensive outpatient program as a predictor of IPTS and suicide risk response to treatment. Furthermore, testing this relationship through the final common pathways models allowed for a more nuanced understanding of predictors of change over time.

Brief Summation of the Findings

The data did not support our first hypothesis that emotion dysregulation at entry would be associated with precursors of risk or suicide risk at exit (see Figure 2). However, we found support for our second hypothesis that changes in thwarted belongingness and perceived burdensomeness (designated in the IPTS as the most proximal precursors of risk) would be associated with change in suicide risk (see Figure 3). We then examined and found that change in emotion dysregulation was associated with changes in precursors of risk and change in suicide risk. The relationship between change in emotion dysregulation and change in suicide risk was no longer significant when change in perceived burdensomeness, change in thwarted belongingness, and change in depressive symptoms were controlled for in three separate regression analyses.

Explanation of the Findings

To our knowledge, there are no previous studies examining emotion dysregulation at entry as a pretreatment predictor of suicide risk. The studies examining the relationship between emotion dysregulation and suicide risk have been cross-sectional. The findings of this study highlight the importance of examining the relationships between these variables prospectively, as they may not maintain the relationship we may expect based on cross-sectional data.

The absence of a relationship between emotion dysregulation at entry and suicide risk at exit was surprising. These findings should be considered in the context of the limitation and setting of this study. There are multiple explanations as to why we did not find the expected relationship between emotion dysregulation at baseline and suicide risk at exit. The first explanation is related to the questionnaire we utilized to measure emotion dysregulation. The Difficulties with Emotion Regulation Scale (Gratz & Roemer, 2004) captures a participant's perception of their ability to experience, tolerate, and function in the context of aversive emotional states in addition to their belief about their ability to regulate their emotions. However, there are other methods of conceptualizing emotion dysregulation.

For example, Linehan's biosocial theory (Linehan, 1993; Crowell, Beauchaine, & Linehan, 2009) posits that the consequences that we typically attribute to emotion dysregulation are due to multiple components that include: emotion sensitivity, emotion lability, inadequate appropriate regulation strategies, and maladaptive regulation strategies. According to the biosocial theory, emotion sensitivity is thought to have a biological basis and comprises of emotional reactivity to environmental stimuli. Emotion sensitivity is thought to make it difficult to learn adaptive ways to regulate emotions (Carpenter & Trull, 2013). Components such as emotion sensitivity and lability may not be accurately captured with the DERS model,

additionally the DERS does not capture specific maladaptive regulation only the participant's self-report of lacking emotion regulation strategies.

Emotion dysregulation as we measured it, changed following treatment. It is possible that other components of emotion dysregulation such as sensitivity and lability may be more enduring over time and may capture the relationship better than the measure used in this study. The possibility that emotion sensitivity as a construct is more stable over time and is not subject to fluctuations is supported by evidence (Martin, Berry, Dobranski, & Horne, 1996). It is possible, then, that emotion sensitivity may be a better risk factor for suicide risk. Adolescents that rate higher in emotion sensitivity may be more predisposed to experiencing more negative emotions. Although the adolescents would make gains in emotion dysregulation, they may still be vulnerable to aversive emotions, perceived burdensomeness, and thwarted belongingness.

The duration between the two time points of this study may have influenced the findings. Both suicide risk and emotion dysregulation as measured in this study were dynamic constructs, the length of time between evaluations may not have been optimal to effectively capture the relationship between the variables. The addition of multiple measurements at shorter distances could be one method that would allow for a clearer view of how these constructs change over time.

The next possibility that might have influenced the results is that the study took place in the context of an intensive outpatient program. Specifically, the interventions that this program utilizes target both emotion regulation and suicide risk. Thus, change forced upon these constructs might undo the natural coupling between emotion dysregulation and suicide risk that we would expect to see under naturalistic circumstances. Our findings may also reflect that this program is particularly effective at targeting emotion dysregulation. The program from which

these participants were recruited is based on cognitive behavioral therapy and includes skills influenced by dialectical behavior therapy. The adolescents learn skills such as mood monitoring and distress tolerance related to better regulate their emotions. Finally, it is possible that the relationship between emotion dysregulation at entry and suicide risk over time might be more apparent in lower risk populations.

The finding that the relationship between change in emotion dysregulation and change in suicide risk was accounted for by changes in the precursors of risk could be interpreted as indicating that difficulties with emotion regulation serve as a potential marker of vulnerability. Vulnerability could be conferred through the agency of the precursors. Specifically, emotion dysregulation may be a distal factor for suicide risk because it exacerbates impaired interpersonal functioning (thwarted belongingness and perceived burdensomeness) and prolonged aversive emotional states (depressive symptoms) (see Figure 4).

Exploratory Hypotheses

The findings demonstrated that participants that entered the program higher in suicide risk as measured by the CHRT had a greater response to treatment than participants that entered the program at lower levels of risk. Furthermore, the high-risk group scored lower on all exit measures except for depressive symptoms. There are several possible explanations as to why the high-risk group had a greater response to treatment than the low risk group. The first and most obvious explanation is that this program is especially effective at treating patients that are considered to be a high suicide risk, but are not severe enough to warrant hospitalization. The intensive outpatient program is innovative, and as far as we know, it is one of very few programs in the country designed to provide a level of treatment that fills the gap between a psychiatric inpatient unit and community mental health services for suicidal adolescents.

However, the level of service may not be appropriate for all adolescents who express suicide ideation. It is possible that the lower risk group identified in this study have needs that may be better met by less intensive treatment geared towards maintaining or decreasing low risk, or by community resources. This explanation is supported by previous research on matching treatment to patient deficits (Davies et al., 2014). When patients that have specific deficits are matched to treatment tailored towards those specific deficits, they make greater gains than patients with less of a deficit. In this context, it makes sense that patients in the high risk group demonstrated greater response to treatment in a program specifically aimed towards reducing suicide risk than patients in the low risk group.

Another possible explanation is that participants identified as high-risk upon entry into the treatment program, recognized as being at higher risk, may have received more intensive treatment (treatment “dose”) than the low risk group. First, we examined whether there were differences between the two groups in terms of the duration of treatment. We conducted an independent sample *t*-test and found that there was no significant difference in duration of treatment between the high-risk group ($M = 36.30$ days; $SD = 9.20$ days) and low risk group ($M = 35.45$ days; $SD = 11.49$ days). However, there may be other factors that influence the dose of treatment that we did not capture. One such factor is a possible difference in level of individual support received by the two groups. For example, the high risk group may have had a higher number of individual therapy sessions per week or they may have used the on-call pager to receive additional support. Similarly, the severity of the high risk group might lend itself towards greater mobilization of support such as parental involvement in the program. It may be possible that our findings are an artifact that result from the drop out or rehospitalization of some of the presumably most impaired on whom we have no data at exit, and whose improvement

would be expected to be much more limited. Finally, a possible explanation for the differences in treatment response is that the high risk group simply regressed to the mean. Specifically, because the high risk group scored extremely high on the entry measures they were less likely to score as high on the exit.

Implications for the IPTS

As previously stated, a shortcoming in the IPTS literature is that known risk factors such as depression have not been consistently controlled. The value of the IPTS is that the constructs provide a final common pathway for the development of suicidality; however, one of the most important tests of a theory is whether the constructs account for variance once known risk factors are controlled (Rogers et al., 2016). Our findings demonstrated that the relationship between change in emotion dysregulation and change in suicide risk was accounted for by change in thwarted belongingness and change in perceived burdensomeness which was consistent with the final common pathways model. Change in depressive symptoms also accounted for the relationship between change in emotion dysregulation and change in suicide risk. Furthermore, when changes in the interpersonal variables were accounted for, change in depressive symptoms still maintained a significant relationship with change in suicide risk. This violates the final common pathways clause of the IPTS, which posits that depressive symptoms are distal factors.

This finding is also consistent with previous studies investigating the IPTS with clinical adolescent samples. Horton et al. (2015) found that depression severity was independently associated with recent suicide intent, while controlling for acquired capability. Miller et al. (2016) found that depression accounted for the relationship between thwarted belongingness and change in suicide risk. Finally, King et al. (2017) found that change in depressive symptoms was directly associated with change in suicide risk.

Implications for Assessment and Treatment

Our findings demonstrate support for the IPTS framework as a theory driven approach to assessing and reducing suicide risk. Interpersonal cognitions related to perceived burdensomeness and thwarted belongingness should be important targets of clinical assessment and intervention. Identifying adolescents at greatest risk would involve assessing for beliefs about being a burden, perceptions of not belonging, and current depressive symptoms because these variables are most proximal for suicide risk. The cognitions of thwarted belongingness and perceived burdensomeness should be early targets for intervention which would include learning to identify and challenge automatic negative thoughts related to either of these cognitions as they appear more amenable than acquired capability to change.

There are numerous components of the program that target thwarted belongingness (e.g., interpersonal effectiveness, utilizing social support, assertive communication), perceived burdensomeness (e.g., identifying and challenging unhelpful thoughts, utilizing social support, validation) and depressive symptoms (e.g., behavioral activation, identifying and challenging unhelpful thoughts, mindfulness). However, like most other treatments, SPARC is an omnibus package and it is difficult to know for certain which strategies target which mediators and at what degree of effectiveness. Further studies will need to examine whether interventions that directly target these variables results in changes over the program in the possible mediators and the outcome of suicide risk.

The results of this study support the IPTS concept that acquired capability does not easily lend itself to change. Given the stability of acquired capability, assessment should include a measurement of the adolescent's level of acquired capability. Regarding intervention, means restriction, such as restricting access to firearms and medication, would be important to reduce

the likelihood of a fatal or near fatal attempt especially for adolescents with high scores on all three IPTS variables. There may be ways to reduce exposure to painful and provocative experiences at the family level by promoting parental monitoring and educating parents about risk taking behaviors. At the societal level, efforts should be geared towards prevention of mental health problems and risk behaviors that might increase acquired capability through school based intervention programs tailored towards improving emotional regulation skills.

Although targeting perceived burdensomeness, thwarted belongingness, and depressive symptoms may be the most direct way to reduce suicide risk, our findings support the importance of targeting emotion dysregulation as well. Specifically, because emotionally dysregulated adolescents are prone to experiencing repeated interpersonal rejection, it could be difficult for them to maintain low perceived burdensomeness and thwarted belongingness. It is this inability to maintain low thwarted belongingness and perceived burdensomeness that ultimately makes them vulnerable for suicide risk. Utilizing a multifaceted approach that incorporates strategies to challenge negative thoughts related to thwarted belongingness and perceived burdensomeness, improve interpersonal effectiveness and skills to maintain or develop close relationships, reduce depressive symptoms, restrict access to means, and improve emotion regulation such as dialectical behavioral therapy, will provide the greatest change in reducing suicide risk in the long run.

The findings from our exploratory analysis have preliminary implications for identifying adolescents most likely to benefit from the intensive outpatient treatment program. It is heartening that neither high levels of emotional dysregulation nor high levels of suicide risk cap the effectiveness of our program. From a program perspective, this may suggest that adolescents entering with low suicide risk may not require such an intensive program. Determining whether

the program misses some of the more specific needs of youth that have suicide ideation at weaker levels would be a worthwhile endeavor and may improve our ability to serve their needs. One possible solution might be to separate the high risk group and the low risk group into separate tracks to understand and tailor more specifically to their needs. Obtaining qualitative information from patients in low risk groups regarding their needs might better inform their program. However, studies collecting follow up data on patients that complete the program are needed to truly understand how these two groups fare once they complete the program. This would inform the literature, for example, as to whether differential function at entry, versus improvement over the program, versus function at exit, are most accurate in predicting post-program outcomes. Accumulated information from careful follow-up data will also inform about a possible absolute or relative criterion associated with better outcomes that could guide discharge planning.

Future Research

There are several limitations of this study. Although it is reassuring in that our program appears to be helpful to emotionally dysregulated youth who are notoriously difficult to treat, our findings that emotional dysregulation does not influence whether or not treatment is effective might be limited by our methodological approach. Future studies should incorporate different measures and models of emotion regulation. It is possible that more trait like components of emotion dysregulation such as emotion sensitivity function as better predictors of treatment response over time. Additionally, the participants included in this study are a clinical sample of predominately Caucasian girls. It is possible that although emotion dysregulation at entry does not predict treatment response, this relationship might be different in less acute and more diverse

samples. More studies that non-clinical samples that are more representative of the general population will be needed to generalize these findings.

Preliminary findings indicated that the relationship between change in emotion dysregulation and change in suicide risk was no longer significant when changes in perceived burdensomeness, thwarted belongingness, and depressive symptoms were controlled. Future studies should incorporate multiwave approaches that utilize three or more time points in order to better understand which variables (emotion dysregulation, interpersonal variables, or depressive symptoms) respond to treatment first, and clarify potentially bidirectional effects.

Future studies that use the Difficulties with Emotion Regulation Scale should examine which of the individual subscales respond to treatment. It would also be important to examine the relationship between specific subscales as they relate to change in precursors of risk and change in suicide risk. This would allow for a more nuanced understanding of the relationships among emotion dysregulation, precursors of risk, and suicide risk. Examining the subscales would provide information about what specific facets of emotion dysregulation change in tandem with both precursors of risk and suicide risk. This would have implications as to what changes in different aspects of emotion dysregulation are most important to change in both the precursors and ultimately change in different levels of suicidality.

The preliminary evidence that suicide risk at entry was the only baseline predictor of change in precursors of risk and suicide risk was an unexpected finding. More studies will be necessary to replicate and generalize the findings across different samples of varying severity. Future studies should also examine possible reasons as to the mechanisms by which severity of suicide risk at entry enhances response to treatment, and the components of our program that are most effective for high versus low risk groups.

Conclusions

This study contributes to the literature by prospectively examining the relationships among precursors of risk and suicide risk in the context of a treatment program. Our findings demonstrated that emotion dysregulation at entry did not limit precursors or risk response to treatment; however, we found that emotion dysregulation changed in tandem with precursors and risk. These findings partially supported the “final common pathways” clause of the IPTS in that emotion dysregulation was a distal variable; however, depression still had an effect outside of the IPTS pathway. Finally, the finding that severity of suicide risk at entry predicted response to treatment has implications for the program including identifying patients likely to benefit the most as well as targeting variables most proximal to risk. The data also have implications for future research, such as comparing overall response or relative response at follow up as well as examining the underlying processes that might be responsible for differences in treatment response in high risk group in comparison to low risk groups.

Figure 1. Consort Diagram

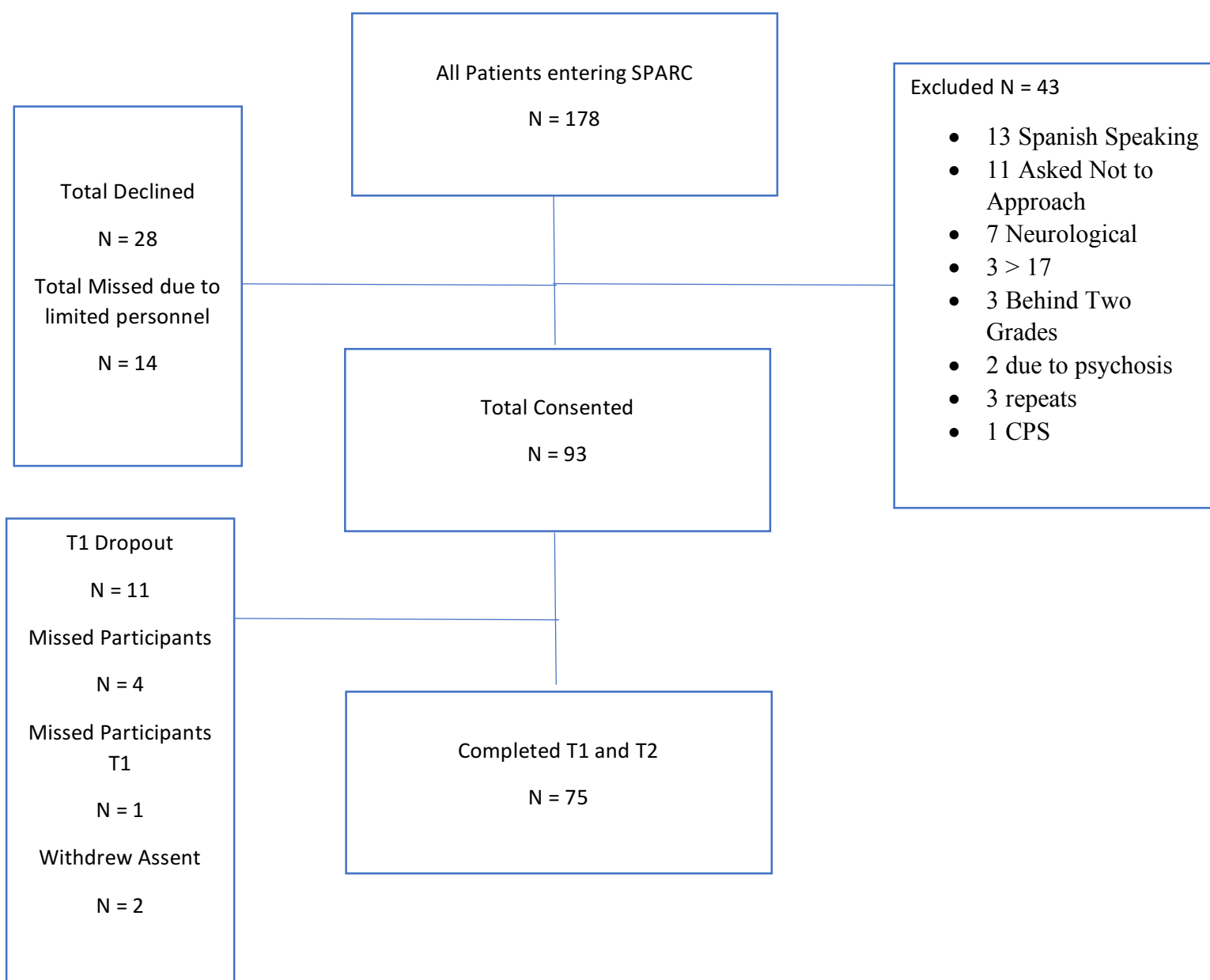


Figure 2.

Hypothesized and Empirically Supported Models: Emotion Dysregulation at Entry Predicting Change in Precursor of Risk and Change in Suicide Risk

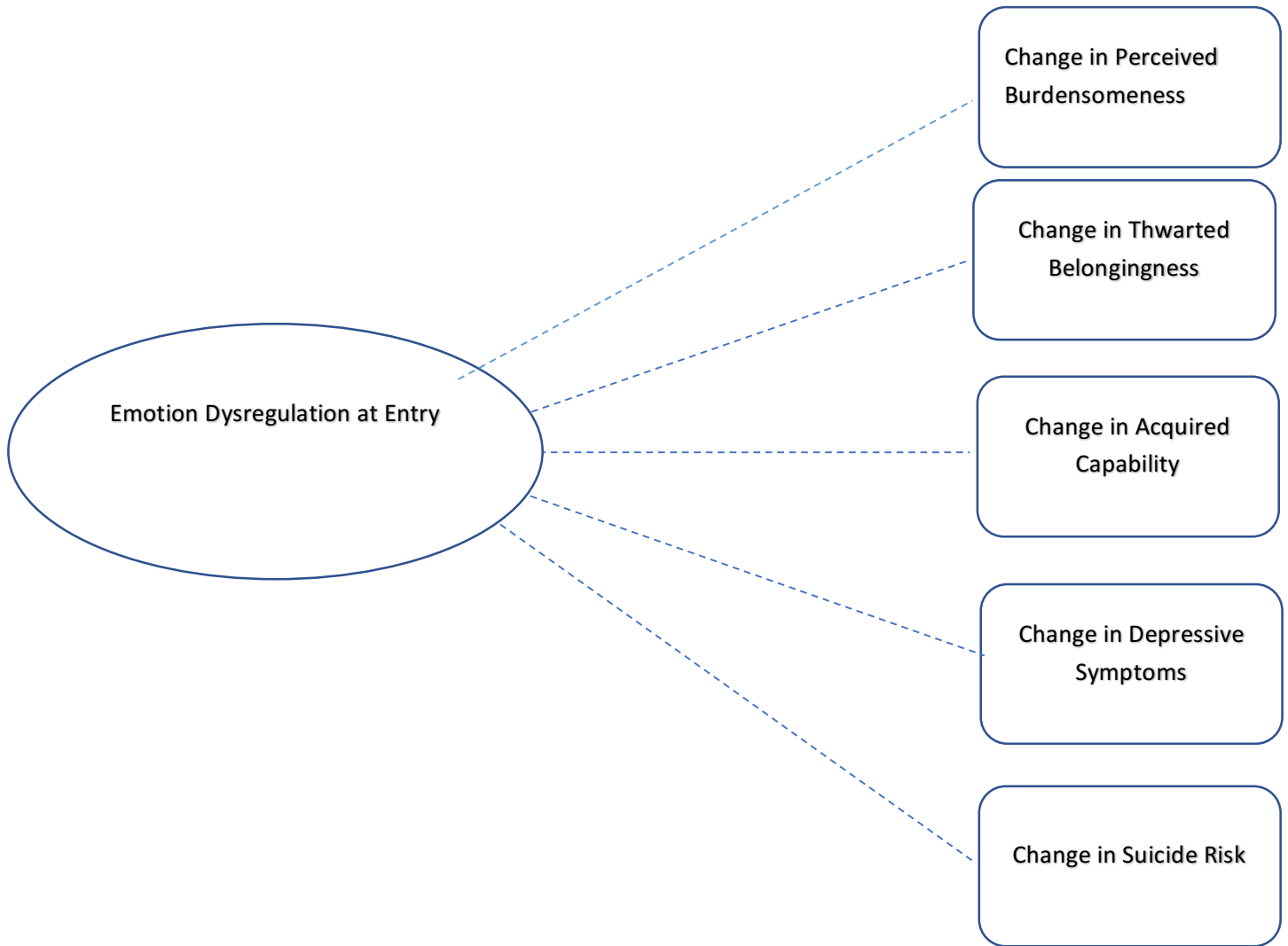


Figure 2. Emotion dysregulation at entry was hypothesized to predict changes in precursor risk factors and change in suicide risk. However, these relationships were not empirically supported. Dotted lines show associations predicted but not empirically supported

Figure 3. Hypothesized and Empirically Supported Models: Change in IPTS and Change in Depression Predicting Change in Risk

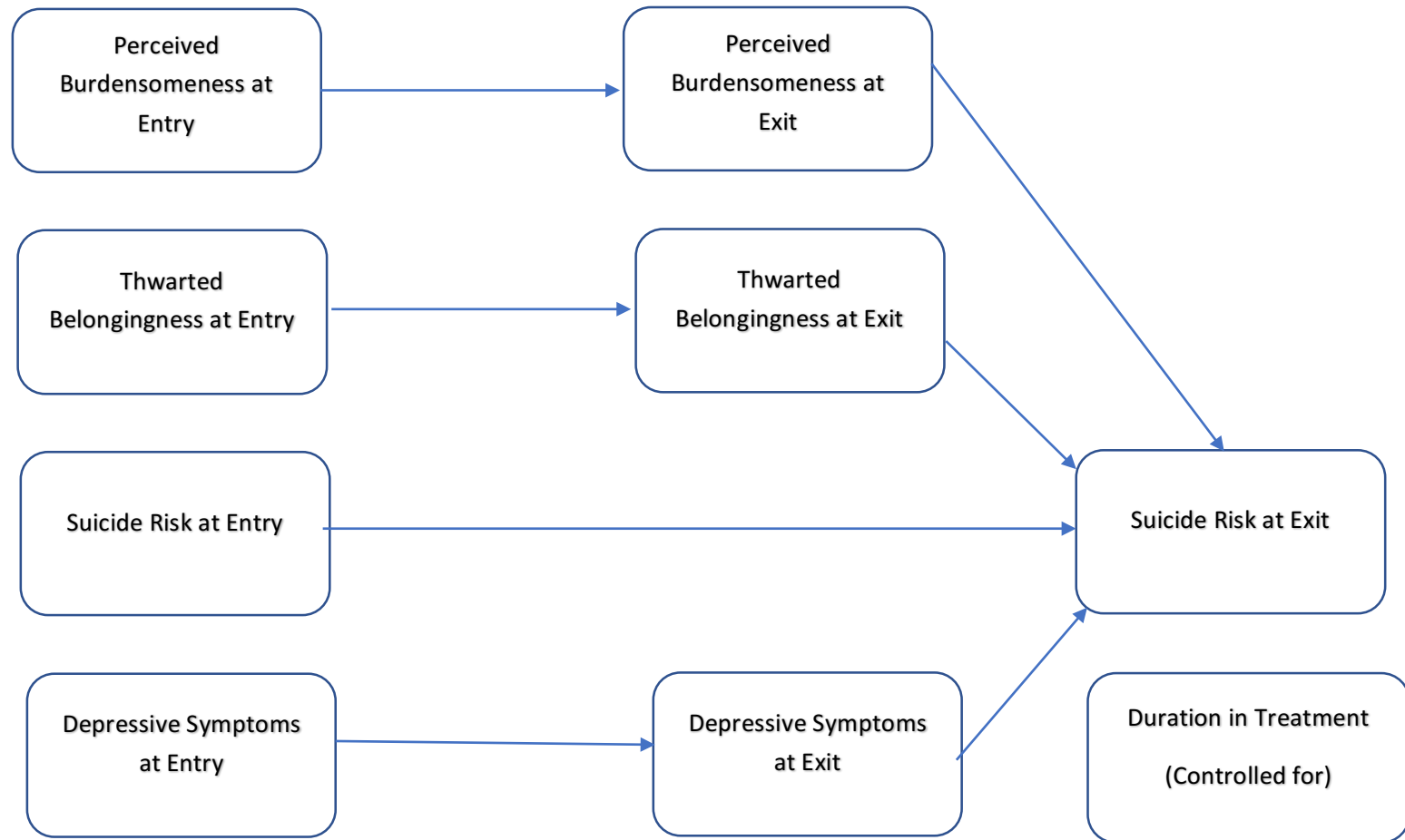


Figure 3. Paths predicting change in suicide risk as a function of change in interpersonal variables and depressive symptoms. All solid lines indicate associations with $p > .01$. Dotted lines show associations predicted but not empirically supported.

Figure 4. Hypothesized and Empirically Supported Models: Changes in Perceived Burdensomeness, Thwarted Belongingness, and Depressive Symptoms Accounting for the Relationship Between Changes in Emotion Dysregulation and Suicide Risk

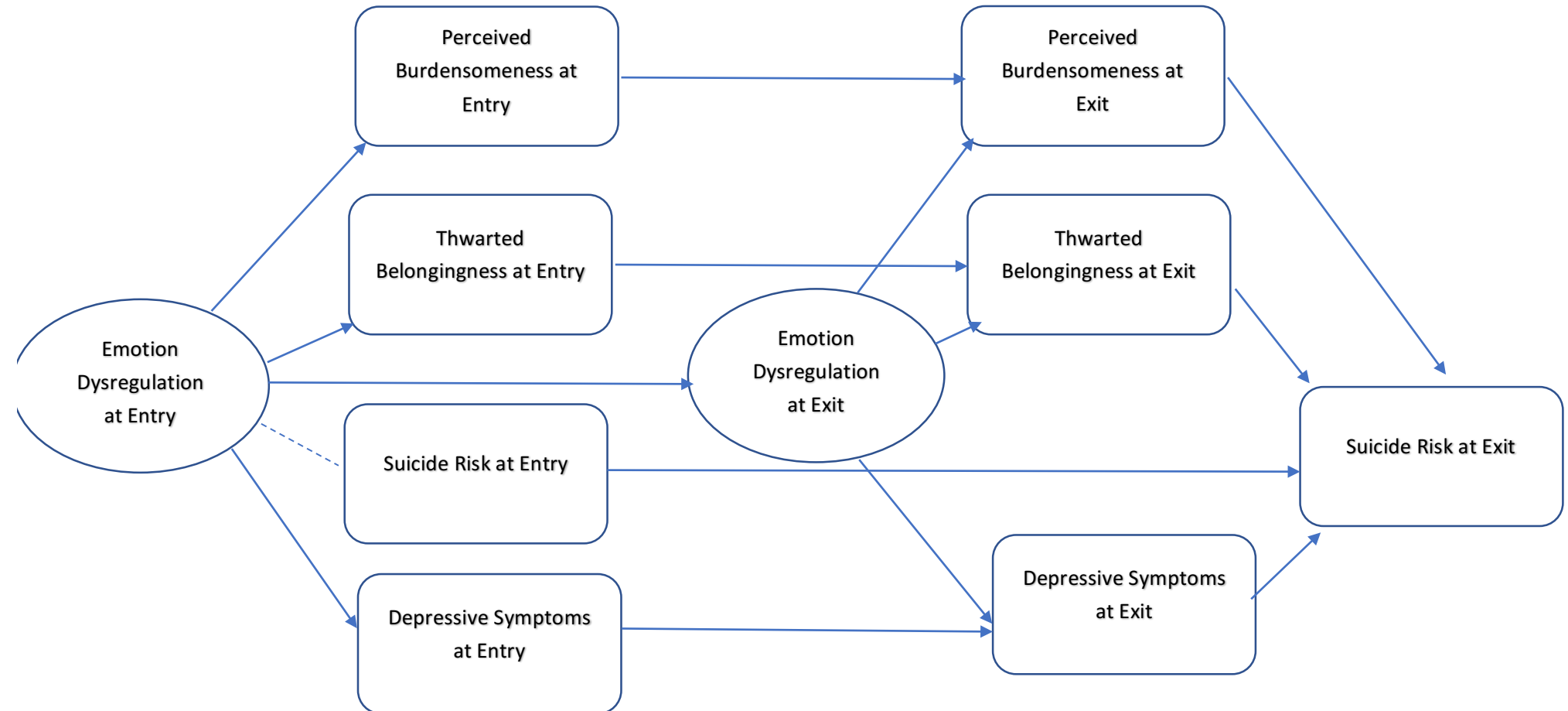


Figure 4. Paths predicting relationship between change in emotion dysregulation and change in suicide risk as accounted for by change in interpersonal variables and depressive symptoms. Only associations that reached $p < .05$ shown as solid lines. Dashed lines indicate hypothesized relationship that was not found.

Figure 5.

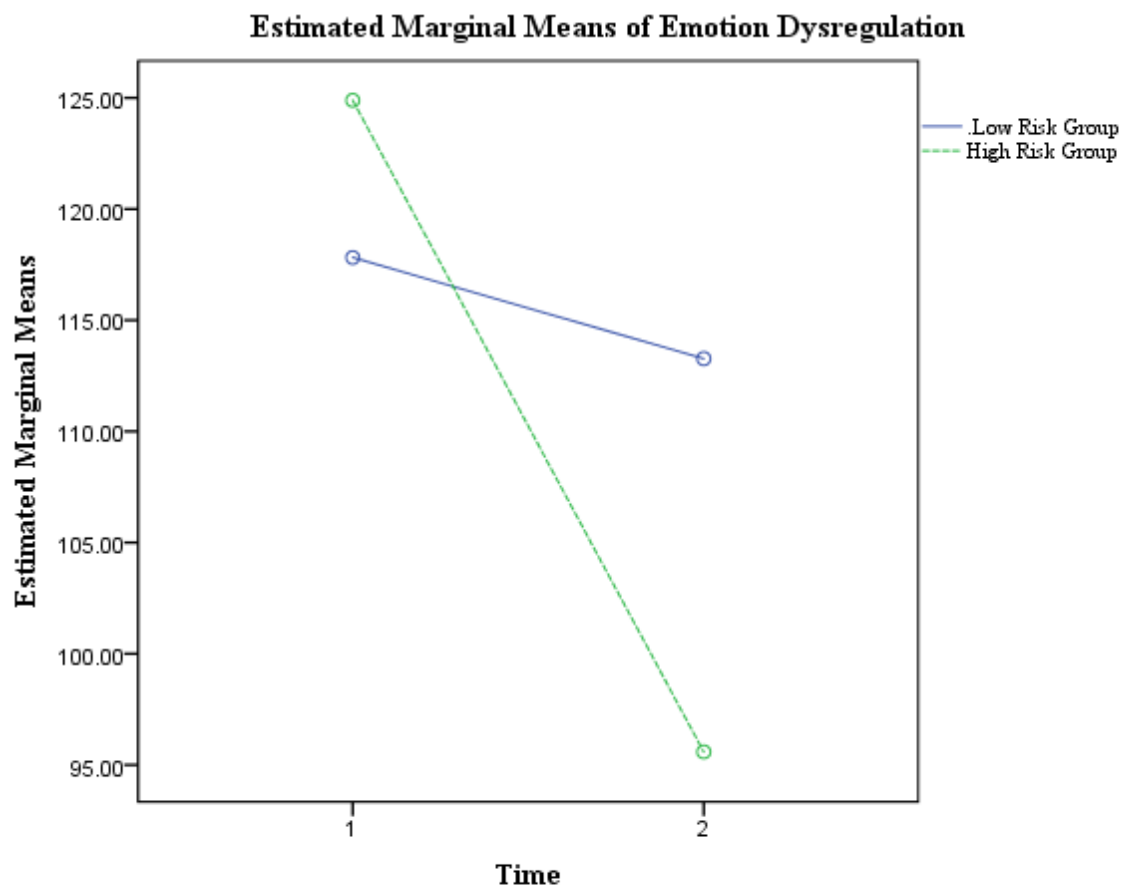


Figure 5. Figure demonstrating significant interaction effect between risk status and time on change in emotion dysregulation.

Figure 6.

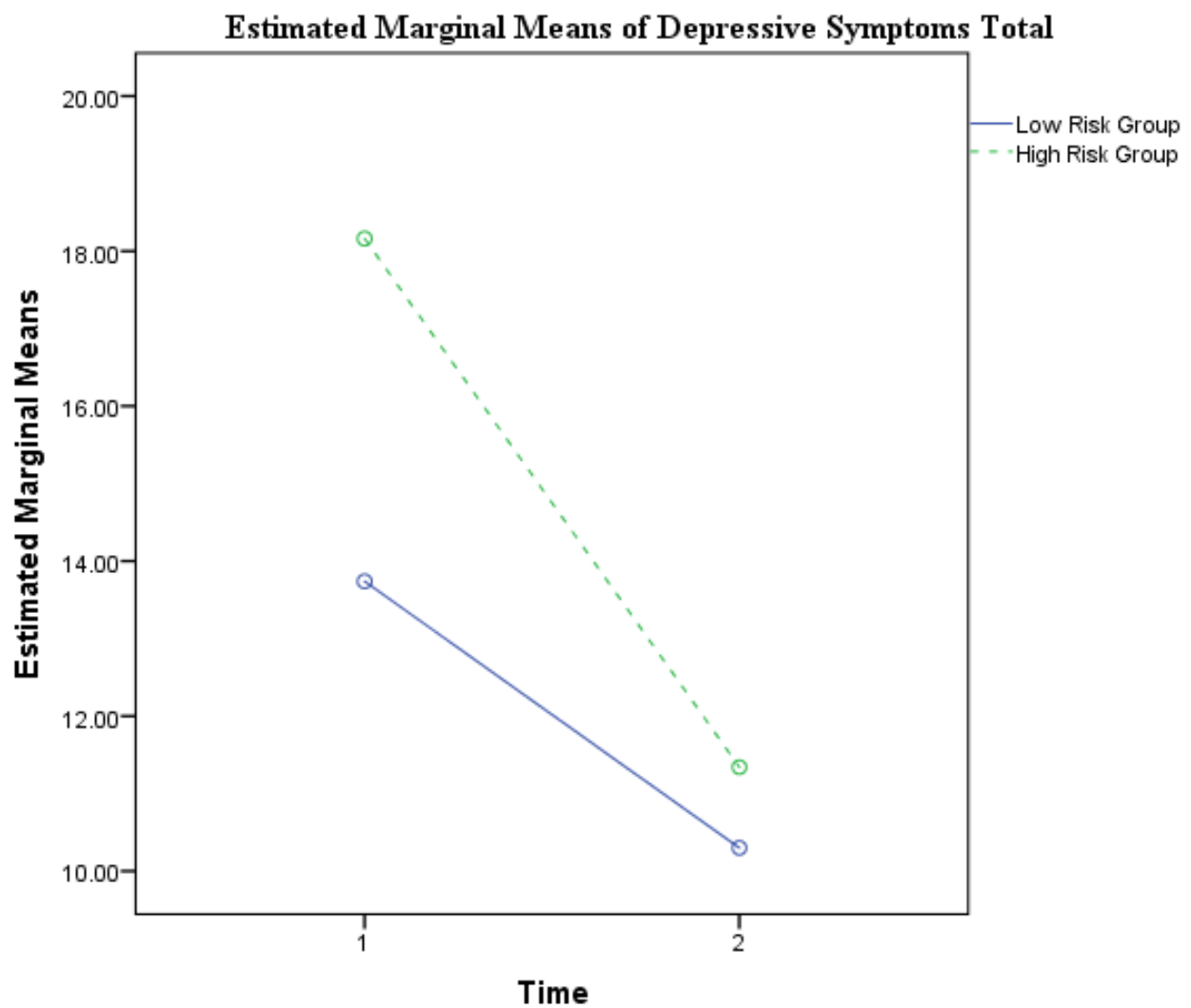


Figure 6. Figure demonstrating non-significant interaction effect between risk status and time on change in depressive symptoms (total score).

Figure 7.

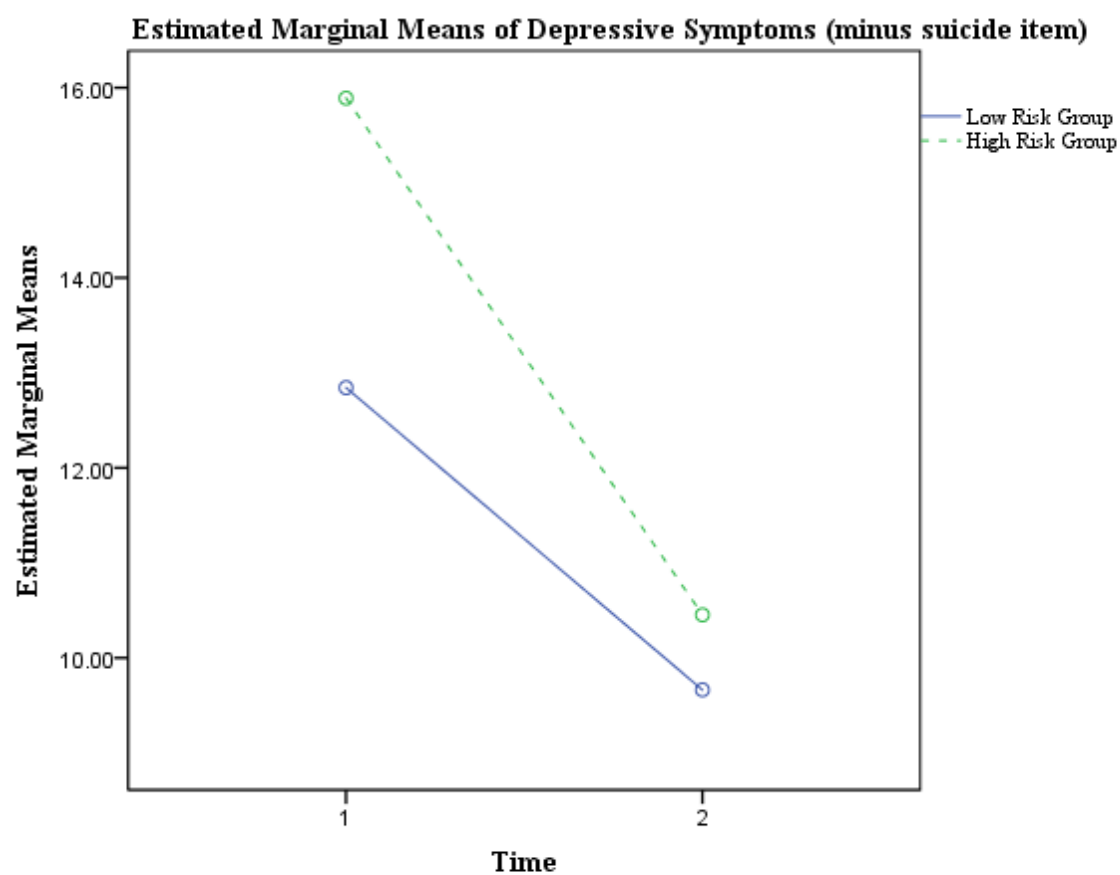


Figure 7. Figure demonstrating the non-significant interaction effect between risk status and time on change in depressive symptoms (minus suicide item).

Figure 8.

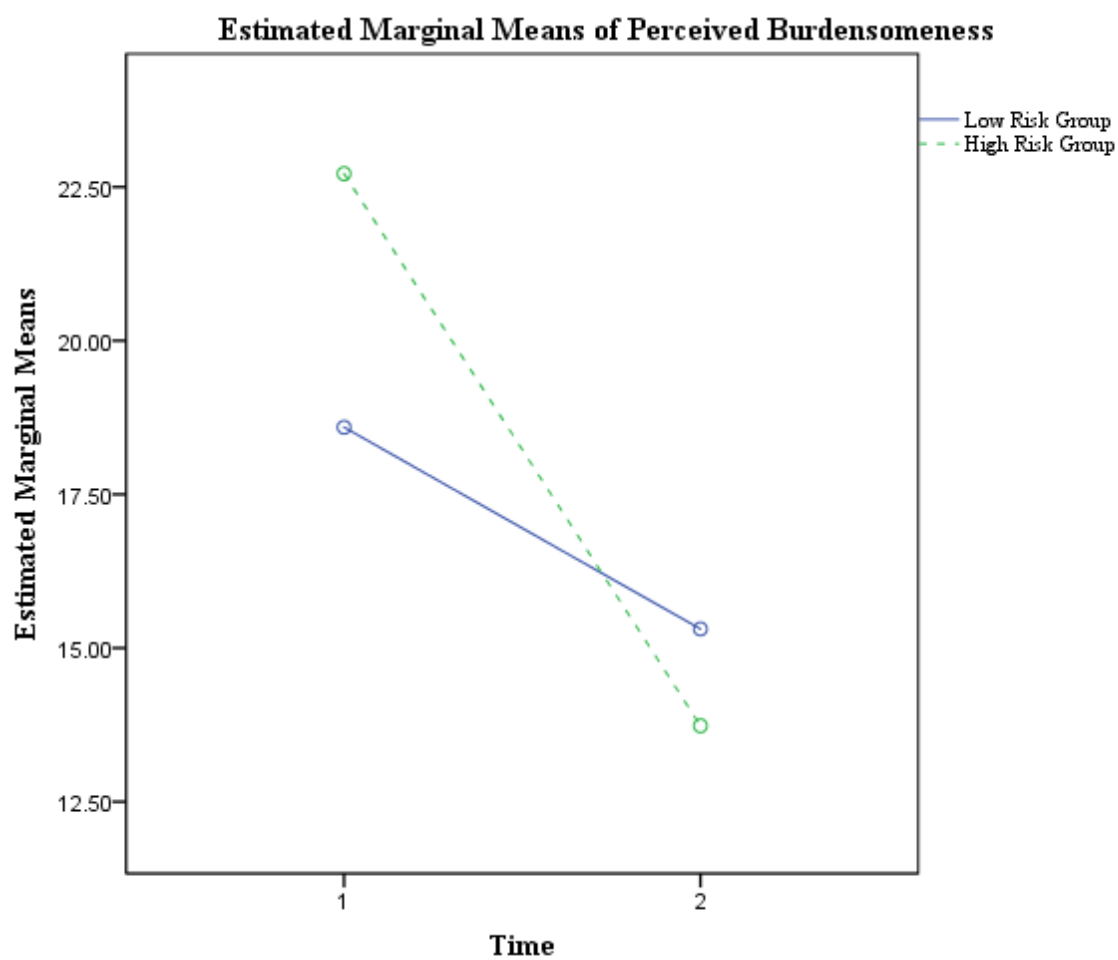


Figure 8. Figure demonstrating the significant interaction effect between risk status and time on change in perceived burdensomeness.

Figure 9.

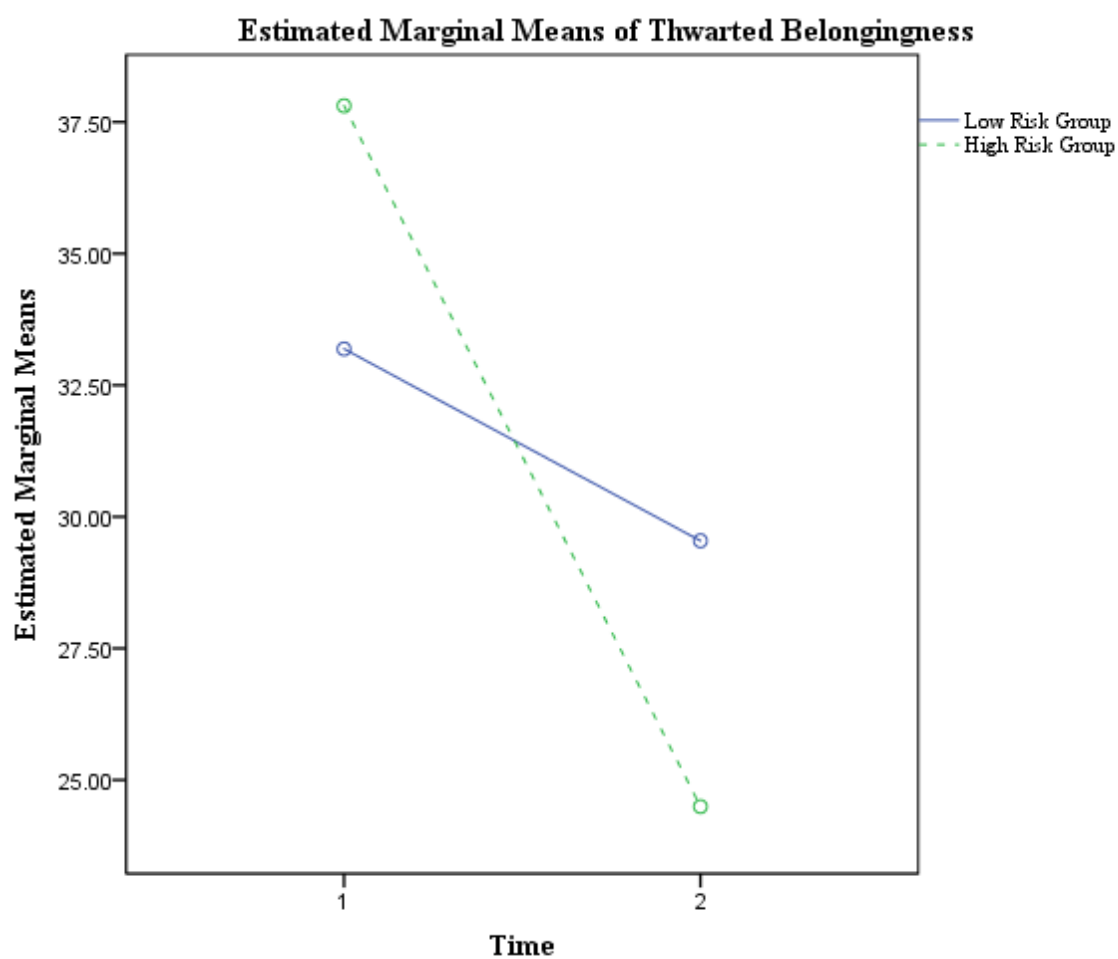


Figure 9. Figure demonstrating significant interaction effect between risk status and time on change in thwarted belongingness.

Figure 10.

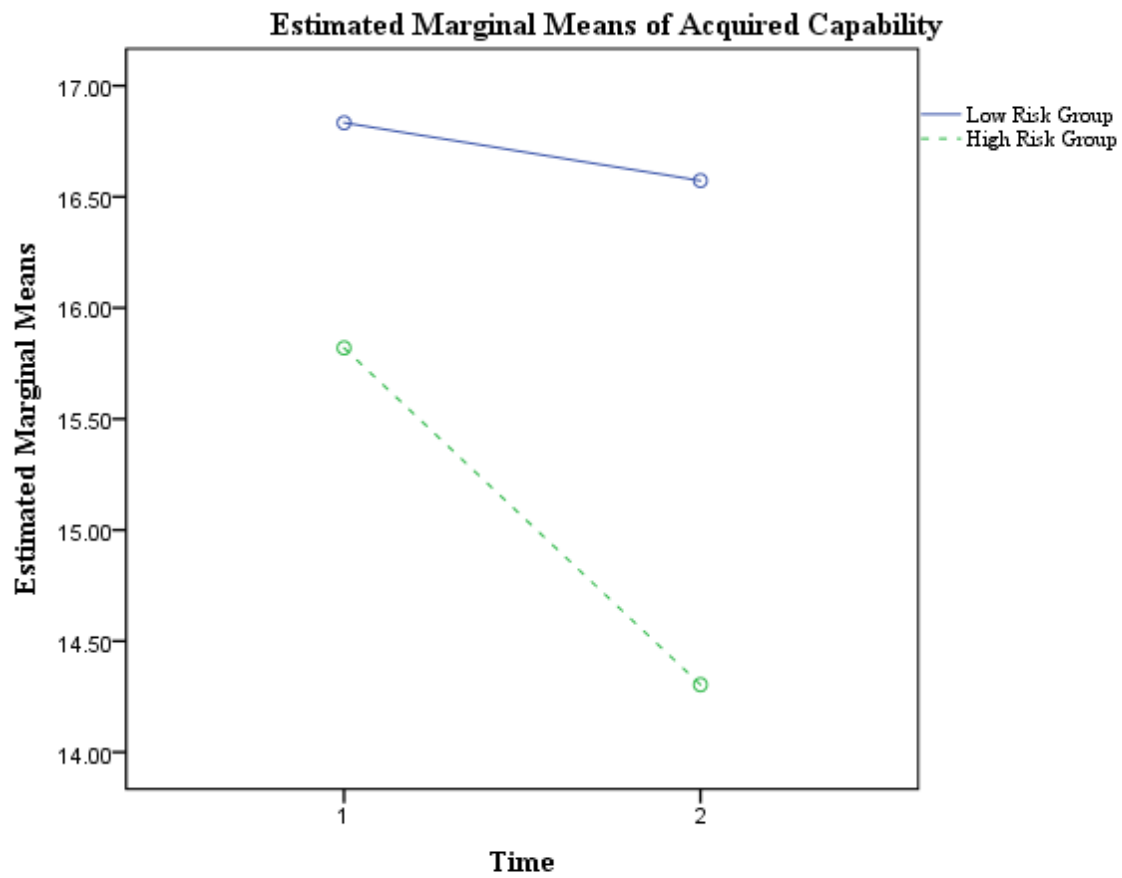


Figure 10. Figure demonstrating a non-significant interaction effect between risk status and time on acquired capability.

Table 1.

Demographic Characteristics of the Sample (N = 75)

Variables	Sample with complete data at entry and exit n (percent) or Mean (standard deviation)
Admitting Diagnosis	
Major Depressive Disorder	71 (94.7%)
Bipolar Disorder	2 (2.7%)
Post-Traumatic Stress Disorder	1 (1.3%)
Social Anxiety Disorder	1 (1.3%)
Age	14.8 (1.3)
Sex	
Girls:Boys	60 (80.0%) : 15 (20.0%)
Ethnicity	
Non-Hispanic: Hispanic	66 (88.0%) : 9 (12.0%)
Race	
Caucasian	67 (89.3%)
African American	4 (5.3%)
Other	4 (5.3%)
Duration of Treatment	35 days (11.17)
Lifetime Suicidal Ideation	
Active Ideation	19 (25.3%)
Ideation with Intent	7 (9.3%)
Plan	49
Lifetime Attempt	
None	43 (57.3%)
1	19 (25.3%)
≥2	13 (18.4%)
Suicide Attempt Past Two Weeks	
No	51 (68.0%)
Yes	24 (32.0%)

Table 2.
Means and Standard Deviations of Measures at Entry and Exit (N = 75)

Variables	Theoretical Range	Entry N (percent)	Exit N (percent)	<i>p</i>	<i>r of entry and exit</i>
ED ^a	36 – 180	121.31 (24.75)	104.55 (28.35)	<.001	.30**
CHRT – Risk ^b	0 - 12	6.35 (3.66)	2.51 (2.76)	<.001	.30**
PB ^c	7 – 63	3.43 (1.68)	2.42 (1.23)	<.001	.28*
TB ^c	7 – 63	4.00 (1.40)	3.03 (1.33)	<.001	.34**
ACSS-FAD ^c	0 - 28	2.34 (.92)	2.22 (.88)	.27	.42**
DS	0 - 27	15.92 (5.38)	10.81 (5.66)	<.001	.26*
<i>Not Depressed</i>		0	12 (16 %)		
<i>Mild</i>		10 (13.33%)	26 (34.70%)		
<i>Moderate</i>		23 (30.67%)	17 (22.60%)		
<i>Severe</i>		24 (32%)	15 (20 %)		
<i>Very Severe</i>		18 (24%)	5 (6.70 %)		
DS-SI ^d	0 - 24	14.35 (4.81)	10.05 (5.09)	<.001	.28*

ED = emotion dysregulation; PB = perceived burdensomeness; TB = thwarted belongingness; acquired capability; DS = depressive symptoms; SI = suicide ideation. * <.05 **<.01

^a DERS mean score for community adolescent sample = 78.9 (23.2) (Weinberg & Klonsky, 2009); DERS mean score from inpatient adolescent sample = 101.28 (28.79) (Perez, Venta, Garnaat, & Sharp, 2012). DERS was used to measure emotion dysregulation.

^b Suicide risk calculated using the CHRT Risk factor (Trivedi et al., et al., 2011); Mean risk score for adolescents at entry and at exit in an intensive patient program (IOP) = 5.91 (3.87) to 2.17 (2.77) (King et al., 2017).

^c PB mean score for adolescents at entry and exit in an IOP = 3.09 (1.24) to 2.51 (1.06) (King et al., 2017). PB mean score from inpatient adolescent sample = 3.62 (1.86) (Horton et al., 2015).

^c TB mean score for adolescents at entry and exit in an IOP = 3.78 (1.41) to 2.74 (1.26) (King et al., 2017). TB mean score from inpatient adolescent sample = 3.78 (1.51) (Horton et al., 2015).

^c AC mean score for adolescents at entry and exit in an IOP = 2.58 (.96) to 2.35 (1.09) (King et al., 2017). AC mean score from adolescent inpatient sample = 2.27 (1.06) (Horton et al., 2015)

^d Depressive symptoms; calculated using the QIDS-A-SR (Rush, et al., 2006; Rush et al., 2003) without the suicide item. DS score ranges: 0 – 5 not depressed, 6-10 mild depression, 11-15 moderate depression, 16 – 20 severe, 21+ very severe. DS mean score for adolescents at exit and entry in an IOP = 13.69 (4.74) to 9.14 (5.43) (King et al., 2017). DS mean score from an inpatient adolescent sample = 12.36 (5.76) (Horton et al., 2015).

Table 3.
Intercorrelations Among Variables at Entry and Exit (N = 75)

Variable	ED	CHRT-RISK	PB	TB	ACSS-FAD	DS	DS-SI
ED	—	.23*	.67**	.68**	.24*	.40**	.45**
CHRT-Risk ^a	.19	—	.44**	.29*	-.01	.63**	.60**
PB	.61**	.25**	—	.63**	.30*	.48**	.46**
TB	.45**	.08	.38**	—	.21	.43**	.44**
ACSS-FAD	.05	.04	.39**	.04	—	.07	.05
DS	.44**	.53**	.22*	.31**	.11	—	.99**
DS-SI ^b	.46**	.43**	.22*	.33**	.14	.98**	—

Note. T2 variables are shaded; ED = emotion dysregulation; PB = perceived burdensomeness; TB = thwarted belongingness; ACSS-FAD = acquired capability; DS = depressive symptoms; SI = suicide ideation. * $p < .05$. ** $p < .01$; Spearman's rho reported

^a Suicide risk calculated using the CHRT Risk factor (Trivedi et al., et al., 2011)

^b Depressive symptoms; calculated using the QIDS-A-SR (Rush, et al., 2006; Rush et al., 2003) without the suicide item.

Table 4.

Results of Hierarchical Multiple Regression Predicting Association between Emotion Dysregulation at Entry and Change in Suicide Risk from Entry to Exit (N = 75)

Predictors entered in step	<i>F</i> <i>For step</i>	<i>R</i> ²	<i>R</i> ² Δ	<i>df</i>	<i>B</i>	<i>p</i>	95% <i>CI</i>
Step 1	2.25	.06		4, 70		.07	
Duration					.02	.114	-.001 - .04
CHRT-Risk at entry ^a					.19	.01	.05 - .34
Step 2	1.43	.05	.114	1,69		.13	
Duration					.01	.08	.00 - .03
CHRT-Risk at entry ^a					.19	.02	.04 - .35
ED at entry					.02	.91	-.28 -.34

Note. All analyses control for duration of treatment, age and sex. The *B* reported is the unstandardized regression coefficient. The DV for this analysis was suicide risk factor at exit. ED = emotion dysregulation; Suicide risk calculated using the CHRT Risk factor (Trivedi et al., et al., 2011)

Table 5.

Results of Four Hierarchical Multiple Regression Analyses Examining the Associations between Emotion Dysregulation at Entry and Changes in Each Precursor of Risk (Perceived Burdensomeness, Thwarted Belongingness, Acquired Capability, or Depressive Symptoms) (N = 75)

Predictors for step	<i>F</i> for Step	<i>R</i> ²	<i>R</i> ² Δ	<i>df</i>	<i>B</i>	<i>p</i>	95% <i>CI</i>
<i>Equation 1 (DV = PB at exit)</i>							
Step 1	12.84	.09		4, 70		.03	
Duration					.03	.40	-.11 - .25
PB at entry					.16	.06	.00 - .05
Step 2	2.26	.12	.02	1,69		.06	
Duration					.03	.05	.00 - .05
PB at entry					.18	.09	-.04 - .36
ED at entry					-.08	.74	-.47 - .44
<i>Equation 2 (DV = TB at exit)</i>							
Step 1	3.60	.12		4, 70		.01	
Duration					.03	.06	-1.16 - .13
TB at entry					.27	.04	.00 - .50
Step 2	3.06	.12	.01	1,69		.02	
Duration					.03	.05	.00 - .05
TB at entry					.32	.02	.04 - .55
ED at entry					-.22	.39	-.63 - .37
<i>Equation 3 (DV = ACSS at exit)</i>							
Step 1	4.70	.17		4, 70		.002	
Duration					.01	.54	-.01 - .02
ACSS-FAD at entry					.41	.001	.20 - .64
Step 2	4.54	.19	.04	1, 69		.001	
Duration					.01	.33	-.01 - .02
ACSS-FAD at Entry					.42	.01	.22 - .64
ED at entry					-.23	.12	-.47 - .11
<i>Equation 4 (DV = DS-SI at exit)</i>							
Step 1	2.00	.05		4, 70		.11	
Duration					.01	.31	-.01 - .13
DS-SI ^a at entry					.13	.30	-.10 - .37
Step 2	1.61	.04	.04	1, 69		.17	
Duration					.01	.34	-.01 - .03
DS-SI ^a at entry					.11	.41	-.14 - .37
ED at entry					.04	.71	-.17 - .27

Note. All analyses control for duration of treatment, age and sex. The *B* reported is the unstandardized regression coefficient. ED = emotion dysregulation; PB = perceived burdensomeness; TB = thwarted belongingness; ACSS-FAD = acquired capability; SI = suicide ideation ^aDepressive symptoms calculated using the QIDS-A-SR (Rush, et al., 2006; Rush et al., 2003) without the suicide item.

Table 6.

Results of Three Hierarchical Multiple Regression Equations Examining the Association between Change in Suicide Risk as a Function of Change in Precursors of Risk (Perceived Burdensomeness, Thwarted Belongingness, or Depressive Symptoms) (N = 75)

Predictors entered in step DV = CHRT-Risk at exit	<i>F</i> for Step	<i>R</i> ²	<i>R</i> ² Δ	<i>df</i>	<i>B</i>	<i>p</i>	95% <i>CI</i>
<i>Equation 1</i>							
Step 1	2.25	.06		4,70		.07	
Duration					.02	.07	.001 - .03
CHRT-Risk at entry ^a					.19	.01	.04 - .34
Step 2	4.65	.23	.18	6, 68		.001	
Duration					.01	.41	-.01 - .03
CHRT-Risk at entry ^a					.23	.002	.10 - .37
PB at entry					-.07	.22	-.19 - .05
PB at exit					.34	<.001	.18 - .50
<i>Equation 2</i>							
Step 1	2.25	.06		4, 70		.07	
Duration					.02	.08	.00 - .03
CHRT-Risk at entry ^a					.19	.01	.05 - .34
Step 2	3.61	.17	.13	6,68		.004	
Duration					.01	.32	-.01 - .03
CHRT-Risk at entry ^a					.26	.001	.12 - .42
TB at entry					-.09	.26	-.24 - .06
TB at exit					.28	.002	.10 - .45
<i>Equation 3</i>							
Step 1	2.25	.06		4, 70		.07	
Duration					.02	.07	.001 - .03
CHRT-Risk at entry ^a					.19	.01	.05 - .34
DS-SI at entry ^b					-.057	.722	-.394 - .325
Step 2	11.01	.45	.38	6, 68		<.001	
Duration					.01	.32	-.01 - .03
CHRT-Risk at entry ^a					.26	.002	.12 - .42
DS-SI at entry ^b					-.22	.15	-.56 - .03
DS-SI at exit ^b					.93	<.001	.68 - 1.24

Note. All analyses control for duration of treatment, age and sex. The *B* reported is the unstandardized regression coefficient. ED = emotion dysregulation; PB = perceived burdensomeness; TB = thwarted belongingness; SI = suicide ideation.

^a Suicide risk calculated using the CHRT Risk factor (Trivedi et al., et al., 2011)

^b Depressive symptoms calculated using the QIDS-A-SR (Rush, et al., 2006; Rush et al., 2003) without the suicide item.

Table 7. *Results of Two Hierarchical Multiple Regression Equations Examining the Association between Changes in Perceived Burdensomeness and Thwarted Belongingness and Change in Suicide Risk (N = 75)*

Predictors entered in step DV = CHRT-Risk at exit	<i>F for Step</i>	<i>R²</i>	<i>R² Δ</i>	<i>df</i>	<i>B</i>	<i>p</i>	<i>95% CI</i>
<i>Equation 1</i>							
Step 1	2.25	.06		4,70		.07	
Duration					.02	.08	-.19 - .13
CHRT-Risk at entry ^a					.19	.01	.05 - .34
Step 2	4.65	.23	.18	6, 68		.001	
Duration					.01	.42	-.01 - .03
CHRT-Risk at entry ^a					.23	.001	.10 - .37
PB at entry					-.07	.23	-.19 - .04
PB at exit					.34	<.001	.19 - .49
Step 3	8.96	.46	.23	8, 66		<.001	
Duration					.004	.61	-.01 - .02
CHRT-Risk at entry ^a					.26	.002	.12 - .41
PB at entry					-.01	.88	-.11 - .10
PB at exit					.15	.04	.002 - .28
DS-SI at entry ^b					-.19	.24	-.53 - .09
DS-SI at exit ^b					.81	<.001	.52 - 1.14
<i>Equation 2</i>							
Step 1	2.25	.06		4, 70		.07	
Duration					.02	.07	.001 - .03
CHRT-Risk at entry ^a					.19	.01	.04 - .34
Step 2	3.61	.17	.13	6,68		.004	
Duration					.01	.34	-.01 - .03
CHRT-Risk at entry ^a					.26	.002	.12 - .42
TB at entry					-.09	.27	-.24 - .06
TB at exit					.28	.003	.09 - .45
Step 3	9.14	.47	.28	8, 66		<.001	
Duration					.01	.37	-.01 - .03
CHRT-Risk at entry ^a					.28	.002	.14 - .45
TB at entry					-.11	.07	-.23 - .01
TB at exit					.13	.05	.01 - .27
DS-SI at entry ^b					-.16	.27	-.48 - .10
DS-SI at exit ^b					.87	<.001	.59 - 1.17

Note. All analyses control for duration of treatment, age and sex. The *B* reported is the unstandardized regression coefficient. ED = emotion dysregulation; PB = perceived burdensomeness; TB = thwarted belongingness; SI = suicide ideation.

^a Suicide risk calculated using the CHRT Risk factor (Trivedi et al., et al., 2011).

^b Depressive symptoms calculated using the QIDS-A-SR (Rush, et al., 2006; Rush et al., 2003) without the suicide item.

EXPLORATORY HYPOTHESES

Table 8. *Results of Four Hierarchical Multiple Regression Analyses Examining the Association between Change in Emotion Dysregulation and Precursors of Suicide Risk Found to be Associated with Change in Suicide Risk and Change in Suicide Risk Over Treatment (N = 75)*

Predictors entered in step	<i>F</i> for Step	<i>R</i> ²	<i>R</i> ² Δ	<i>df</i>	<i>B</i>	<i>p</i>	95% <i>CI</i>
<i>Equation 1 (DV = PB at exit)</i>							
Step 1	2.84	.10		4, 70		.03	
PB at entry					.16	.07	-.001 - .05
Step 2	12.06	.47	.37	6, 68		<.001	
PB at entry					.23	.001	.10 - .37
ED at entry					-.07	.06	-.74 - .03
ED at exit					1.02	<.001	.72 - 1.34
<i>Equation 2 (DV = TB at exit)</i>							
Step 1	3.60	.12		4, 70		.01	
TB at entry					.27	.04	-.002 - .49
Step 2	19.15	.60	.48	6, 68		<.001	
TB at entry					.31	.001	.13 - .48
ED at entry					-.54	.002	-.89 - .20
ED at exit					1.21	<.001	.90 - 1.50
<i>Equation 3 (DV = DS-SI at exit)</i>							
Step 1	1.99	.05		4, 70		.11	
DS-SI at entry ^a					.13	.29	-.10 - .38
Step 2	3.73	.18	.13	6, 68		.003	
DS-SI at entry ^a					.21	.07	-.02 - .44
ED at entry					-.09	.36	-.27 - .13
ED at exit					.35	<.001	.16 - .54
<i>Equation 4 (DV = CHRT – Risk^b at exit)</i>							
Step 1	2.25	.06		4, 70		.07	
CHRT-Risk at entry ^b					.19	.01	.05 - .34
Step 2	3.36	.16	.01	6, 68		.01	
CHRT-Risk at entry ^b					.29	.001	.15 - .46
ED at entry					-.15	.28	-.44 - .14
ED at exit					.45	.003	.18 - .76

Note. All analyses control for duration of treatment, age and sex. The *B* reported is the unstandardized regression coefficient. PB = perceived burdensomeness; TB = thwarted belongingness; ED = emotion dysregulation; SI = suicide ideation.

^aDepressive symptoms calculated using the QIDS-A-SR (Rush et al., 2006; Rush et al., 2003) without the suicide item.

^b Suicide risk calculated using the CHRT Risk factor (Trivedi et al., et al., 2011)

Table 9.

Three Hierarchical Multiple Regressions Predicting Association Between Changes in Emotion Dysregulation and Suicide Risk is Accounted for by Changes in Perceived Burdensomeness, Thwarted Belongingness, and Depressive Symptoms (N = 75).

Predictors entered in step DV = CHRT-Risk at exit	<i>F</i> for Step	R^2	$R^2 \Delta$	<i>df</i>	<i>B</i>	<i>p</i>	95% CI
<i>Common</i>							
Step 1	2.25	.06		4,70		.07	
CHRT-Risk at entry ^a					.19	.01	.05 - .34
Step 2	3.36	.16	.10	6, 68		.01	
CHRT-Risk at entry ^a					.29	<.001	.15 - .45
ED at entry					-.15	.28	-.44 - .14
ED at exit					.45	.002	.15 - .45
<i>Equation 1</i>							
Step 3	3.51	.21	.05	8, 66		.002	
CHRT-Risk at entry ^a					.26	.001	.12 - .41
ED at entry					.001	.99	-.32 - .37
ED at exit					.14	.41	-.20 - .50
PB at entry					-.08	.32	-.24 - .07
PB at exit					.29	.01	.06 - .50
<i>Equation 2</i>							
Step 3	2.84	.17	.01	8, 66		.01	
CHRT-Risk at entry ^a					.28	.001	.14 - .44
ED at entry					-.04	.81	-.37 - .32
ED at exit					.23	.21	-.12 - .62
TB at entry					-.07	.43	-.26 - .10
TB at exit					.19	.03	.06 - .44
<i>Equation 3</i>							
Step 3	8.40	.44	.28	8, 66		<.001	
CHRT-Risk at entry ^a					.28	.001	.15 - .43
ED at entry					-.08	.52	-.31 - .18
ED at exit					.16	.17	-.07 - .38
DS-SI at entry ^b					-.18	.18	-.55 - .10
DS-SI at exit ^b					.86	<.001	.60 - 1.17

Note. All analyses control for duration of treatment, age and sex. The *B* reported is the unstandardized regression coefficient. PB = perceived burdensomeness; TB = thwarted belongingness; ED = emotion dysregulation; SI = suicide ideation

^a Suicide risk calculated using the CHRT Risk factor (Trivedi et al., et al., 2011)

^b Depressive symptoms calculated using the QIDS-A-SR (Rush et al., 2006; Rush et al., 2003) without the suicide item.

Table 10.

Three Hierarchical Multiple Regression Equations Predicting Associations Between Interactions of Perceived Burdensomeness and Emotion Dysregulation, Thwarted Belongingness and Emotion Dysregulation, and Depressive Symptoms and Emotion Dysregulation to Predict Suicide Risk at Exit (N = 75)

Predictors entered in step	<i>F</i> for step	R ²	R ² Δ	df	<i>B</i>	<i>p</i>	95% CI
<i>Equation 1</i>							
Step 1	1.47	.04		6, 68		.20	
Duration					.02	.09	-.01 - .04
CHRT- Risk at entry ^a					.19	.02	.04 - .36
ED at entry					.04	.84	-.32 - .46
PB at entry					-.02	.82	-.19 - .12
Step 2	1.64	.06	.02	7, 67		.14	
Duration					.02	.10	.01 - .04
CHRT-Risk at entry					.20	.01	.06 - .37
ED at entry					.003	.98	-.30 - .44
PB at entry					-.01	.89	-.19 - .12
PBxED entry					-.13	.09	-.26 - .07
<i>Equation 2</i>							
Step 1	1.46	.03		6, 68		.21	
Duration					.01	.11	-.58 - .15
CHRT-Risk at entry ^a					.19	.02	.04 - .34
ED at entry					.02	.91	-.31 - .42
TB at entry					-.01	.93	-.21 - .16
Step 2	1.48	.04	.01	7, 67		.19	
Duration					.01	.13	-.001 - .04
CHRT-Risk at entry ^a					.20	.02	.05 - .36
ED at entry					.02	.63	-.31 - .40
TB at entry					-.05	.63	-.26 - .15
TBxED entry					-.12	.21	-.34 - .09
<i>Equation 3</i>							
Step 1	1.16	.02		6, 68		.34	
Duration					.01	.10	-.01 - .04
ED at entry					-.03	.89	-.42 - .35
DS-SI at entry					-.02	.90	-.50 - .35
Step 2	1.31	.04	.02	7, 67		.26	
Duration					.01	.14	-.002 - .03
CHRT-Risk at entry ^a					.17	.12	-.02 - .43
ED at entry					.07	.72	-.33 - .46
DS-SI at entry ^b					-.02	.95	-.49 - .37
EDxDS-SI					-.32	.16	-.71 - .31

Note. All analyses control for duration of treatment, age and sex. The *B* reported is the unstandardized regression coefficient. ED = emotion dysregulation. PB = perceived burdensomeness; TB = thwarted belongingness; SI = suicide ideation

^a Suicide risk calculated using the CHRT Risk factor (Trivedi et al., et al., 2011)

^b Depressive symptoms calculated using the QIDS-A-SR (Rush et al., 2006; Rush et al., 2003) without the suicide item.

Table 11.
*The Results of a Repeated Measures MANOVA Examining Differences Between
 High Suicide Risk Group and Low Suicide Risk group in Precursors
 and Suicide Risk Response to Treatment (N = 75)*

	Low Risk (M, SD)		High Risk (M, SD)		Time x Group		
	Entry	Exit	Entry	Exit	F	p	Eta Squared ^c
ED	117.63 (25.46)	112.76 (25.93)	125.08 (23.76)	96.11 (28.58)	14.26	>.001	.20
DS	13.66 (5.39)	10.24 (5.94)	18.24 (4.33)	11.41 (5.38)	4.75	.03	.06
DS-SI ^a	12.76 (4.90)	9.61 (5.35)	15.97 (4.17)	10.51 (4.83)	2.63	.11	.003
PB ^b	18.58 (9.47)	15.18 (8.30)	22.73 (10.36)	13.86 (6.33)	5.64	.02	.08
TB ^b	33.18 (12.81)	29.34 (12.70)	37.81 (11.73)	24.70 (11.19)	9.75	.003	.12
AC ^b	16.84 (6.46)	16.53 (6.30)	15.81 (6.62)	14.35 (6.04)	.64	.42	.01

Note. DV for all analyses was suicide risk at exit. Duration, age, and sex were controlled.

ED = emotion dysregulation; PB perceived burdensomeness; TB = thwarted belongingness; DS = depressive symptoms; SI = suicide ideation

Suicide risk calculated using the CHRT Risk factor (Trivedi et al., et al., 2011).

^aDepressive symptoms calculated using the QIDS-A-SR (Rush, et al., 2006; Rush et al., 2003) without the suicide item.

^bThe values reported are the means of the total score.

^cPartial eta square values = .01 (small); .06 (medium); .14 (large)

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Appendix A

Difficulties in Emotion Regulation Scale (DERS)

Please indicate how often the following statements apply to you by writing the appropriate number from the

scale below on the line beside each item.

1-----2-----3-----4-----5

almost never sometimes about half the time most of the time almost always

(0-10%) (11-35%) (36-65%) (66-90%) (91-100%)

- _____ 1) I am clear about my feelings.
- _____ 2) I pay attention to how I feel.
- _____ 3) I experience my emotions as overwhelming and out of control.
- _____ 4) I have no idea how I am feeling.
- _____ 5) I have difficulty making sense out of my feelings.
- _____ 6) I am attentive to my feelings.
- _____ 7) I know exactly how I am feeling.
- _____ 8) I care about what I am feeling.
- _____ 9) I am confused about how I feel.
- _____ 10) When I'm upset, I acknowledge my emotions.
- _____ 11) When I'm upset, I become angry with myself for feeling that way.
- _____ 12) When I'm upset, I become embarrassed for feeling that way.
- _____ 13) When I'm upset, I have difficulty getting work done.
- _____ 14) When I'm upset, I become out of control.
- _____ 15) When I'm upset, I believe that I will remain that way for a long time.
- _____ 16) When I'm upset, I believe that I will end up feeling very depressed.
- _____ 17) When I'm upset, I believe that my feelings are valid and important.
- _____ 18) When I'm upset, I have difficulty focusing on other things.
- _____ 19) When I'm upset, I feel out of control.
- _____ 20) When I'm upset, I can still get things done.
- _____ 21) When I'm upset, I feel ashamed at myself for feeling that way.
- _____ 22) When I'm upset, I know that I can find a way to eventually feel better.
- _____ 23) When I'm upset, I feel like I am weak.
- _____ 24) When I'm upset, I feel like I can remain in control of my behaviors.
- _____ 25) When I'm upset, I feel guilty for feeling that way.
- _____ 26) When I'm upset, I have difficulty concentrating.
- _____ 27) When I'm upset, I have difficulty controlling my behaviors.
- _____ 28) When I'm upset, I believe there is nothing I can do to make myself feel better.
- _____ 29) When I'm upset, I become irritated at myself for feeling that way.
- _____ 30) When I'm upset, I start to feel very bad about myself.
- _____ 31) When I'm upset, I believe that wallowing in it is all I can do.
- _____ 32) When I'm upset, I lose control over my behavior.
- _____ 33) When I'm upset, I have difficulty thinking about anything else.
- _____ 34) When I'm upset I take time to figure out what I'm really feeling.
- _____ 35) When I'm upset, it takes me a long time to feel better.
- _____ 36) When I'm upset, my emotions feel overwhelming.

Reverse-scored items (place a subtraction sign in front of them) are numbered 1, 2, 6, 7, 8, 10, 17, 20, 22, 24 and 34.

Appendix B

Concise Health Risk Tracking (CHRT)

Please rate the extent to which each of the following statements describes how you have been feeling or acting in the past week.

For example, if you feel the statement very accurately describes how you have been feeling in the past week, you would give a rating of “Strongly Agree.” If you feel the statement is not at all how you have been feeling in the past week, you would give a rating of “Strongly Disagree.”

	Strongly Disagree (0)	Disagree (1)	Neither Agree nor Disagree (2)	Agree (3)	Strongly Agree (4)
1. I feel as if things are never going to get better.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
2. I have no future.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
3. It seems as if I can do nothing right.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
4. Everything I do turns out wrong.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
5. There is no one I can depend on.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
6. The people I care the most for are gone.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
7. I wish my suffering could just all be over.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
8. I feel that there is no reason to live.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
9. I wish I could just go to sleep and not wake up.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
10. I find myself saying or doing things without thinking.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
11. I often make decisions quickly or “on impulse.”	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
12. I often feel irritable or easily angered.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
13. I often overreact with anger or rage over minor things.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
14. I have been having thoughts of killing myself.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
15. I have thoughts about how I might kill myself.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
16. I have a plan to kill myself.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

Appendix C

Interpersonal Needs Questionnaire

The following questions ask you to think about yourself and other people. Please respond to each question by using your own current beliefs and experiences, NOT what you think is true in general, or what might be true for other people. Please base your responses on how you've been feeling recently. Use the rating scale to find the number that best matches how you feel and circle that number. There are no right or wrong answers: we are interested in what *you* think and feel.

1	2	3	4	5	6	7
Not at all			Somewhat True for me			Very True for me

- _____ 1. These days the people in my life would be better off if I were gone.
- _____ 2. These days I think I give back to society.
- _____ 3. These days the people in my life would be happier without me.
- _____ 4. These days I think I have failed the people in my life.
- _____ 5. These days I think people in my life would miss me if I went away.
- _____ 6. These days I think I am a burden on society.
- _____ 7. These days I think I am an asset to the people in my life.
- _____ 8. These days I think my ideas, skills, or energy make a difference.
- _____ 9. These days I think my death would be a relief to the people in my life.
- _____ 10. These days I think I contribute to the well-being of the people in my life.
- _____ 11. These days I feel like a burden on the people in my life.
- _____ 12. These days I think the people in my life wish they could be rid of me.
- _____ 13. These days I think I contribute to my community.
- _____ 14. These days I think I make things worse for the people in my life.
- _____ 15. These days I think I matter to the people in my life.
- _____ 16. These days, other people care about me.
- _____ 17. These days, I feel like I belong.
- _____ 18. These days, I rarely interact with people who care about me.
- _____ 19. These days, I am fortunate to have many caring and supportive friends.
- _____ 20. These days, I feel disconnected from other people.
- _____ 21. These days, I often feel like an outsider in social gatherings.
- _____ 22. These days, I feel that there are people I can turn to in times of need.
- _____ 23. These days, I feel unwelcome in most social situations.
- _____ 24. These days, I am close to other people.
- _____ 25. These days, I have at least one satisfying interaction every day.

Appendix D

Acquired Capability for Suicide Scale – Fearlessness of Death

Please read each item below and indicate to what extent you feel the statement describes you. Rate each statement using the scale below and indicate your responses on your answer sheet.

- | | | | | |
|--------------------|---|---|---|-------------------|
| 0 | 1 | 2 | 3 | 4 |
| Not at all like me | | | | Very much like me |
-
- _____ 1. Things that scare most people do not scare me.
 - _____ 2. The sight of my own blood does not bother me.
 - _____ 3. I avoid certain situations (e.g., certain sports) because of the possibility of injury.
 - _____ 4. I can tolerate a lot more pain than most people.
 - _____ 5. People describe me as fearless.
 - _____ 6. The sight of blood bothers me a great deal.
 - _____ 7. The fact that I am going to die does not affect me.
 - _____ 8. The pain involved in dying frightens me.
 - _____ 9. Killing animals in a science course would not bother me.
 - _____ 10. I am very much afraid to die.
 - _____ 11. It does not make me nervous when people talk about death.
 - _____ 12. The sight of a dead body is horrifying to me.
 - _____ 13. The prospect of my own death arouses anxiety in me.
 - _____ 14. I am not disturbed by death being the end of life as I know it.
 - _____ 15. I like watching the aggressive contact in sports games.
 - _____ 16. The best parts of hockey games are the fights.
 - _____ 17. When I see a fight, I stop to watch.
 - _____ 18. I prefer to shut my eyes during the violent parts of movies.
 - _____ 19. I am not at all afraid to die.
 - _____ 20. I could kill myself if I wanted to. (Even if you have never wanted to kill yourself, please answer this question.)

Appendix E

Quick Inventory of Depressive Symptomology

Please circle the one description for each question that best describes you for the past seven days.

1. Falling Asleep:

- 0 I always fall asleep in less than 30 minutes.
- 1 I take at least 30 minutes to fall asleep, less than half the time.
- 2 I take at least 30 minutes to fall asleep, more than half the time.
- 3 I take more than 60 minutes to fall asleep, more than half the time.

2. Sleep During the Night:

- 0 I do not wake up at night.
- 1 I toss and turn a lot on some nights.
- 2 I wake up at least once in the middle of the night, but I go back to sleep easily.
- 3 I wake up many times in the middle of the night and usually stay awake for 20 minutes or more on most nights.

3. Waking Up Too Early:

- 0 Most of the time, I wake up no more than 30 minutes before I need to get up.
- 1 More than half the time, I wake up more than 30 minutes before I need to get up.
- 2 I almost always wake up at least one hour or so before I need or want to, but I go back to sleep eventually.
- 3 I wake up at least one hour before I need or want to, and can't go back to sleep.

4. Sleeping Too Much:

- 0 I sleep no longer than 7-8 hours each night, without napping during the day.
- 1 I sleep no longer than 10 out of 24 hours a day including naps.
- 2 I sleep no longer than 12 out of 24 hours a day including naps.
- 3 I sleep longer than 12 out of 24 hours a day including naps.

5. Feeling Sad:

- 0 I do not feel down, unhappy, sad, or miserable.
- 1 I feel down, unhappy, sad, or miserable less than half the time.
- 2 I feel down, unhappy, sad, or miserable more than half the time.
- 3 I feel really down, unhappy, sad, or miserable pretty much all the time.

6. Feeling Irritable:

- 0 I do not feel crabby, grouchy, or cranky.
- 1 I feel crabby, grouchy, or cranky less than half the time.
- 2 I feel crabby, grouchy, or cranky more than half the time.
- 3 I feel crabby, grouchy, or cranky nearly all of the time.

7. Decreased Appetite:

- 0 There is no change from my normal appetite.
- 1 I eat less often or smaller amounts of food than normal.
- 2 I eat much less than normal and have to make myself eat.
- 3 I hardly ever eat during a whole day, and then only after I push myself to eat or because other people make me eat.

8. Increased Appetite:

- 0 There is no change from my normal appetite.

- 1 I feel a need to eat more often than normal.
 - 2 I regularly eat more often and/or larger amounts of food than normal.
 - 3 I feel like I want to eat a lot more than normal during or between meals.
9. Decreased Weight (Within the Last Two Weeks):
- 0 My weight has not changed.
 - 1 I think I've lost a little weight.
 - 2 I think I've lose 2 pounds or more in the past 2 weeks. My clothes are a little more loose than normal.
 - 3 I think I have lost 5 pounds or more in the past 2 weeks. My clothes are a lot more loose than normal.
10. Increased Weight (Within the Last Two Weeks):
- 0 My weight has not changed.
 - 1 I think I've gained a little weight.
 - 2 I think I've gained 2 pounds or more in the past 2 weeks. My clothes are a little tighter than normal.
 - 3 I think I have gained 5 pounds or more in the last 2 weeks. My clothes are a lot tighter than normal.
11. Concentration/Decision Making:
- 0 There is no change in my normal ability to pay attention or make up my mind.
 - 1 I have some problems paying attention or making up my mind.
 - 2 Most of the time, I have a lot of problems paying attention or making up my mind.
 - 3 My mind has wandered so much during the past week that I haven't been able to read or follow a TV show or make even little decisions.
12. View of Myself:
- 0 I feel as worthwhile or good about myself as the people around me feel about themselves.
 - 1 I am harder on myself or more down on myself than normal.
 - 2 I blame myself for everything around me that goes wrong.
 - 3 I think a lot about my faults, both big and little.
13. Thoughts of Death or Suicide:
- 0 I do not think of suicide or my own death.
 - 1 I feel that life is empty or wonder if it's worth living.
 - 2 I think of suicide or my own death several times a week for several minutes.
 - 3 I think of suicide or my own death several times a day, or I have made plans or tried to commit suicide.
14. General Interest:
- 0 There is no change from normal in how interested I am in other people or activities.
 - 1 I am less interested in things that used to be fun for me, like meeting with friends, hobbies, or sports.
 - 2 I find I have interest in only one or two of my usual interests or activities.
 - 3 I have no interest in any of the things that used to be fun.
15. Energy Level:
- 0 I have as much energy as usual for getting things done.
 - 1 I get tired more easily than normal.
 - 2 I have to push myself more than usual, or it takes more effort than usual to start and finish my normal activities.

- 3 I am so tired or worn out that I've just not been able to do most of my usual activities.
16. Feeling slowed down:
- 0 I think, speak, and move at my normal pace.
 - 1 My thinking is slowed down or my voice sounds dull or flat.
 - 2 My thoughts or speech are slowed down so that it sometimes takes me several seconds to answer when someone talks to me.
 - 3 My thoughts and speech are so slow at times that I haven't been able to answer without a lot of encouragement from someone.
17. Feeling restless:
- 0 I do not feel squirmy, antsy, or restless.
 - 1 I am a little squirmy, antsy, or restless so that sometimes I can't stay still easily.
 - 2 I am often squirmy, antsy, or restless so that I often can't stay still easily.
 - 3 I am so squirmy, antsy, or restless that I can't sit still at all.