

Original research

Depression And Anger As Risk Factors For Suicide With Inpatient Adolescents

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Abstract: Suicide is the third leading cause of death for children ages 10-24 (U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, 2010). This study examined the direct and indirect effects of depression, anger, and coping with regard to adolescent suicidal behavior. Seventy six participants from an inpatient psychiatric hospital were evaluated for depression, state and trait anger, and coping skills using the Children's Depression Inventory, State-Trait Anger Expression Inventory, and the Coping Response Inventory. The results showed there were statistically significant direct effects of depression and state and trait anger with adolescents who made a suicide attempt compared to those with suicide ideation and no attempt. The results of the Children's Depression Inventory scores indicated that a cutoff score of 68 or higher is a good predictor of an increased risk of suicide. The adolescents at highest risk for suicide were significantly depressed, had elevated state and trait anger, displayed high emotional discharge, and could not identify a solution to their problems.

Keywords: Depression; Anger; CDI; Suicide; Adolescents

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Suicide is a national problem with over 1,900 youth under age 20 dying by suicide annually in the United States (Cerel, Jordan & Duberstein, 2008). It is also the third leading cause of death for children ages 10-24 (U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, 2010). Furthermore, depression and mood disorders are often related to suicide ideation and attempts (Greening & Stoppelbeing, 2002; Horowitz, Hill, & King, 2011; Lewinsohn, Rohde & Seeley, 1994). Childhood depression, specifically, requires study and attention due to the expanded effect it has on not only the child experiencing the depression, but the increased

hopelessness, family dysfunction, and stress that is often experienced by the families of these children (Hetrick, Parker, Robinson, Hall, & Vance, 2011).

Because of this, it is widely agreed that the presence of a mood disorder is a risk factor for suicide, and therefore understanding specific characteristics that link depression to suicide will greatly help the mental health field understand the progression of depression to suicide ideation and ultimately help prevent suicide ideation in children diagnosed with depression.

The relationship between depression, anger expression, and coping are critical when examining suicide attempts among adolescents. Anger is listed as the most typical emotional experience for depressed young adolescents in clinical settings (Hammen, 1994). Anger and aggression are particularly salient to study in relationship to depression, as depression and anger have been shown to have a strong correlation with suicide (Jang et al., 2014). Furthermore, depressed youth

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are known to have longer durations, higher frequency, and greater intensity of anger than non-depressed youth (Sheeber et al., 2009). Anger is conceptualized in terms of state and trait dimensions. State anger is situational and describes the intensity of anger in the moment; whereas, trait anger is a more enduring dimension of anger (Spielberger & Reheiser, 2009).

Anger and self-directedness have some effect on suicide ideation (Giegling et al., 2009). Daniel, Goldston, Erkanli, Franklin and Mayfield (2009) found that trait anger expressed outwardly was related to an increased risk for suicide attempts among adolescent boys. Claes, Muehlenkamp, Vandereyckin, Hamelinck, Martens and Claes, (2010) noted that psychiatric inpatients with non suicidal self-injury and a history of a suicide attempt had significantly higher scores on suppressing anger inwardly. Recently Hawkins and Cogle (2013) found that both anger expression, and the experience of anger, contributed to suicidal thoughts, as well as suicide attempts. Additionally, the expression of anger through aggressive acts has been found to correlate with suicide attempts as well (Evren, Cinar, Evren, & Celik, 2011).

Coping is defined as the behavioral and cognitive attempts to manage stress, as well as the emotions that are generated (Lazarus & Folkman, 1984). Maladaptive coping strategies correlate with depressive symptoms and suicide ideation. Conversely, adaptive coping strategies that are commonly used by youth can be effective in reducing suicidal ideation (Khurana & Romer, 2012). Avoidant coping styles such as behavioral disengagement are related to increased levels of depression and suicide ideation (Horowitz, Hill, & King, 2011); however, it was noted that problem-focused coping did not independently predict lower depression or suicidal ideation. McMahon et al., (2013) found that problem oriented coping styles were associated with better mental health, and emotion focused coping styles were associated with poorer mental health. Poor problem solving coping skills were indicative of elevated suicidal ideation and a greater risk of making a nonfatal suicide attempt (Grover, Green, Pettit, Monteith, Garza & Venta, 2009).

There is evidence that higher levels of depression and poor task oriented coping is related to multiple suicide attempts (Nrugham, Holen, & Sund, 2012). Those who are depressed are more likely to use maladaptive coping styles, and to view their coping strategies as ineffective (Zong et al., 2010). Maladaptive coping styles, and rumination, are believed to predict depressive symptoms (Thompson et al., 2010). It is believed that it is

beneficial in terms of reducing suicide ideation to focus on eliminating maladaptive coping behaviors and introducing positive coping behaviors (Horwitz, Hill, & King, 2011), in particular utilization of social support as a coping mechanism (Spirito, Francis, Overholser & Frank, 1996).

Research has shown that there is a correlation between adolescent depression and suicide (Hetrick et al., 2012), trait anger and suicide (Daniel, Goldston, Erkanli, Franklin & Mayfield, 2009), and that there is a need for adaptive coping skills to reduce suicide risk (Horwitz et al., 2011; Nrugham, Holen, & Sund, 2012). This study will contribute to the existing literature by providing detailed information regarding the relationships among these variables. In this study, we hypothesized that more intense anger expression, avoidant coping skills, and higher levels of depression will increase the likelihood of suicide with adolescents in an inpatient setting. This study examined whether coping skills, depression, and anger expression styles have independent explanatory abilities in differentiating inpatients that have, or do not have, a history of suicide behaviors, as well as the level of intensity of these behaviors. An in depth exploration of avoidant and approach coping skills as well as state and trait anger, and depression are examined in relationship to the number of suicide attempts.

Method

Participants

Institutional Review Board (IRB) approval was obtained certification #5120041 to recruit adolescents from an inpatient psychiatric hospital located in Southern California. Informed consent was obtained from the adolescent's parents as well as assent from the youth. Inclusion criteria included a primary diagnosis of major depression (by a psychiatrist) with no comorbid diagnoses, and an ability to read and write English at a 6th grade level. As seen in Table 1 the sample included 76 adolescents from age 13 to 17: M=15.25 years. There were 61 females and 15 males. Approximately 41% of the adolescents were White, 33% were Latino, and 26% were other ethnicities (Asian, Pacific Islander, or declined to report their ethnicity). 53% of participants had at least one suicide attempt, and 19% had more than one suicide attempt. The average number of suicide attempts was 1.5.

Procedure

This study investigated the role of coping and anger expression in regard to depression, and suicide attempts with adolescents on an inpatient unit. Data was collected during a one-year period,

from a sample at a psychiatric hospital located in Southern California. Information was obtained from the patient's medical record regarding diagnosis, length of stay, number and type of suicide attempts, substance abuse, and medications. Information was also gathered about the participant's age, ethnicity, education, parent's marital status, parent's education, self-harm

behaviors, substance abuse, and the frequency and types of suicide attempts. The adolescents then completed a series of three measures, which included the Children's Depression Inventory (CDI-2); the Coping Response Inventory for Youth (CRI-Youth); and the State Trait Anger Expression Inventory-2 (STAXI-2).

Table 1. Demographic Summary and Comparison of Measures

	<i>f</i> (%)		<i>M</i> (<i>SD</i>)
Gender		Age	15.25(1.1)
Females	61(79.2)		
Males	15(19.5)	Number of Suicide attempts	1.53(3.6)
Family Type			
Married	24(31.6)		
Divorced	33(43.4)		
Never married	19(25.0)		
Education (Father)			
High School or less	19(24.7)		
College or greater	24(31.2)		
Education (Mother)			
High School or less	33(24.7)		
College or greater	36(31.2)		
Ethnicity			
White	31(40.8)		
Hispanic	25(32.9)		
Other	20(26.3)		
TOTAL	76		

Measures

The Children's Depression Inventory 2 (CDI-2) (Kovacs, 2011) is a self-report measure of depression in children and adolescents. It is used for the early identification of depression, the diagnosis of depression, and to monitor treatment effectiveness. It asks the individual to report feelings related to depression for the past two weeks. There are two scales of emotional and functional problems, and subscales of negative mood, negative self-esteem, ineffectiveness and interpersonal problems. The administration age for males and females is 13-17 years old. The Cronbach's alpha is $r=.84$. (Kovacs, 2011).

The State-Trait Anger Expression Inventory-2 (STAXI-2) (Brunner and Spielberger, 2009) is a self-report measure that assesses state anger, trait anger and anger expression. The state anger scale refers to the intensity of the individual's angry feelings at the time of testing. The state anger-feelings angry scale reflects the intensity of annoyance and anger experienced by the respondent during the testing. The state anger-

expression scale reflects a strong desire for the respondent to express anger through words or physical actions. The trait anger scale evaluates the respondent's predisposition to becoming angry. The trait anger-temperament refers to anger that is experienced quick and with little provocation. The trait anger-reaction scale measures the tendency to become angry when the respondent is criticized, sensitivity to criticism, or when receives negative feedback. The anger expression-out scale describes the respondent's propensity to express anger outwardly in a negative and uncontrolled manner such as by assaults, hitting, or slamming doors. The anger expression-in refers to the amount in which the respondent suppresses anger inside. The anger control-out refers to the respondent spending a great deal of energy on trying to reduce anger and calm down as quickly as possible. The internal consistency alpha coefficients for the STAXI-2 subscales range from .70 to .87 for ages 9-18 (Brunner and Spielberger, 2009).

The Coping Response Inventory-Youth (CRI-Y) (Moos, 1992) is a self-report measure that assesses coping skills of youth between the ages of 12-18

years old. The Coping Response Inventory (CRI-Y) is a self-report measure that assesses coping skills. It is divided into two scales of approach or avoidant coping styles. Approach coping styles include logical analysis, positive reappraisal, seeking guidance and support, and problem solving. Logical analysis is defined as cognitive attempts to understand and prepare mentally for a stressful situation. Positive reappraisal means cognitive attempts to restructure a problem in a positive way while still accepting the reality of it. Seeking guidance are attempts to seek out support, information, and guidance. Problem solving means attempts to take action to directly address the problem. Avoidant coping styles consist of cognitive avoidance, acceptance or resignation, seeking alternative rewards, and emotional discharge. Cognitive avoidance is defined as attempts to avoid thinking realistically about the problem. Acceptance or resignation is cognitive attempts to accept the problem. Seeking alternative rewards means getting involved in substitute activities to create a new source of satisfaction. Emotional discharge is behavioral attempts to reduce tension by expressing negative feelings. The internal consistency alpha coefficients for the CRI-Y subscales range from .55 to .72 for boys and .59 to .79 for girls (Moos, 1992).

Analytic Strategy

Statistical analysis was conducted using the SPSS 22.0. Prior to analysis, all items were screened for univariate assumptions (Tabachnick & Fidell, 2013). Through this process, one case was determined to be an outlier on multiple subscales from the Coping Response Inventory, the outlier scores on these scales were recoded into the normal range prior to analysis. The data was then evaluated in three distinct approaches. First, we used t-tests to determine if there were statistically significant differences between the means of patient with and without a history of a suicide attempt on the depression, coping, and anger expression measures. Then we used the binary outcome variable of suicide attempts (yes = 1; no = 0). The adolescent who endorsed a prior suicide attempt was placed in the "yes" category. Methods for suicide attempts included overdose, cutting/stabbing self with the intent of suicide, hanging, suffocation, huffing, drowning, jumping, and starvation. The suicide attempt category included a range of one attempt to multiple attempts. The adolescent who reported a history of suicide ideation with no actual attempt, was placed in the "no" attempt category. The "no" attempt category also included adolescents who endorsed non-suicidal self-injury. The patient's

suicide attempt history was evaluated with hierarchical logistic regression. This modeling determined whether the depression, coping, or anger expression measures could accurately differentiate patients with and without suicide behavior histories. Finally the analysis employed EQS 6.2 (Bentler, 2006) and a Full Information Maximum Likelihood estimation method to determine at a multivariate level whether depression offered both direct and indirect effects on suicide behaviors. The indirect effects being the effect depression offers through anger expression and coping. In this analysis the outcome/endogenous variable was a scale variable measuring the number of previous suicide attempts by the patient.

Results

Table 2 and Figure 1 below illustrate the differences between adolescents with a history of suicide attempt and no history of suicide attempt amongst the measures used in this study. Specifically, what was found was that adolescents with a history of suicide attempts have a statistically significant higher levels of depression ($M = 72.4$, $SD = 12.7$, Very Elevated) than adolescents with no history of suicide attempts ($M=64.2$, $SD = 15.0$, High Average), $t(74) = -2.55$, $p < 0.01$.

Further analysis determined that there was a statistically significant difference between anger expression for adolescents who have and do not have a history of suicide attempts. The history of suicide attempt group scored slightly higher on the State Anger scale ($M=53.1$, $SD= 13.6$) than the no history of suicide attempt ($M= 47.8$, $SD= 11.4$), $t(74) = -1.76$, $p < 0.1$, although this finding is not statistically significant it does suggest a trend towards significance. Therefore we might hypothesize that adolescents with a history of suicide behaviors show an increased intensity of angry feelings. Similarly, adolescents with a history of suicide behavior ($M= 53.5$, $SD= 13.3$) scored slightly higher than the no history of suicide behavior ($M= 46.4$, $SD = 9.68$), $t(74) = -2.52$, $p < 0.01$ on the State Anger/Feeling subscale.

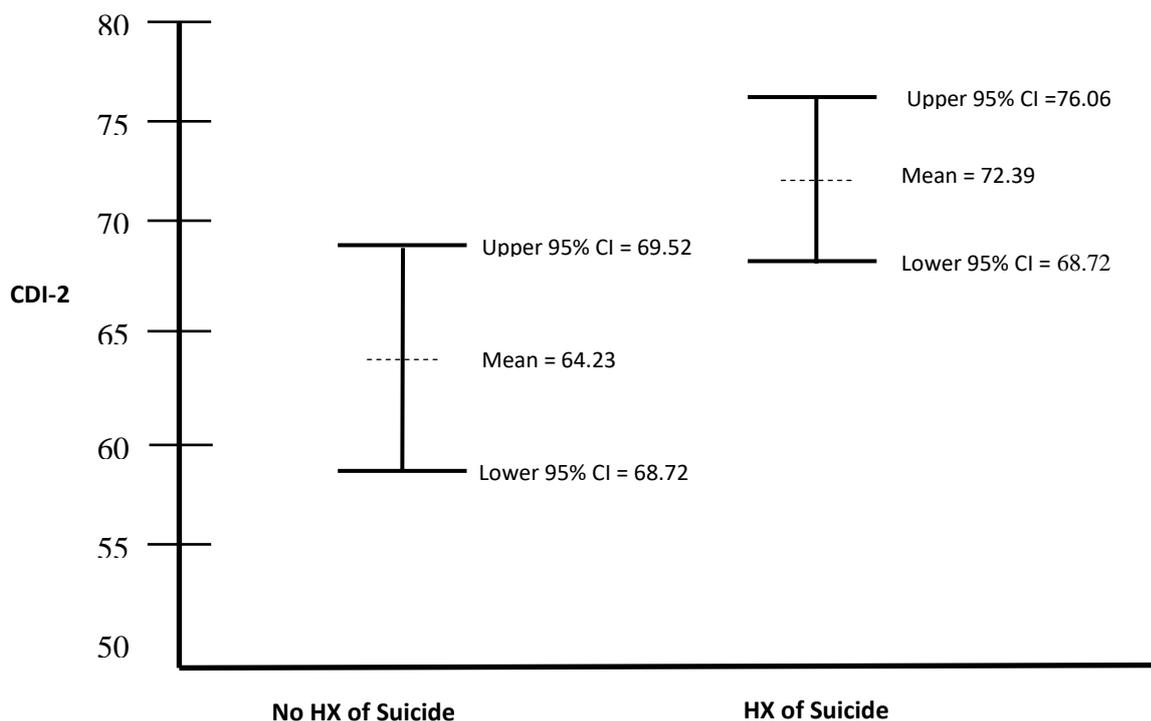
In addition, the two groups varied on the Trait Anger scale, which indicated that adolescents with a history of suicide attempts ($M=55.8$, $SD = 12.8$) scored higher than those with no history of suicide attempts ($M= 49.3$, $SD = 11.60$), $t(74) = -2.11$, $p < 0.05$. There were also differences on Trait Anger subscales. Trait Anger Temperament for adolescents with a history of suicide attempts ($M=55.5$, $SD = 12.8$) was higher than those with no history of suicide attempts ($M = 50.3$, $SD = 12.7$), $t(73) = -1.73$, $p < 0.1$.

Table 2 Comparison of Depression, Coping and Anger Expression between Patients with and without a History of Suicide Attempts

	Suicide History M(SD)	No History M(SD)	T(df)
Children’s Depression Inventory	72.39(12.65)	64.23(15.01)	-2.55(74)**
Coping Response Inventory			
Logical Analysis	49.67(11.72)	51.03(9.73)	.53(74)
Positive Appraisal	47.64(13.05)	47.63(9.44)	-.00(73)
Seeking Guidance	51.30(14.66)	54.70(13.58)	1.02(74)
Problem Solving	49.56(10.90)	53.00(8.83)	1.44(73)
Cognitive Avoidance	59.00(10.80)	59.67(8.26)	.29(74)
Acceptance or Recognition	59.98(11.76)	59.70(8.02)	-.11(74)
Seeking Alternative Reward	50.74(11.86)	50.73(7.81)	-.00(74)
Emotional Discharge	59.30(11.11)	57.23(5.92)	-.94(74)
State-Trait Anger Inventory			
State Anger	53.13(13.64)	47.83(11.40)	-1.76(74)†
State Anger-feelings	53.54(13.34)	46.43(9.68)	-2.52(74)**
State Anger V/P Expression	52.29(12.34)	49.70(11.60)	-.91(74)
Trait Anger	55.82(12.78)	49.27(11.60)	-2.11(74)*
Trait Anger Temperament	55.49(12.83)	50.27(12.72)	-1.73(73)†
Trait Anger Reaction	53.64(11.24)	46.87(13.23)	-2.38(74)*
Anger Expression-Out	50.61(12.78)	49.70(14.43)	-.29(74)
Anger Expression-In	57.70(13.06)	58.77(12.18)	.36(74)
Anger Control	49.41(10.99)	50.43(12.21)	.38(74)

† p < 0.1, * p < 0.05, ** p < 0.01, *** p < 0.001

Figure 1. Comparison of Depression Scores and Suicide Behavior.



On another subscale of Trait Anger, Trait Anger Reaction, the two groups varied. Those with a history of suicide attempts ($M=53.6$, $SD = 11.24$) scored higher than those with no history of suicide attempts ($M=46.9$, $SD = 13.2$), $t(74) = -2.38$, $p < 0.05$.

Next, we evaluated all three concepts together (Depression, State-Trait Anger, and Coping Skills), including demographic variables (gender, age, parent's marital status, history of substance use) in a hierarchical logistic regression model, to estimate how these factors impact suicide attempts (1 = suicide attempt, 0 = no history of suicide attempt). Given that the sample size was small, as well as a tendency for the associates subscales within each measure to be correlated (and produce multiple colinearity) we choose to use an enter method between blocks, and a backward likelihood ratio method within blocks (Mertler & Vannatta, 2010). Table 3 below reports the final model with only significant predictors included. This stepwise model fit four blocks. The first being the demographic control variables. This block did not have any significant predictors estimated and therefore correctly classified only 55.4% of the cases and accounted for 0.0% of the total variance in the dependent variable (-2 Log Likelihood = 101.72, Cox & Snell $R^2 = 0.00$, Nagelkerke $R^2 = 0.00\%$). The second block included the CDI variable and was a moderately well-fitting model with 62.2% correct classification and explained approximately 6-9% of the variance. (-2 Log Likelihood = 96.81, Cox & Snell $R^2 = 0.06$, Nagelkerke $R^2 = 0.09\%$). In this model Higher scores on the CDI increased the odds of being classified into the suicide attempt group ($B = .038$, $se = .018$, $Wald = 4.61$, $Exp(B) = 1.039$, $p < 0.03$).

The third block added the Coping Response variables. This block offered a significant improvement in fit with a correct classification of 71.6% and explained 21-28% of the variance (-2 Log Likelihood = 84.49, Cox & Snell $R^2 = 0.21$, Nagelkerke $R^2 = 0.28\%$). This model retained three coping response variables. In this case increases of Problem solving ($B = -.079$, $se = .036$, $Wald = 4.92$, $Exp(B) = 0.92$, $p < 0.03$) and Cognitive Avoidance ($B = -.080$, $se = .036$, $Wald = 4.97$, $Exp(B) = 0.92$, $p < 0.04$) decreased the odds of being grouped into the suicide group. Higher levels of emotional discharge increased the odds of being grouped into the suicide attempt group ($B = .070$, $se = .035$, $Wald = 4.04$, $Exp(B) = 1.07$, $p < 0.04$).

The fourth, and final block included the State-Trait Anger variables. The resulting model fit the data well (-2 Log Likelihood = 65.72, Nagelkerke $R^2 = .50$, Cox & Snell $R^2 = .37$). The final model also correctly classified the participants into the previous history

of suicide behavior group with 79.5% accuracy. The significant variables from blocks 1-3 were retained in the model and five additional State and Trait variables were added as significant predictors. Increased depression increases the odds of being classified into the suicide attempt group. Additionally coping responses associated with problem solving and cognitive avoidance decreased the odds of being grouped in the suicide attempt group whereas as emotional discharge increased the odds. Specific to this four block, patients with higher State Anger and Trait Anger tended to be in the suicide attempt group (see Table 3).

Discussion

In all the analyses, depression predicted the suicide behavior history. A comparison between the CDI-2 scores of the group with no history of a suicide attempt, versus the group with a history of a suicide attempt, demonstrates that a cut off score of 68 or higher puts the adolescent at greater risk for a future attempt. When the coping styles were evaluated individually (as in the first t-test comparison), they do not seem to vary between those with and without a history of a suicide attempt. Rather it is the state and trait anger concepts that vary. Specifically those with higher State and Trait anger scores were seen for the suicidal attempt group. Therefore, depression and state and trait anger can be helpful concepts to consider in light of patients who are at risk for suicide behaviors.

In the second analysis, we evaluated each concept in relationship to the other. In this case, when controlling for depression and state and trait anger, certain coping styles do seem to offer predictive abilities for suicide attempts. Specifically, the coping styles of emotional discharge, problem solving, and cognitive avoidance. Patients with higher levels of emotional discharge and lower levels of problem solving and cognitive avoidance have an increased risk of suicide attempts. This means that the patient at greatest risk for suicide has a score of 68 or higher on the CDI-2, has elevated state and trait anger scores on the STAXI-2, high emotional discharge, and is actively thinking about the problem, but is unable to find a solution to the problem.

As can be seen in Table 3 when we include all three concepts, as well as demographic variables, we find in both the simplistic t-test evaluation and the more robust logistic regression evaluation that depression plays a significant and negative role in predicting suicide behaviors. In this case, patients with higher levels of depression were more likely to have a history of suicide attempts. Also similar

to the previous analysis, those with higher State Anger/ Feeling and Trait Anger Reactions are

statistically significantly more likely to have a suicide attempt history.

Table 3 Predicting Suicide Attempts: Hierarchical Logistic Regression with Backwards Likelihood Ratio Method.

Outcome Variable is 1 = Suicide Attempt, 0 = No History of Suicide Attempt

Predictor	B(se)	Wald Statistic	Exp(B)	95% CI
Age	ns	-	-	-
Gender (male = 1, female = 0)	ns	-	-	-
Parent's married (married =1 not married = 0)	ns	-	-	-
History of Substance Use (yes = 1, no = 0)	ns	-	-	-
Children's Depression Inventory	.06(.03)	3.68*	1.06	1.00-1.14
Coping Response Inventory				
Logical Analysis	ns	-	-	-
Positive Appraisal	ns	-	-	-
Seeking Guidance	ns	-	-	-
Problem Solving	-.09(.05)	4.39*	.91	.83-.99
Cognitive Avoidance	-.07(.04)	3.00†	.94	.87-1.0
Acceptance or Recognition	ns	-	-	-
Seeking Alternative Reward	ns	-	-	-
Emotional Discharge	.09(.05)	3.52*	1.09	1.00-1.19
State-Trait Anger Expression Inventory				
State Anger/feeling	.18(.07)	6.25**	1.20	1.04-1.37
State Anger-verbal or Physical expression	-.16(.06)	6.18**	.85	.75-.97
Trait Anger Reaction	.06(.03)	3.33*	1.06	1.00-1.13
Trait Angry Temperament	ns	ns	-	-
Anger Expression-Out	-.08(.04)	4.60*	.93	.87-.99
Anger Expression-In	-.08(.04)	4.54*	.92	.86-.99
Anger Control-Out	ns	-	-	-
Percent Correct Total		77.0%		
Percent Correct in Yes		79.5%		
Percent Correct in No		73.3%		
Cox & Snell R²		.37		
Nagelkerke R²		.50		
-2 Log Likelihood		65.72		

† p < 0.1, * p < 0.05, ** p < 0.01, *** p < 0.001

ns = not significant (p > 0.05) and removed from final model due to Backwards Likelihood Ratio method.

Step methods was used with separate blocks for the Demographic variables (Age, Gender, Marital Status, Substance Use), Children's Depression, Coping Response Inventory and State-Trait Anger Expression Inventory.

Although the three variables (Depression, State Anger Feelings and Trait Anger Reaction) are consistently showing predictive relationships to suicide attempt history, this analysis identified additional predictive variables, when these three variables were controlled for. In this case, this analysis showed a significant increase in the probability of suicide attempt when the patient also had lower scores on the State Anger-Verbal or Physical Expression, Anger Expression-Out, and Anger Expression-In measures. Indicating that after controlling for depression, State Anger Feeling and Trait Anger Reaction, those with lower levels of anger expression (State Anger Expression, Anger Expression-Out and Anger Expression-In) were more likely to have a history of a suicide attempt. This analysis, unlike the previous analysis, also

identified significant relationships between suicide attempt history and coping. Therefore, after controlling for Depression, State Anger Feelings and Trait Anger Reaction, certain coping styles are related to suicide attempt history. A higher level of emotional discharge, low problem solving skills, and low cognitive avoidance was seen with adolescents with a history of at least one suicide attempt.

As seen in many other studies, this study continues to demonstrate a strong effect of depression on suicide attempts (Greening & Stoppelbeing, 2002; Horowitz, Hill, & King, 2011; Lewinsohn, Rohde & Seeley, 1994). Nruham, Holen and Sund (2012) note that depression and hopelessness are characteristics of adolescents who repeat suicide attempts as young adults. Major Depression is

present in approximately 60% of suicide deaths (Cavanagh et al., 2003), and depression is associated with a 20 times higher risk of suicide (Osby et al., 2001). Treating depression is likely to reduce suicide rates in adolescents (Wilkinson, et al., 2011). Because of this significant and consistent finding, we offer some potential clinical guidance for a cut off score on the CDI-2 for depression.

This study found that for those with no history of a suicide attempt, their CDI-2 ranged from 68.72-69.52 (95% CI), whereas for those with a history of suicide attempt, their CDI-2 scores ranged from 68.72-76.06 (95% CI). Therefore, if the CDI-2 is given as part of the intake evaluation process a clinic might apply a cut off score of 68. In this case, any patient with a CDI-2 score of 68 or higher should be screened for potential suicide attempts. Furthermore, the cut off score could be used to identify adolescents in inpatient setting with higher risk for suicide attempts, and therefore warrant more in-depth evaluation, extensive discharge planning, and continued care. We are cautious in providing this cut off score as it must be used with consideration of the limitation of this study. In addition, future studies should attempt to replicate this cut off score before it can be used with greater confidence.

This study provides support for the role of depression, but also the role of anger, with regard to suicide risk. In the first analysis, without controlling for depression or coping, patients with higher levels of State Anger and Trait Anger were more likely to have a history of a suicide attempt. This finding supports Hammen (1994) and Jang et al. (2014) studies, which noted that depression and anger are highly correlated with suicide. This suggests that clinicians should not only evaluate a patient's level of depression but also evaluate a patient's anger expression. This was again seen in the second analysis which controlled for not only depression but coping as well. Increases with state and trait anger correlate with depression, and depression has a direct impact on suicide attempts. The study also provides support for the role of coping behaviors. Specifically when considered without regards to depression and anger (as in the first analysis), coping behaviors do not seem to relate directly to suicide attempts. However, as seen in the second and third analysis, if we first control for depression and anger, increases in emotional discharge (behavioral attempts to reduce tension by expressing emotional negative feelings, Moos, 1992), and decreases in cognitive avoidance (cognitive attempts to avoid thinking realistically about a problem, Moos, 1992) and poor problem solving (behavioral attempts to take

action to deal directly with the problem, Moos, 1992) lead to a higher likelihood of suicide attempts. The adolescents may be thinking about the problem, but are unable to find a solution, and may feel trapped. Future studies could explore the role of problem solving in more depth. In these studies, it will be important to include the findings from this study and therefore explore the role of problem solving with consideration to lowering suicide risk.

Although this study offers important findings for adolescent inpatient care, as well as suicide attempts, there are a number of limitations that should be considered. The first limitation is that this study is a cross-sectional analysis based on a convenience sample of adolescents at an inpatient setting. Therefore, we cannot infer a cause and effect relationship between depression, coping, anger and suicide attempts. However, the literature offers substantial evidence for the co-existence of increased depression and increased probability of suicide. In addition, we know that a strong indicator of future suicides is a history of past suicide attempts. This study was conducted with inpatients, therefore, the role and relationship of depression, anger; coping and suicide may not be replicable with other populations. Future studies should focus on depression, anger, coping and suicide in a longitudinal design, as well as expand this study into other populations.

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