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Relationships between components of emotional intelligence and suicidal behavior in alcohol-dependent patients

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Abstract

Objectives—The importance of investigating various emotional skills in assessment of suicide risk in alcohol-dependent (AD) individuals has recently become the focus of increasing interest. The objective of this study was to explore the relationships between self-reported components of emotional intelligence (EI) and lifetime prevalence of suicide attempts in a clinical sample of AD subjects.

Methods—A group of 80 inpatients entering an alcohol treatment program in Warsaw, Poland, was recruited. Baseline information about demographics, psychopathological symptoms, personality, and severity of alcohol problems was obtained. The Schutte Self-Report Emotional Intelligence Test was utilized for assessment of emotional processing. Lifetime history of suicide attempts was obtained from the MINI International Neuropsychiatric Interview.

Results—After accounting for affect-related suicide risk factors (severity of depression, anxiety, neuroticism) as well as other significant predictors (e.g., age, gender, history of childhood abuse), mood regulation/optimism deficits remained a significant correlate of lifetime suicide attempts in AD patients. In the mediation models, mood regulation appeared to fully mediate the relationship between history of suicide attempts and depression as well as neuroticism.

Conclusions—The results of this study support the evidence that poor mood regulation might be related to the risk for suicidal behavior in AD individuals. These findings point towards the significance of addressing the issue of emotion-related skills in the therapy of those AD subjects who are at risk for suicide.

Keywords

alcohol-dependence; suicide attempts; emotional intelligence; mood regulation

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Introduction

Lifetime prevalence of suicide attempts in alcohol-dependent individuals (ADs) is estimated to be between 14% and 44% (Weissman et al., 1980; Wojnar et al., 2009); and 7 to 18% of people with AD die by suicide (Inskip et al., 1998; Roy and Linnoila, 1986). Several risk factors for suicidal behavior in ADs, such as gender, age, low socio-economic status, low social support, negative affectivity (e.g., Conner and Duberstein, 2004; Sher, 2006), family history of suicide (e.g., Roy, 2000; Sher and Mann, 2003) or psychiatric comorbidity (e.g., Roy et al., 1993; Preuss et al., 2002), are not specific for this clinical population. Other factors such as young age at either the onset of heavy drinking or alcohol-related problems, high maximum quantities of alcohol consumed, and multiple treatment episodes for substance use disorders in the past, are specifically related to the course of alcohol dependence (e.g., Roy, 1993; Preuss et al., 2002). A wealth of research indicates that suicidality in AD individuals is also influenced by the presence of comorbid depressive and anxiety symptoms (Conner et al., 2007; Aharonovich et al., 2002).

The relationship between emotional processing deficits and suicidal behavior is a focus of current interest. Some theories consider suicidal behavior as a consequence of an inability to tolerate or modulate the experience of negative affect (Lynch et al., 2004; Zlotnick et al., 1997), with a suicidal act as an effort to escape from it (e.g., Mann et al., 1999). Most research in this area is focused on emotional regulation, yet this theoretical concept has been defined and measured in different ways across studies (e.g., Cole et al., 2004). Mental disorders characterized by problems with regulation of emotions, such as borderline personality disorder and substance use disorders (Selby et al., 2009; Cooper et al., 1992), are associated with elevated suicide rates. Significant work examining the relationship between emotional dysregulation and suicidality focused on suicidal ideation rather than suicidal behavior, showing that emotional dysregulation predicts higher prevalence of reported suicidal ideation (e.g., Lynch et al., 2004). However, results of the Anestis et al. (2014) study performed in a group of patients treated for addiction revealed that emotional dysregulation was also associated with suicide attempts, though this effect was partially mediated by non-suicidal self-injury. The results of Zlotnick et al. (1997) also confirmed that presence of past suicide attempts was positively associated with emotion dysregulation. The data from AD samples suggest that enduring vulnerabilities such as negative affectivity and hopelessness as well as precipitating temporal mood changes moderate the relationship between alcohol dependence and suicidal acts (Conner and Duberstein, 2004).

According to Mayer and Salovey (1997), emotional intelligence (EI) is “the ability to perceive accurately, appraise, and express emotion; the ability to access and/or generate feelings when they facilitate thought; the ability to understand emotion and emotional knowledge; and the ability to regulate emotions to promote emotional and intellectual growth”. In this model, a composite of emotional skills works in concert for the modulation of current emotional state, and directs behavior in desired ways regardless of temporary emotional states. Fernandez-Berrocal et al. (2006) showed a positive relationship between self-reported EI and emotional adjustment (lower levels of depression and anxiety), suggesting that individuals high in self-reported EI are better able to regulate negative affect (NA).

There is limited data on the relationship between components of emotional intelligence and suicidality, yet the research conducted so far on healthy adolescents revealed that the relationship is complex (Cha and Nock, 2009; Ciarrochi et al., 2002). Ciarrochi et al. (2002) showed that people self-reporting to be more emotionally perceptive might be strongly impacted by stress and appear more prone to suicidal ideation than less emotionally perceptive individuals. Likewise, in another study, high self-reported emotional attention predicted suicidal ideation (Aradilla-Herrero et al., 2014). Concurrently, in the Ciarrochi et al. (2002) study, people reporting a high ability to manage other's emotions, tended to adapt better to stress and were less prone to have suicidal ideation.

Current research suggests lower EI in AD individuals, however, there is still not enough clinical data from this group to make unequivocal conclusions (for rev., Kun & Demetrovics, 2010; Peterson, et al., 2011). Among the EI components, problems with emotion regulation has long been thought to be one of the primary motives for alcohol use and a core emotional feature of alcohol dependence (for rev., Petit et al., 2015; Kober, 2014). Kober (2014) suggests that chronic drug or alcohol use (through its adverse effects on prefrontal cortex, a key neural region for emotion regulation) reduces the ability to cope with negative affect, fueling subsequent drug use. Limited data shows that poor emotion regulation in AD patients predicted post-treatment alcohol use at 3-month follow-up (Berking et al., 2011).

Taken together, current literature underlines the importance of emotional processing deficits in the assessment of suicide risk. Available data shows that emotional dysregulation is an important factor involved in the development of both alcohol dependence and suicidality. The EI concept gives the new frame for assessing the contribution of other emotional competencies (appraisal of emotions, regulation of emotions, utilization of emotions), and their role in the relationship between AD and suicide. It could be expected that problems with identifying, describing, or managing emotions are related to an inability to manage negative affect, and might contribute to self-destructive strategies of acting out distress. To the best of our knowledge, there has been no research on the relationship between components of emotional intelligence and suicide attempts in AD individuals. Since these subjects are at higher risk for suicidal behavior and have been shown to have lower EI, the current study examined whether self-perceived emotional skills could add predictive value over other predisposing factors that are presumed to underlie the relationship between alcoholism and suicide attempts. We also examined whether EI components mediate the relationship between components of negative affect (severity of depression, anxiety and neuroticism) and suicide attempts. We anticipated that emotional perception, understanding, regulation and utilization of emotions would be directly associated with a history of suicide attempts.

Materials and Methods

Participants

A group of 80 inpatients from the alcohol treatment clinic in Warsaw, Poland, was recruited into the study. Participation was voluntary and written informed consent was obtained from all subjects. All participants fulfilled DSM-IV criteria for alcohol dependence. Patients with confirmed current Axis I psychiatric comorbidity (as established using the MINI

International Neuropsychiatric Interview; Sheehan et al., 1998; Masiak and Przychoda, 1998), or marked cognitive deficits (scores of 25 or less on the Mini-Mental State Examination; Folstein et al., 1975) were not eligible for the study. The study was approved by both the Medical Institutional Review Board at the University of Michigan and the Bioethics Committee at the Medical University of Warsaw.

Procedures

All participants completed a questionnaire that evaluated demographics and psychosocial variables. A history of lifetime suicide attempts was assessed using a semistructured instrument by a trained member of the research team (see below).

Measures

1. Information regarding education, experiences of sexual or physical abuse, and the severity of alcohol use over the past 4 weeks prior to the baseline assessment were obtained using a modified version of a self-administered questionnaire – the University of Arkansas Substance Abuse Outcomes Module (SAOM; Smith et al., 1996).
2. Lifetime history of suicide attempts was evaluated with a question from the MINI International Neuropsychiatric Interview: “During your lifetime, have you ever tried to commit suicide?” Other data related to the suicide attempts, such as the number of suicide attempts, impulsive vs non-impulsive suicide attempts, intent to die, need for hospitalization, or alcohol consumption prior to the suicidal behavior was not analyzed further because of the small number of subjects reporting a positive history for suicide attempts.
3. The Schutte Self-Report Emotional Intelligence Test (SSEIT) was used as a measure of EI. Based on the theoretical formulation introduced by Salovey and Mayer (1990), EI is conceptualized here as a composite of various emotional skills such as: perception, appraisal and expression of emotion, emotional facilitation of thinking, understanding, analyzing and employing emotional knowledge, and reflective regulation of emotions to further emotional and intellectual growth (Schutte et al., 1998; Jaworowska et al., 2005). According to current data on the factor structure of SSEIT, the most consistently reported four-factor model has been applied. Factors were calculated and named according to Saklofske et al. (2003), and matched to those described by Petrides and Furnham (2000) as follows: mood regulation/optimism (e.g., “*I have control over my emotions*”), appraisal of emotions (e.g., “*I know what other people are feeling just by looking at them*”), utilization of emotions (e.g., “*When I feel a change in emotions, I tend to come up with new ideas*”), and social skills (e.g., “*I help other people feel better when they are down*”). The total SSEIT score was also calculated and included in the analyses. Cronbach α values were 0.87 for total EI score, 0.77 for mood regulation/optimism, 0.67 for appraisal of emotions, 0.62 for utilization of emotions, and 0.60 for social skills.

4. The subscale score for anxiety from the Brief Symptom Inventory (BSI; Derogatis and Melisaratos, 1983), depression severity (BDI; Beck et al., 1996), and neuroticism from the NEO Five-Factor Inventory (NEO-FFI; Costa and McCrae, 1992; Zawadzki et al., 1998) were included as measures of negative affect.

Data analysis

In the bivariate analyses, subjects with and without a history of a lifetime suicide attempt were compared. Comparisons including age, gender, and education as well as emotional intelligence, personality characteristics, depression and anxiety severity, drinking severity, and childhood abuse (sexual and physical) were performed. For continuous variables, analysis of variance (ANOVA) and Mann-Whitney tests were used, depending on the distribution of the variables. For dichotomous variables, chi square tests were applied. To avoid multicollinearity between the affect-related risk factors (EI, depression, anxiety, neuroticism), a correlation matrix was performed, and intercorrelation values above 0.7 between variables excluded them from the further multiple analysis. In order to determine the most significant predictors of suicide attempt history, for the final analysis relevant variables were included in the logistic regression. Only significant interactions are reported.

Since it was hypothesized that individual differences in EI would serve as a mediator in the relationship between negative affect and suicide attempts, two sets of mediation analyses were conducted after the logistic regression analysis: one with depression and the other with neuroticism being the independent variables. Mediation was tested using Preacher and Hayes's (Preacher and Hayes, 2008) bootstrapping method with 5000 resamples with replacement. For this, the SPSS macro suggested by Preacher and Hayes (Preacher and Hayes, 2008) was used.

The criterion for statistical significance in all tests (two-tailed) was $p < 0.05$. The data were analyzed using SPSS® 21.0 for Windows.

Results

The study group comprised 56 men (70%) and 24 (30%) women. Their mean (SD) age was 44.64 (10.42) years and the mean education level was 12.12 (3.01) years (the last level of secondary school in Poland). All patients were Caucasian. The mean age at onset of alcohol-related problems was 26.27 (9.68) years; the mean duration of alcohol problems before entering treatment was 18.47 (10.41) years; the median duration of the last heavy drinking episode was 14 (IQR: 7, 43) days. Twenty subjects (25%) endorsed a history of at least one lifetime suicide attempt. The experience of childhood abuse was confirmed by 26 (32.5%) subjects.

The analysis of variance (ANOVA) revealed (Table 1) that subjects with a positive history of suicide attempts were characterized by significantly higher neuroticism ($F = 12.71$; $p = 0.001$) and greater severity of depressive symptoms ($F = 7.70$; $p = 0.007$) as well as lower self-reported mood regulation ($F = 15.61$; $p = 0.0002$) and SSEIT total score ($F = 4.52$; $p =$

0.04). A significant association between suicide attempts and a childhood history of either sexual or physical abuse ($\chi^2=8.90$; $df=1$; $p=0.005$) was also confirmed.

When all variables that were significant in bivariate analyses were entered into a logistic regression analysis, controlling for age and gender, history of childhood abuse (OR = 4.47; 95% CI: 1.11 – 17.89; $p = 0.03$) and mood regulation (OR = 0.70; 95% CI: 0.54 – 0.92; $p = 0.01$) remained significant predictors of lifetime suicide attempts. The model was significant (chi square = 27.16, $df = 7$, $p < 0.0001$) with 44% of the variance explained (Nagelkerke R square = 0.44; Table 2).

Mediation analyses

The first analysis revealed that controlling for the effect of child abuse the indirect effect of depression on suicide attempts through mood regulation was significant, with an unstandardized point estimate of 0.04 and 95% confidence interval of 0.0083 to 0.1124, while the direct effect became non-significant (0.02; SE = 0.03; $p = 0.44$). Thus, mood regulation fully mediated the relationship between depression and suicide attempts (Fig. 1).

The second analysis (child abuse included as a covariate) yielded a significant indirect effect of neuroticism on suicide attempts through mood regulation (0.07) with 95% confidence interval from 0.0082 to 0.1611, while the direct effect became non-significant (0.06; SE = 0.05; $p = 0.27$). Thus, mood regulation fully mediated the relationship between neuroticism and suicide attempts as well (Fig. 2).

Discussion

In the current study, self-reported EI and its components were analyzed in a group of inpatients treated for alcohol dependence. According to the objectives of the study, associations between EI and a history of suicide attempts were explored. To the best of our knowledge this is the first study in an AD sample investigating the relationship between self-reported EI and suicidal behavior. The results of our analyses provide evidence that after accounting for other stringent affect-related risk factors (e.g., severity of depression, neuroticism), lower scores on self-reported mood regulation in AD individuals was associated with a higher prevalence of attempted suicide. Other EI components - emotional perception as well as understanding and utilization of emotions – were not associated with a history of suicidal attempts. Moreover, the study revealed that the EI component of mood regulation fully mediated the relationship between depression and a history of suicide attempts, as well as between neuroticism and suicide attempts. These results suggest that the self-perceived ability to regulate mood is a major contributor to the relationship between negative affect and attempted suicide. Negative affect may be associated with a suicide attempt, but their bidirectional effects depend on emotional regulation competencies in AD patients.

Although the relationship between emotional dysregulation and suicidal ideation has already been confirmed, studies of the relationship between emotional dysregulation and suicide attempts are scarce. The results of our study corroborate previous findings showing that emotional dysregulation might predict suicidal behavior (Zlotnick et al., 1997; Anestis et al.,

2014). It is possible that within a sample of AD subjects, individuals that have problems with mood regulation may develop suicidal behavior to cope with their negative feelings. As suggested by Izard, overwhelming negative emotions might ignite within milliseconds a “low road” of non-cognitively driven decisions leading to impulsive, self-destructive behaviors (e.g., Izard et al., 2007). Within this theoretical framework suicidal behavior would be a consequence of the inability to modulate negative and distressing emotional states, with suicide attempts a final behavior to alleviate this state (Zlotnick et al., 1997).

Importantly, within the EI construct, mood regulation is not only a mechanism of the internal distress reduction (Kopp, 1989), but also an element of a multilevel emotional executive system. In this framework, mood regulation is not only the ability to manage current emotional distress (negative affect), but also to plan and anticipate the emotional consequences of a certain behavior, based on previous experience. Accordingly, the mood regulation factor in the SSEIT scale reflects the person's self-perceived ability to understand and recognize his/her own feelings accurately, as well as to control and manage his/her emotions. It has been shown that positive affect appears to be an important independent factor reducing suicidal ideation (Hirsch et al., 2007). Other studies suggest that positive affect experienced during distress was associated with decreased negative affect (Strand et al., 2006; Zautra et al., 2005; Zautra et al., 2001). We hypothesize that good mood regulation skills makes it easier to acquire, maintain and benefit from positive affect. This would not only decrease the influence of current, distressing emotional arousal (negative affect), but also improve the quality of social interactions in the long run, reducing the influence of interpersonal disruptions on suicidal behavior. Future studies could look at the relationship between mood regulation and positive affect as a mediating and/or moderating factor in the relationship between AD and suicide (Conner and Duberstein, 2004).

In several studies, it has been reported that the experience of childhood abuse is an important predictor of suicidal behavior (e.g., Joiner et al., 2007; Bruffaerts et al., 2010), with the victims of abuse having more than four times the risk for suicide attempts in the future. Our study is consistent with previous findings (e.g., Preuss et al., 2002; Jakubczyk et al., 2014) that AD subjects with a positive history of suicide attempts reported higher rates of childhood abuse, implicating the importance of this particular risk factor.

The current findings point towards the significance of addressing the issue of emotion-related skills in AD patients who are at increased risk for suicide attempts. Recently, Bergmans et al. (2009) assessed the effectiveness of a 20-week outpatient Psychosocial/Psychoeducational Intervention for Persons with Recurrent Suicide Attempts, targeting emotion-processing difficulties and teaching emotional skills as well as developing alternative strategies to suicidal behavior to cope with distress. This intervention proved to be effective in reducing affective deficits, diminishing the potential risk for suicide-related behavior in the future. Importantly, the authors noted that comprehensive strategies focusing on the improvement of psychosocial and cognitive factors related to positive affect might be effective in the treatment of patients at risk for suicide.

Although the results of our study provide preliminary evidence on the association between self-reported emotional deficits and suicide attempts in AD individuals, the findings should

be interpreted with caution. Because of the cross-sectional design of the study, any conclusions regarding causation and/or directionality of the association between mood regulation/optimism and suicide attempts are questionable. The different assessment points for depressive symptoms and suicidal behaviors preclude drawing any causal interpretations. However, plausibly current depression level is a proxy for longer-term depressive problems. Likewise, there is a strong and consistent link between prior suicide attempts and future suicidal behaviors (e.g., Nock et al., 2008); and past suicide attempts are the strongest predictor of future suicide attempts. Thus, we anticipate that by looking at current correlates of prior attempts, we can anticipate who might be at elevated risk for subsequent attempts.

Given the retrospectively reported history of suicide attempts, we cannot exclude that for some patients the suicide attempt was a factor that significantly motivated them for treatment. Consequently, the onset of psychotherapeutic intervention might hypothetically improve their emotion regulation skills, thus the directionality of the observed association would be reversed. Future longitudinal studies, looking prospectively at potential risk factors and precipitants for suicidal behavior are needed to capture the complexity and direction of the revealed association. Importantly, in contrast to the contextual suicide-precipitating factors the study of enduring suicide vulnerabilities – including trait-like emotional dispositions – may be less compromised by the cross-sectional design of the study.

Due to the relatively small number of subjects reporting a positive history of suicide attempts, other data related to the suicidal behavior were not further analyzed (e.g., planning, method, need for hospitalization after the attempt).

Furthermore, the presence of child abuse was only self-reported by the study participants, and we had no additional information that could objectively confirm its presence.

Finally, just as the self-perceived and behaviorally measured capacity to tolerate distress may be of some utility in predicting different facets of suicidality (Anestis and Joiner, 2012; Capron et al., 2013), so may EI measures, including the one used in this study as well as others. Cha and Nock (2009) found that higher scores on an EI measure (MSCEIT) of the ability to understand and manage emotions was protective against suicide attempts, although the sample consisted of adolescents. It would be important in future studies on suicidality to attend carefully to the different definitions and measurement strategies in the assessment of emotion processing.

Despite these limitations, the study provides a novel implementation of EI methodology to conceptualize suicide risk in AD patients. This knowledge might be applied in psychotherapeutic interventions dealing with AD individuals at risk for suicide attempts.

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Fig 1. Mood regulation as a mediator of the relationship between depression and suicide attempts. The values in the figure are unstandardized path coefficients. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Fig 2. Mood regulation as a mediator of the relationship between neuroticism and suicide attempts. The values in the figure are unstandardized path coefficients. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 1
Comparison of patients with and without lifetime history of suicide attempt

	Mean (SD)		P
	History of suicide attempt (N=20)	No history of suicide attempt (N=60)	
Age	41.20 (10.29)	45.78 (10.29)	0.09
Education	11.84 (3.77)	12.22 (2.71)	0.64
Gender (male/female)	12/8	44/16	0.20 [*]
Childhood abuse (yes/no)	12/8	14/45	0.004[*]
Age at onset of problems from dinking	23.90 (9.75)	27.07 (9.60)	0.21
Years of intensive alcohol use	17.30 (11.35)	18.88 (10.13)	0.56
Duration of the last episode of heavy drinking (days)	14 (7, 60)	14 (7, 40)	0.75
Severity of anxiety symptoms	1.09 (0.81)	0.65 (0.64)	0.052
Severity of depressive symptoms	24.15 (10.32)	16.66 (10.46)	0.007
Neuroticism	30.75 (6.01)	24.32 (7.25)	0.001
Emotional intelligence (total score)	108.20 (13.44)	114.73 (11.21)	0.04
Mood regulation	32.75 (5.08)	37.87 (4.95)	0.0002
Appraisal of emotions	18.95 (3.23)	19.21 (3.23)	0.77
Utilization of emotions	14.35 (2.60)	14.72 (2.04)	0.52
Social skills	17.70 (3.01)	17.92 (2.46)	0.74

^{*} Chi square test

Table 2
Logistic regression model predicting suicide attempts in alcohol-dependent patients

	OR	95% CI	p
Age	0.98	0.92 – 1.06	0.68
Gender	1.53	0.37 – 6.34	0.56
Severity of depressive symptoms	1.00	0.93 – 1.08	0.92
Neuroticism	1.04	0.92 – 1.17	0.58
History of childhood abuse	4.47	1.11 – 17.89	0.03
Mood regulation	0.70	0.54 – 0.92	0.01
Emotional intelligence	1.09	0.98 – 1.20	0.09
Model:	chi square = 27.16; df = 7; p < 0.0001		

95% CI – 95% confidence interval