Dimensions of the Dysfunctional Attitude Scale (DAS-A) and the Automatic Thoughts Questionnaire (ATQ-30) as Cognitive Vulnerability Factors in the Development of Suicide Ideation

Andrea P. Chioqueta

Norwegian University of Science and Technology, Trondheim, and Ryfylke Regional Psychiatric Center, Jørpeland, Norway

Tore C. Stiles

Norwegian University of Science and Technology, Trondheim, Norway

Abstract. The investigation of factors that may render an individual vulnerable to the development of suicide ideation may provide some light on the etiology of suicidal behavior and consequently contribute to the prevention of suicide. Based on this idea, an examination of the relationship between the underlying dimensions of the Dysfunctional Attitude Scale (DAS-A), the Automatic Thoughts Questionnaire (ATQ-30) and suicide ideation was conducted. The six DAS-A components and the two ATQ-30 components reported by Chioqueta and Stiles (2006a, 2006c) were among the variables employed in the present study. In a sample composed of 102 male military recruits, initially assessed at the Army School (Pretest) and re-tested 3 months later (Posttest), a series of multiple regression analyses were conducted. The results demonstrated that the two subscales of the ATQ-30 (Negative Self-Concept/Personal Maladjustment and Desire for Change/Negative Expectations), but none of the DAS-A subscales, predicted suicide ideation 3 months later. Thus, automatic thoughts reflecting ideas of negative self-concept, perceptions of personal maladjustment, thoughts of desire for change, and negative expectations seem to be more associated with suicide ideation than depressogenic beliefs.

Keywords: Dimensions, dysfunctional attitude, automatic thoughts, suicide ideation, nonclinical.

Introduction

The emphasis on the role of cognition in the etiology of depressive states impelled the examination of the accountability of cognition in the development of suicidal behavior (Weishaar and Beck, 1990). Accordingly, a negative view of the future, or hopelessness, has been pointed out as the cognitive factor most consistently related to suicide ideation (Beck, Steer, Kovacs and Garrison, 1985). In addition, Prezant and Neimeyer (1988) found

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Reprint requests to Andrea P. Chioqueta, Ryfylke DPS, Strand, 4100 Jørpeland, Norway. E-mail: andrea.chioqueta@ svt.ntnu.no

that selective abstraction and overgeneralization, two specific cognitive distortions, emerged as predictors of suicide ideation in a sample of adults diagnosed with unipolar major depressive disorder. Dichotomous thinking, another type of cognitive distortion, has also been reported to be characteristic of suicidal individuals (Neuringer and Lettieri, 1971). Suicide ideators have been found to exhibit interpersonal problem-solving deficits (Schotte and Clum, 1982, 1987), a negative attributional style (Joiner and Rudd, 1995; Priester and Clum, 1992), and a negative self-concept (Beck, Steer, Epstein and Brown, 1990).

Some studies have found an association between depressogenic beliefs and assumptions as measured by the Dysfunctional Attitude Scale Form A (DAS-A; Weissman, 1980) and suicide ideation. For instance, Ranieri et al. (1987) have found a significant association between depressogenic beliefs and suicide ideation in a sample of psychiatric inpatients. Similarly, Ellis and Ratliff (1986) found that hospitalized suicide attempters presenting with current suicide ideation had significantly higher scores on the DAS-A compared with non-suicidal patients. Research on the relationship between depressogenic beliefs and suicide ideation has, however, faced some inconsistencies. For instance, Beck, Steer and Brown (1993) did not find a significant association between the overall severity of dysfunctional attitudes measured by means of the DAS-100 (Weissman and Beck, 1978) and suicide ideation in a sample of psychiatric outpatients. Similarly, no significant associations were found between the DAS-A total scores and suicide ideation in a non-clinical sample in our previous study (Chioqueta and Stiles, in press). On the other hand, the ATQ-30 total scores were found to significantly predict suicide ideation at posttest (3 months period) even after initial level of suicide ideation and severity of depression were statistically controlled for (Chioqueta and Stiles, in press).

In addition to the investigation of cognitive factors and their association with suicidal behavior, empirical models integrating cognitive risk factors have also been proposed. For instance, Clum and colleagues (Clum, Patsiokas and Luscomb, 1979; Schotte and Clum, 1982) developed an interactional model of suicidal behavior focusing on the relationship between life stress, deficient problem-solving ability and hopelessness. A later application of this model with suicidal psychiatric patients found no relationship between hopelessness and levels of interpersonal problem-solving skill, suggesting that they represent independent risk factors in suicide (Schotte and Clum, 1987). Bonner and Rich (1987) proposed a model in which cognitive distortions, social-emotional alienation, and deficient reasons for living were believed to interact and predispose an individual to suicide ideation. However, no model has included dysfunctional attitudes and/or negative automatic thoughts among the cognitive factors being investigated. There seems therefore to be a lack of and at the same time a need for exploration of the extent to which suicidal and non-suicidal individuals differ on such specific dimensions.

More recently, Rudd (2000; Rudd, Joiner and Rajab, 2001) developed a cognitive-behavioral model of suicidality through an elaboration of Beck's (1996) modal theory of psychopathology, a refinement of his original cognitive model. Beck's (1996) modal theory is built around the concept of mode that is defined as "specific suborganizations within the personality organization [that] incorporate the relevant components of the basic systems of personality: cognitive (information processing), affective, behavioral, and motivational" (p.4). The suicidal mode thus is composed of four systems (a cognitive, an affective, a behavioral, and a physiological system), which in turn are composed of structures identified as schemas. The cognitive system is characterized by the suicidal belief system, which is believed to incorporate maladaptive meaning constructed and assigned by the suicidal individual regarding the self,

others, and the future. The suicidal belief system is also proposed to incorporate associated conditional rules/assumptions such as "If I'm perfect, then people would accept me", as well as compensatory strategies such as overcompensation, perfectionism, and subjugation in relationships. Finally, the suicidal belief system is characterized by pervasive hopelessness, the central feature of an active suicidal mode. Despite being well articulated, this theoretical model has not yet been empirically tested.

The investigation of factors that may render an individual vulnerable to the development of suicide ideation may provide some light on the etiology of suicidal behavior and consequently contribute to the prevention of suicide. Considering the fact that cognitive therapy emphasizes the modification of dysfunctional beliefs and automatic thoughts in order to alleviate symptomatology and ameliorate maladaptive states (Beck, Rush, Shaw and Emery, 1979), it seems of value to investigate the precise relationship between dysfunctional attitudes, automatic thoughts, and suicide ideation. Moreover, the exploration of underlying dimensions of dysfunctional attitudes and automatic thoughts may eventually contribute to the advancement of cognitive interventions specifically designed for treating suicidal individuals such as the cognitive-behavioral model of suicidality proposed by Rudd (2000; Rudd et al., 2001). Based on this idea, we decided to further investigate the relationship between depressogenic beliefs, automatic thoughts, and suicide ideation. To our knowledge, no previous studies have examined the underlying dimensions of the DAS-A and the ATQ-30 and suicide ideation. The aim of the present study was to examine whether the underlying dimensions of the ATQ-30 and the DAS-A could have an association with the development of suicide ideation. The participants were young men living in Central Norway doing their compulsory national service. They were tested on several assessment measures while they were nearing completion of their 3 months military training at a military campus in the south of Norway and waiting to be sent up to the north of Norway.

Method

Participants

The participants were 102 male military recruits serving their compulsory national military service in The Norwegian Army. They completed their 3-month military training at an Army school in Central Norway (Steinkjer), and were then sent to different parts of Northern Norway for 9 months of national military service. Their mean age was 19.48 years (SD = 0.72), ranging from 18 to 23. Ninety-nine (97%) were single, only three were married. Seventy-four (72.5%) were manual workers, 17 (16.7%) students and 10 (9.8%) were unemployed prior to admission to the army. One-way analyses of variance revealed no significant differences between the different occupational categories on any of the self-report measures.

Longitudinal design

The recruits were assessed before and after they were sent to Northern Norway to complete their 9 months national military service. The first assessment was conducted 3 months after they started the military training. In the first part of the study (Pretest), subjects completed, among others not reported here, the following self-report instruments: Beck Depression Inventory (BDI), the Dysfunctional Attitude Scale (DAS-A), and the Automatic Thoughts Questionnaire

(ATQ-30). The subjects completed the questionnaires in the recruit school's cinema with one chair spare on each side. In the second part (Posttest), 12 weeks later, subjects completed, among other inventories not reported here, the BDI again, but this time in groups containing approximately 15–25 subjects each.

Assessment instruments

The Dysfunctional Attitude Scale (DAS-A; Weissman and Beck, 1978) is a 40-item self-report inventory consisting of typical depressogenic attitudes or beliefs assumed to be characteristic of persons vulnerable to depression. It has been reported to have high internal and testretest reliability (Dobson and Breiter, 1983; Weissman and Beck, 1978). It only correlates moderately with the BDI, indicating that dysfunctional attitudes are operationally distinct from depressive symptoms (Oliver and Baumgart, 1985). Studies with Norwegian samples demonstrated adequate reliability and validity properties for the DAS-A. For instance, a Cronbach's alpha of .85 was found for this scale in a non-clinical sample (military recruits) indicating good degree of internal consistency. Evidence for the construct validity was obtained by the correlation between the DAS-A and the BDI (r = .47, p < .01) and the DAS-A and the ATQ-30 (r = .47, p < .01). The DAS-A significantly discriminates clinically depressed, non-depressed psychiatric patients, and healthy controls (Chioqueta and Stiles, 2004a).

A principal components analysis of the Norwegian version of the DAS-A revealed the existence of six components composing the underlying structure of this instrument. The were labeled Performance Evaluation ($\alpha = .80$, items: 1, 4, 7, 8, 9, 10, 11, 13, 14, 16, 19, 21, 26, 36), Need for Approval ($\alpha = .69$, items: 27, 28, 32, 38, 39), Autonomous Attitude ($\alpha = .55$, items: 6, 17, 24, 25, 35, 37, 40), Risk Avoidance ($\alpha = .58$, items: 3, 5, 15, 18, 31, 33, 34), Perfectionism ($\alpha = .45$, items: 2, 20, 22, 23), and Tentativeness ($\alpha = .18$, items: 12, 29, 30), respectively (Chioqueta and Stiles, 2006c).

The Automatic Thoughts Questionnaire (ATQ-30; Hollon and Kendall, 1980) is a 30-item self-report instrument designed to identify and measure the frequency of automatic thoughts associated with depression. The scores range from 30 to 150, with a high score indicating frequent occurrence of negative automatic thoughts. It has been shown to measure depression-related cognitions in both college (Hollon and Kendall, 1980; Dobson and Breiter, 1983) and clinical populations (Hollon, Kendall and Lumry, 1986). Satisfactory psychometric properties were identified for the Norwegian version of the ATQ-30 as evidenced by the Cronbach's alpha of .94 and the positive and significant correlation with the BDI (r = .60, p < .01). The ATQ-30 significantly discriminates clinically depressed from nondepressed psychiatric patients, and healthy controls (Chioqueta and Stiles, 2004b).

Two components were found to compose the underlying structure of the Norwegian version of the ATQ-30. Component 1 was labeled Negative Self-Concept and Personal Maladjustment ($\alpha = .92$, items: 2, 3, 5, 7, 8, 9, 10, 13, 14, 17, 18, 20, 21, 22, 23, 27, 30) and the component 2 was named Desire for Change and Negative expectations ($\alpha = .90$, items: 1, 4, 6, 11, 12, 15, 16, 19, 24, 25, 26, 28, 29) (Chioqueta and Stiles, 2006a).

The Beck Depression Inventory (BDI; Beck, Ward, Mendelsohn, Mock and Erbaugh, 1961) is a 21-item self-report inventory that has been shown to have good validity as a measure of depression severity in both clinical (Beck et al., 1961) and in college populations (Bumberry, Oliver and McClure, 1978). Item 9 (Suicidal Ideation) was not used in calculating the BDI total score because this rating was used as a measure of suicide ideation.

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Suicide Ideation was operationalized according to the answer provided by the respondent to item 9 of the BDI (Beck et al., 1961). The following sentences comprise the item assessing suicide ideation: 0 = I do not have any thoughts of killing myself, 1 = I have thoughts of killing myself, but I would not carry them out, 2 = I would like to kill myself, and 3 = I would kill myself if I had the chance. The answer to one of the questions was estimated to indicate the severity of suicide ideation exhibited by the respondents. Similar procedures for assessing suicide ideation from the BDI-item have been reported in several studies (Bhui et al., 2003; Hintikka et al., 2001; Ivarsson, Larsson and Gillberg, 1998; Lester and Beck, 1977; Tanskanen et al., 2001). Item 9 of the BDI correlated significantly with the Beck Scale for Suicide Ideation (r = .68, p < .001) and with the Beck Hopelessness Scale (r = .45, p < .01) providing some evidence for the adequacy of this item in measuring suicide ideation (Chioqueta and Stiles, 2006b).

Statistical analyses

To investigate the associations among the variables, Pearson product-moment correlations were performed. Paired-samples t tests were conducted to investigate whether there were differences on the BDI and suicide ideation scores between the pretest and posttest. In order to examine the relationship between depressogenic beliefs, automatic thoughts, and suicide ideation, a series of multiple regression analyses were performed. Finally, one hierarchical multiple regression analysis was performed to control for level of depression and level of suicide ideation. An alpha level of .05 was considered statistically significant. All the tests were two-tailed. The Statistical Package for Social Sciences (SPSS) was used to perform the analyses.

Results

Table 1 displays the means, standard deviations, and intercorrelations for suicide ideation and BDI pretest and posttest scores, DAS-A total scores and components, and ATQ-30 total scores and components. A high correlation was found between posttest level of suicide ideation and posttest level of depression (r = .62, p < .01). Interestingly, only the DAS-A total score and the DAS-A subscales Performance Evaluation and Need for Approval were found to have some correlation with level of suicide ideation at posttest. The ATQ-30 total score and the two ATQ-30 subscales were found to be significantly, although moderately, correlated with level of suicide ideation at posttest. Finally, the mean BDI score at the second assessment was found to be significantly higher compared to the first assessment (t (97) = -2.33, p < .05, two-tailed). No significant changes were observed across time for level of suicide ideation.

To investigate to what extent the DAS-A and the ATQ-30 subscales are associated with suicide ideation an initial set of analyses was performed. Thus, eight independent multiple regression analyses were conducted entering each of the ATQ-30 and DAS-A subscales as independent variables. The results revealed that among the DAS-A subscales, only Performance Evaluation (B = .24, t = 2.46, p < .05) and Need for Approval (B = .22, t = 2.21, p < .05) were significantly associated with suicide ideation. The ATQ-30 component 1, Negative Self-Concept and Personal Maladjustment (B = .45, t = 4.91, p < .001), and the ATQ-30 2, Desire for Change and Negative Expectations (B = .45, t = 4.88, p < .001), were significantly associated with suicide ideation. The attraction is the associated with suicide ideation.

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Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. Suicide ideation 1	-													
2. Suicide ideation 2	.31**	_												
3. BDI ¹	.38**	.28**	_											
4. BDI2	.19	.62**	.39**	_										
5. DAS-A	.18	.24*	.48**	.41**	_									
6. DAS Performance ev.	.19	.24*	.46**	.41**	.84**	_								
7. DAS Need for appro.	.19	.22*	.40**	.30**	.74**	.51**	-							
8. DAS Autonomous A.	.18	.09	.19	.19	.55**	.27**	.42**	-						
9. DAS Risk avoidance	.02	.09	.29**	.20	.65**	.42**	.42**	.10	-					
10. DAS Perfectionism	00	.16	.20*	.24*	.50**	.31**	.21*	.19	.31**	_				
11. DAS Tentativeness	08	05	.11	.00	.27**	.13	.06	.11	.16	.06	_			
12. ATQ-30	.50**	.48**	.73**	.43**	.50**	.45**	.46**	.31**	.22*	.16	.06	_		
13. ATQ Negative self-con	48**	.45**	.62**	.39**	.50**	.44**	.46**	.31**	.23*	.17	.27**	.92**	-	
14. ATQ Desire for change	.46**	.45**	.73**	.41**	.43**	.40**	.40**	.28**	.18	.14	.08	.94**	.74**	-
M	.25	.28	6.37	8.23	117.63	34.67	19.81	23.42	20.11	12.35	7.29	49.90	26.33	23.55
SD	.69	.66	6.29	8.38	24.22	11.72	6.04	5.82	5.92	4.19	2.92	15.70	8.00	8.83

 Table 1. Correlations of pretest and posttest suicide ideation and BDI scores, DAS-A total and factors scores, and ATQ-30 total and components scores

Note: Suicide Ideation 1 = pretest Suicide Ideation; Suicide Ideation 2 = posttest Suicide Ideation; BDI1 = pretest Beck Depression; DAS-A = Dysfunctional Attitude Scale; ATQ-30 = Automatic Thoughts Questionnaire.

¹The BDI ratings for the item 9 (Suicidal Ideation) are not included.

p*<.05; *p*<.01.

Predictor variable	F change	R^2 change	В	t
Step 1	5.95	.11**		
BDI ¹			.18	1.67
Suicide ideation			.23	2.13*
Step 2	2.62	.18*		
ATQ-30(1) – Negative self-concept			.33	2.22*
ATQ-30(2) – Desire for change			.32	2.02*
DAS-A(1) – Performance evaluation			.02	.22
DAS-A(2) – Need for approval			01	10
DAS-A(3) – Autonomous attitude			07	73
DAS-A(4) – Risk avoidance			01	13
DAS-A(5) – Perfectionism			.14	1.49
DAS-A(6) – Tentativeness			05	59

 Table 2. Summary of the hierarchical multiple regression analysis for variables assessed at the army school predicting suicide ideation at posttest

Note: BDI = Beck Depression Inventory; ATQ-30 = Automatic Thoughts Questionnaire; DAS-A = Dysfunctional Attitude Scale.

¹The BDI ratings for the item 9 (Suicidal Ideation) are not included.

p < .01, p < .05

analysis was carried out in order to control for level of depression and level of suicide ideation. The analysis was then performed entering the BDI pretest scores and suicide ideation pretest scores in the first step followed by each of the ATQ-30 subscales and DAS-A subscales entered simultaneously in the second step. As can be seen in Table 2, initial level of depression did not predict level of suicide ideation at posttest, while initial level of suicide ideation predicted level of suicide ideation 3 months later. Interestingly, both ATQ-30 subscales significantly predicted suicide ideation. On the other hand, none of the DAS-A subscales were found to be significantly associated with suicide ideation at posttest after controlling for both, initial level of depression and initial level of depression and initial level of suicide ideation.

Discussion

This is the first study to investigate whether there is any association between the underlying dimensions of the ATQ-30 and the DAS-A with suicide ideation in a non-clinical sample using a predictive prospective design. Accordingly, the aim was to identify dimensions of the DAS-A and the ATQ-30 that could represent specific cognitive vulnerabilities in the development of suicide ideation. The results suggested that both of the ATQ-30 subscales, but none of the DAS-A subscales, were significantly associated with suicide ideation at posttest. More specifically, we found that the ATQ-30 component 1, reflecting ideas of Negative Self-Concept and perceptions of Personal Maladjustment, and the ATQ-30 component 2, reflecting thoughts of Desire for Change and Negative Expectations, predicted suicide ideation 3 months later, even after controlling for level of depression and level of suicide ideation.

The content of the two ATQ-30 dimensions seems to reflect the negative view of the self and the negative view of the future described by Beck (1967) as components of the cognitive triad

in the cognitive model of depression. The results thus are consistent with empirical studies in which the role of hopelessness (negative view of the future) has been emphasized as an important psychological variable in the development and predisposition of suicide ideation (Beck, Steer, Beck and Newman, 1993; Beck et al., 1985; Dyer and Kreitman, 1984; Hughes and Neimeyer, 1993). Moreover, the results also emphasize the role of a negative self-concept in the prediction of suicide ideation. In fact, empirical research has identified a negative self-concept as an indicator of suicide risk (Beck et al., 1990; Wetzel and Reich, 1989).

Interestingly, however, none of the DAS-A subscales was found to be associated with the development of suicide ideation after level of depression and level of suicide ideation were statistically controlled for. One possible explanation for the fact that only the subscales of the ATQ-30 emerged as significant predictors of suicide ideation may be related to the kind of cognitions that these two instruments assess and/or to the cognitive content of the belief system of depressed individuals who develop and who do not develop suicidal thoughts. For instance, it may be that the ATQ-30 measures negative automatic thoughts that are associated with both depression and suicidal thoughts, while the DAS-A is sensitive to or measures a kind of dysfunctional beliefs that is specifically associated with depression or depressive mood but not necessarily taps the cognitive content of the belief system of suicidal individuals. Thus one may assert that the content of the cognitive belief system of a depressed individual who becomes suicidal is different from a depressed individual who does not become suicidal. In fact, the beliefs described by Rudd (2000, 2004) to exemplify the "suicidal belief system", which contains statements such as "I do not deserve to live, I am worthless", "Everyone would be better off if I were dead", "Nobody really cares about me", and "Things will never change and I cannot tolerate these feelings", are different from the beliefs assessed by the DAS-A. For instance, the DAS-A measures beliefs such as "It is difficult to be happy, unless one is good looking, intelligent, rich, and creative", "My value as a person depends greatly on what others think of me", and "I should be upset if I make a mistake". This suggestion needs though to be empirically tested.

Overall, the results provide useful clinical information. First, an instrument measuring frequency of negative automatic thoughts such as the ATQ-30 can be used to detect suicide ideation in the absence of a scale designed to assess suicidal ideation. Second, negative automatic thoughts can be modified through cognitive-behavioral treatments alleviating the symptomatology and eventually impeding the development of a more severe suicidal behavior. Finally, cognitive interventions specifically designed to treat suicidal individuals can be developed or improved based on the knowledge of the role of negative automatic thoughts in the development of the suicidal crisis.

Some important limitations of the present study must be considered in examining the results. First, the level of suicide ideation was assessed extracting the item 9 of the BDI, not through the use of the full Beck Scale for Suicide Ideation (SSI; Beck and Steer, 1991). However, it is not an unusual practice to assess level of suicide ideation through the BDI item-9, since this assessment procedure has been used in several studies (Bhui et al., 2003; Hintikka et al., 2001; Ivarsson et al., 1998; Lester and Beck, 1977; Tanskanen et al., 2001). Second, the results may be limited by the low levels of depressive symptoms exhibited in our nonclinical sample. However, research findings have demonstrated that sub-clinical depression levels exhibited by students provide a fairly accurate model of clinical depression (Hill, Kemp-Wheeler and Jones, 1987; Vredenburg, Flett and Krames, 1993). Third, the study was composed of a non-clinical population. Fourth, the fact that the recruits were tested under different conditions

(smaller groups at posttest) may have affected the results. Finally, the results could be partly attributed to gender differences in cognitive vulnerability since our sample was composed of males only. It is possible that different kinds of stress interact in a different way with the cognitive vulnerabilities of men and women evoking different dysphoric responses as suggested by Whiffen and Gotlib (1989). The results therefore should be treated with caution and replication, preferably using clinical samples, is recommended. Future studies should also investigate possible gender differences. Finally, the investigation of the role of dysfunctional attitudes and negative automatic thoughts in the development of other suicidal behaviors such as attempts, repetition of suicide attempts, and eventually completed suicides seem also relevant.

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