

Gender difference of school anger dimensions and its prediction for suicidal behavior in adolescents¹

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ABSTRACT. This instrumental study examined gender differences of school anger components and its prediction for suicidal behavior. The subjects of this study were 1418 high school students selected by stratified random sampling in Shiraz. The self reported Multidimensional School Anger Inventory was used to measure anger within a school context. The subjects reported their suicidal behavior including wish to die, consideration of suicide, suicidal attempt and self injury behavior in the previous six months. Girls experienced anger more than boys and, for the contrary, hostility was higher in boys. However, there was no difference between both genders regarding positive coping expression of anger or destructive coping expression. Hostile Outlook score and destructive expression of anger score were positively related to all types of suicidal behavior. Positive coping strategy for anger was not a predictor of suicidal behavior. The cognitive component of anger does not relate to more healthy expression of anger. The adolescents without suicidal attempt have not reported higher positive coping strategies as a means of managing or expressing angry feelings than suicidal attempters. Negative cognitions, and more hostility towards school are related to lower levels of adjustment. Teaching positive coping strategies for management of anger might not be sufficient for prevention of suicidal behavior.

KEYWORDS. Gender. School anger dimensions. Suicidal behavior. Adolescents. Students. Farsi version of K-SADS. Iran. Instrumental study.

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RESUMEN. El propósito de este estudio instrumental fue examinar las diferencias de género en los componentes de ira escolar y su predicción para el comportamiento suicida en los adolescentes de educación secundaria en Shiraz, una cultura no-occidental. Los sujetos de este estudio fueron 1418 estudiantes de Educación Secundaria seleccionados mediante muestreo aleatorio estratificado en Shiraz. Se utilizó un autoinforme de Inventario Multidimensional de Ira Escolar para medir la ira dentro del contexto escolar. Los sujetos informaron sobre su comportamiento suicida, incluyendo el deseo de morir, consideración del suicidio, intentos suicidios y comportamiento de autolesionarse en los seis meses anteriores. Las mujeres experimentaban más ira que los varones y, por el contrario, la hostilidad fue más alta en ellos. Sin embargo, no había diferencias entre los géneros en cuanto a la expresión positiva y destructiva de afrontamiento. Las puntuaciones en la actitud hostil y expresión destructiva de ira fueron positivamente relacionadas con todos los tipos de comportamiento suicida. Sin embargo, la puntuación en afrontamiento positivo no fue asociada con consideración del suicidio, intentos suicidas y comportamiento de autolesionarse. La puntuación en estrategia positiva de afrontamiento de ira no era predictora del comportamiento suicida. Parece que el componente cognitivo de ira no se relaciona con su expresión más sana. Los adolescentes sin intentos suicidas no han informado sobre mayores estrategias positivas de afrontamiento como medio para controlar y expresar sentimientos de ira en comparación con los que sí han intentado suicidarse. Adicionalmente, eso indica que cogniciones negativas más hostilidad hacia compañeros de escuela se relaciona con menores niveles de ajuste. Enseñar las estrategias positivas de afrontamiento para controlar la ira puede no ser suficiente para prevenir el comportamiento suicida.

PALABRAS CLAVE. Género. Dimensiones de ira escolar. Comportamiento suicida. Adolescentes. Estudiantes. Versión Farsi del K-SADS. Iran. Estudio instrumental.

Anger is an emotional reaction to a perceived internal or external provocation. There is not an overall consensus with regard to defining and operationalizing anger and related constructs such as hostility and aggression (Smith and Furlong, 1994). Anger has four distinct components: physiological, affective, behavioral and cognitive (Novaco, 1975). The affective component or anger experience is the strength of emotional responses toward anger provoking situations. The behavioral component consists of coping mechanisms which are used for expression of anger. Coping strategies may be positive or destructive. The cognitive component or hostility is composed of negative beliefs towards others or places (Boman, 2003). There is not a gender difference in the experience of anger in adolescents but expression of anger is related to gender (Zahn-Wexler, 1994). According to more recent results of other study, girls experience more anger and showed more positive coping. However, boys had a higher mean score for school hostility (Boman, 2003). Other study indicated that experience or expression of anger was not associated with gender (Swaffer and Epps, 1999). The anger-hostility-aggression (A-H-A) model is another conceptual definition of anger which was proposed by Spielberger *et al.* (1985).

Suicide was the third leading cause of death among 10-19 years old children and adolescents in the United States in 1997 (Guyer MacDorman, Martín, Peters, and Strobino

1998). Experience of anger is a major variable in the prediction of later suicidality (Myers, McCauley, Calderon, and Treder, 1991). A study on young population aged 15-19 showed that both boys and girls who reported suicidal feelings had significantly higher scores on the Aggression Questionnaire than those who denied suicidal ideation (Miotto *et al.*, 2003). Therefore assessment of anger may play a role in prevention of suicide. A better understanding of anger components that predict and protect against suicidal behaviors in adolescents is needed to identify modifiable factors and develop culturally responsive prevention strategies.

Connectedness to school which includes student's perceptions that teachers care about them and treat them fairly, and feel a sense of belonging, happiness, and safety at school are protective against interpersonal violence involvement among the youth (Resnick *et al.*, 1997). The youths who had high scores on the hostility scale were more likely to experience school violence than those with low scores (Furlong, Chung, Bates, and Morrison, 1995). In addition, interpersonal violence is found to predict a suicide attempt in youth (Borowsky, Resnick, Ireland, and Blum, 1999). Suicide attempters show higher scale scores on aggression expression and it is a feature of suicidal temperament (Nordstrom, Schalling, and Asberg, 1995). A high level of anger expression predicts a self-reported wish to die (Boergers, Spirito and Donaldson, 1998).

Mode of anger expression varies in different individuals. Externalized anger is expressed outwardly, *i.e.* toward people or environment. However, internalized anger is directed inwardly (Spielberger, 1988). Evaluated modes of anger expression in adolescent suicide attempters indicated that in comparison to the control group of high school students, suicidal adolescents displayed an increased likelihood of experiencing anger, and significantly higher levels of both internalized and externalized anger (Lehnert, 1994).

Suicidal patients were significantly less likely to use the coping style of minimization to deal with life problems (Kotler *et al.*, 1993). (Coping style of minimization is to minimize the importance of a problem or situation). Among suicidal patients, suicide risk is negatively correlated with the coping styles of minimization (Botsis, Soldatos, Liossi, Kokkevi, and Stefaniz, 1994). Despite the prominence of anger for consequences such as suicide, it has received only limited research attention among adolescents.

This instrumental and *ex post fact* study (Carretero-Dios y Pérez, 2007; Montero and León, 2007) compares gender differences of the anger characteristics in high school students. It also surveys if boys experience more anger, more hostility, lower positive cognitive strategies, and higher destructive coping strategies towards school than girls. Are the anger components predictor of suicidal behavior and self injury? To date, no study on Iranian samples, a non Western culture was conducted.

Method

Participants

The respondents of the study were 1418 (out of 1500; 38 were not returned and 44 were not completely filled in) high school students selected by stratified random

sampling in Shiraz, one of the largest cities in Iran. The age range was 15 to 18 years ($M = 16.4$) and 51% were girls. The response rate of the sample was 94.6% and all of them were Persian. The study was confidential, anonymous, and participation was on a voluntary base. The structured interview questionnaires were completed by the students in attendance on the administration day. This report is a part of a broader study on suicidal behavior in the adolescents (Ghanizadeh, in press).

Measures

The Multidimensional School Anger Inventory (MSAI) is a self reported questionnaire that measures anger within a school context (Smith, Furlong, Bates, and Laughlin, 1998). The MSAI measures anger components. It assesses affective, cognitive, and behavioral dimensions of anger specific to the general school setting and context. Each of the subscales measures a relatively independent aspect of the general construct of anger in adolescents. The instrument is consistent with conceptual definitions of anger, *e.g.* the anger-hostility-aggression (A-H-A) model proposed by Spielberger *et al.* (1985).

To assess the suicidal behavior, the subjects were asked four questions about suicide and self injury behavior during the last 6 months. The questions which were taken from the Farsi translation of the Kiddie-Schedule for Affective Disorders and Schizophrenia (K-SADS) (Ghanizadeh, Mohammadi, and Yazdanshenas, 2006) include: a) wish to die; b) thinking about suicidal attempt; c) suicidal attempt; d) act of self injury behavior other than suicidal attempt.

Procedure

The MSAI was translated by a team of child and adolescent psychiatrist and psychologist researchers who translated the MSAI into Farsi. The MSAI-Farsi Version was back translated. The back translated version of the MSAI was reviewed and reconfirmed by the team and the final translation was fixed by consensus. To examine the feasibility of the MSAI, it had been administered to adolescents in a child and adolescent psychiatric clinic. After approval of its performance and establishments of its face validity, it was used in the current study. All of the items of the MSAI were included in the developmental version of the Farsi MSAI. Four-point Likert-type response format was used for response to the items. However, there were four different subscales, each having its own response type. The following responses were used for the 13 anger experience subscale items: 1 (*I'm not angry at all*), 2 (*I'm a little bit angry*), 3 (*I'm pretty angry*), and 4 (*I'm very angry. I'm furious*). This subscale measures anger experience and presents hypothetical school situations in which the students reported their own level of anger. The 6 cognitive subscale items used the following responses: 1 (*strongly disagrees*), 2 (*disagree*), 3 (*agree*), and 4 (*strongly agree*). The cognitive subscale measured the students' level of school hostility to a series of statements. The 12 anger expression subscale items used these responses: 1 (*never*), 2 (*occasionally*), 3 (*often*), and 4 (*always*). Its subscale represented positive or destructive coping strategies in which the students reported how often they may use them in dealing with their anger. Destructive expression includes aggressive responses and positive coping includes more socially acceptable responses. Higher scores in the subscales show the worst condition, except for positive coping that higher score show more favorable condition (Table 1).

Analysis

A principal component analysis with varimax rotation for purposes of examining the factor structure was used. Independent *t*-test analyses were conducted to investigate the nature of gender differences in anger subscales. Pearson's correlation was used to assess association of the anger components with each other. Multiple logistic regression, enter method, was conducted to investigate anger components which are predictor of suicidal behavior and self-injury.

Results

Validity of Farsi version of Multidimensional School Anger Inventory (MSAI)

In the initial phase of the scale development, item analysis and exploratory factor analysis were conducted. Item-subscale correlations were calculated and examined to identify the set of subscale items that had the highest correlations with each subscale total score. The item analysis revealed that all of the 31 items showed moderately low ($r = .25$) to high correlations with their associated total subscale score. These three items with item-total correlations of less than .30 were dropped from the subscales: *Somebody cuts in front of you in the queue*, *When I get mad at school, I share my feelings*, and *I talk it over with another person when I'm upset*. So, 28 items with item-total correlations of .43 and higher were selected to be included in further analyses. Correlation of the other items with their own subscales is shown in Table 1. Table 1 shows that the four factors reported in the original MSAI study (Smith *et al.*, 1998) were replicated for the subset of the adolescents in this study. Also, the original four factors emerged unchanged.

TABLE 1. Results of principal components analysis showing item factor loadings after varimax rotation, eigenvalues, and percentage of variance explained by rotated factors.

	Rotated Factor Loadings			
	1	2	3	4
<i>School Anger Experience Index</i>				
You didn't notice that someone put gum on your seat and you sit on it	.67	-.09	-.17	-.22
At school, two bigger kids take something of yours and play "keep away" from you	.77	-.04	-.14	-.19
You tell the teacher that you are not feeling well but he/she doesn't believe you	.68	.25	.17	.03
Someone in your classroom acts up, so the whole class has to stay after school	.64	-.08	.18	.18
You ask to go to the bathroom and the teacher says no	.45	.26	.32	.29
You go to your desk in the morning and find out that someone has stolen some of your school supplies.	.81	-.09	.00	.11
Someone in your class tells the teacher on you for doing something	.61	.05	.17	.19
You get sent to the principal's office when other kids are acting worse than you.	.76	.03	.03	.11
The teacher's pet gets to do all of the special errands in class	.44	.20	.34	.18

TABLE 1. Results of principal components analysis showing item factor loadings after varimax rotation, eigenvalues, and percentage of variance explained by rotated factors (*cont.*).

	<i>Rotated Factor Loadings</i>			
	1	2	3	4
You are trying to do your work in school and someone bumps your desk on purpose and you mess up	.79	.05	-.06	-.17
You study really hard for a test but still get a low grade	.61	-.08	.05	.00
Somebody calls you a bad name	.60	.09	-.03	-.03
<i>Hostile Outlook</i>				
School is worthless (junk)	-.20	.60	.29	.10
School is really boring	-.00	.75	.17	-.10
Grades at school are unfair	.12	.63	.17	-.14
There is nothing worth learning at school	-.09	.67	.18	-.00
Rules at school are stupid	.11	.76	-.03	-.06
Adults at school don't care about students	.09	.73	-.14	-.01
<i>School Anger Expression Index (Positive Coping)</i>				
When I'm angry, I think about something else	-.10	-.14	.13	.44
Before I explode, I try to understand why this happened to me	.24	.01	-.21	.43
When I'm upset, I calm myself down by reading, writing, painting, or some similar activity	.02	-.20	-.07	.69
If something makes me mad, I try to find something funny about it	-.01	.06	-.12	.63
When I'm mad, I let my feelings out by some type of physical activity like running, playing, etc	.05	.02	-.14	.58
<i>School Anger Expression Index (Destructive Expression)</i>				
When I'm mad, I hate the world	.15	.13	.50	-.12
When I'm mad, I break things	-.16	.10	.69	-.13
I get so mad that I want to hurt myself	-.06	.06	.62	.032
If I get mad, I'll throw a tantrum	.08	.03	.70	-.05
When I'm angry, I'll take it out in whoever is around	.18	.08	.46	-.18
Percentage variance explained by rotated factors	20.40	12.71	7.01	6.83

Note. Total variance accounted for by the factor structure was 46.90%.

Reliability of the Farsi version of Multidimensional School Anger Inventory

The internal consistency reliability scores were good with the school *Anger expression* subscale at .89, the *Hostile outlook* .79, and the *Positive coping anger expression* subscale .66 and *Destructive expression* subscale at .71. The reliability of the whole questionnaire was .81.

Gender difference of anger components

The score of the school anger experience subscale was higher in girls than boys. The higher score are in favor of higher school anger experience or sever condition. Boys have hostility more than girls. However, there was no difference between both

genders regarding positive coping expression of anger or destructive coping expression (Table 2).

TABLE 2. Association of anger components score with gender.

	<i>Gender</i>	<i>Mean</i>	<i>Significance</i>
School anger experience	Boys	32.79	$F_{(1, 1415)} = 23.06, p < .001$
	Girls	35.12	
Hostile outlook	Boys	13.03	$F_{(1, 1417)} = 30.88, p < .001$
	Girls	11.82	
Positive coping	Boys	10.33	$F_{(1, 1417)} = .04, p = .83$
	Girls	10.29	
Destructive coping	Boys	8.65	$F_{(1, 1416)} = .05, p = .82$
	Girls	8.61	

Correlation of the anger subscales with each other

There was no significant relationship between anger experience and positive coping. There was a significant negative relationship between hostility and positive coping (Table 3).

TABLE 3. Correlations of the components of anger with each other.

		<i>School anger experience</i>	<i>Hostile outlook</i>	<i>Positive coping</i>
Hostile outlook	Pearson Correlation	.07(**)		
	Sig. (2-tailed)	.003		
Positive coping	Pearson Correlation	-.01	-.03	
	Sig. (2-tailed)	.514	.179	
Destructive coping	Pearson Correlation	.16(**)	.30(**)	-.03
	Sig. (2-tailed)	.000	.000	.145

** Correlation is significant at the .01 level (2-tailed).

Anger subscales predictors of suicidal behavior

Multiple logistic regressions showed that destructive coping strategy for anger in Farsi version of Multidimensional School Anger Inventory was a common predictor for all the types of the suicidal behavior and self injury (Table 4). Also it was the strongest predictors of all the types of suicidal behavior. Another interesting finding was that the score of positive coping strategy for anger was not a predictor for suicidal behavior.

TABLE 4. The anger dimensions and gender as predictors of suicidal behavior and self injury.

<i>Suicidal behavior</i>	<i>Predictor variable*</i>	β	<i>Significance</i>	<i>Model**</i>
Wish to die	Hostile outlook	.099	.0005	$F_{(5, 1408)} = 45.66$, Adjusted $R^2 = .138$
	Destructive coping	.314	.0005	
	Sex	.092	.0005	
Considering of suicide	School anger experience	.07	.0006	$F_{(5, 1408)} = 48.92$, Adjusted $R^2 = .145$
	Hostile outlook	.120	.0005	
	Destructive coping	.337	.0005	
	Sex	.05	.042	
Suicidal attempt	School anger experience	.157	.0005	$F_{(5, 1408)} = 35.26$, Adjusted $R^2 = .108$
	Destructive coping	.303	.0005	
	Sex	.61	.017	
Self-injury	School anger experience	.091	.0005	$F_{(5, 1408)} = 38.20$, Adjusted $R^2 = .108$
	Hostile outlook	.075	.005	
	Destructive coping	.317	.0005	

*Only significant variables are shown.

**Multiple regression analysis, using enter method.

Discussion

This study shows that the Farsi translation of Multidimensional School Anger Inventory is a reliable 28-item scale that measures affective, cognitive, and positive and destructive expressive aspects of anger in adolescent. The scale has sufficient validity and reliability. In contrast to prior study, positive coping strategy was not superior in girls than boys. However, experience of school anger was higher in girls and hostility was higher in boys (Boman, 2003). Destructive coping mechanisms were not related to gender. It is in contrast with other studies that reported that adolescent males are more likely to outwardly express their anger (Boman, 2003; Cox, Stabb and Hulgus, 2000).

Students who indicated low levels of hostility towards school also tended to indicate lower levels of anger experience and lower destructive strategies, but not more constructive coping mechanisms. It appears that the cognitive component of anger does not relate to the more healthy expression of anger. This result is completely different from that of a similar study in West (Boman, 2003). There was a correlation between hostility and positive coping strategy scores.

A unique contribution of the current survey is the exploration of the association of anger components with suicidal behavior in adolescents. On the whole, the adolescents without suicidal attempt have not reported higher positive coping strategies as a means of managing or expressing angry feelings than suicidal attempter. In other words, a lower positive coping strategy was not a risk factor for suicidal attempt.

The cognitive hostility score in subjects with suicidal behavior was more than non-suicidal subjects. However, it was not a risk factor for suicidal attempt and it was a risk factor for all of the other types of suicidal behavior. It is possible that students with higher levels of cognitive hostility and lower coping strategy already have committed suicide and were not included in this study. On the other hand, higher level of hostility in the suicidal adolescents indicates that students who reported higher levels of cognitive

hostility were more likely than their less hostile peers to report that they expressed their anger in destructive ways such as suicidal behavior. Also, it indicates that negative cognitions, more hostile towards school, relates to lower levels of adjustment.

Destructive coping strategy for anger was a common predictor for all the types of the suicidal behavior including self injury. Also it was the strongest predictor of all the types of suicidal behavior. It is in accordance with a prior study in Italy that showed that those who reported suicidal feelings had significantly higher scores on the Aggression Questionnaire than those who denied suicidal ideation (Miotto *et al.*, 2003).

Probably one of the most important findings of this study was that the positive coping score was not associated with consideration of suicide, suicidal attempt, and self injury behavior. It was not a predictor of any type of suicidal behavior and self injury. On the other hand, more scores in destructive expression score, experience of anger and hostile outlook were positively associated with suicidal behavior. It might be concluded that teaching positive coping strategies for management of anger might not be sufficient for prevention of suicidal behavior. The education should include the strategies for handling the destructive expression of anger. In addition, the preventive programs should target the cognitive dimension of the anger, hostility outlook. The study showed that more experience of anger increased the suicidal attempt. It shows that suicide prevention programs should include the underlying causes of anger, for example emotional disorders (Beautrais, 2000), biological influences, family variables, the role of school and peers, and cultural, social, and economic conditions.

Adolescents' adjustment is related to their psychological autonomy levels (Soares, Guidandre, Diniz, and Almeida, 2006). It seems necessary to identify specific types of anger-related problems in suicidal adolescents and to match intervention strategies to these specific needs.

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