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ORIGINAL PAPER

A cross-cultural investigation of suicidal behavior and attitudes in Austrian and Turkish medical students

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Abstract
Purpose This cross-cultural study investigated the prevalence of suicidal behavior and attitudes towards suicide and reactions to suicidal individuals in 320 Austrian and 326 Turkish medical students.
Methods Data were collected using a self-report questionnaire consisting of sections on demographic information, suicidal behavior, current mood, religiosity, attitudes towards suicide, and reactions to suicidal individuals.
Results More Austrian (37.8%) than Turkish (27.3%) students reported life-time, past 12-month, or current suicidal ideation, while more Turkish (6.4%) than Austrian (2.2%) students reported life-time or past 12-month suicide attempts. Austrian students had more permissive and liberal attitudes towards suicide, while those of Turkish students were more rejecting. Conversely, attitudes of Turkish medical students towards an imagined suicidal close friend were more accepting than those of Austrian medical students. Comparisons of suicidal versus nonsuicidal students showed that those reporting suicidal ideation or suicide attempts generally were more accepting of suicide and viewed suicide as a solution to a greater extent than the nonsuicidal group.
Conclusion The findings suggest that cultural factors play a role in observed country differences in suicidal ideation and behavior and in attitudes towards suicide and reactions to suicidality among Austrian and Turkish medical students.

Keywords Suicidal behavior · Attitudes · Medical students · Austria · Turkey

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Introduction

Suicide is a significant public health problem and even more so in certain professions. For instance, suicidal behavior is more frequent in physicians than in other professions [1, 22, 32, 36]. As future doctors, medical students are at a greater risk for suicide [26, 41]. As in the general population [25], depression is the strongest risk factor for suicidal behavior in physicians, too [40]. Evidence indicates that depressive symptoms are rather common in medical students [3]. A recent study [42] investigated the prevalence of burnout and suicidal ideation in 2,115 Dutch medical residents. Study findings included that 20.6% of residents were classified as burnout and suicidal ideation was more common in residents with burnout than in those without (20.5 vs. 7.6%).

The pathways leading to suicidal behavior are multifaceted, including intrapersonal, interpersonal, biological and genetic as well as societal and cultural contributions [6, 24, 33, 43]. Bearing in mind the latter factor, it is unsurprising that rates of suicidal ideation, suicide attempts, and completed suicide all show noticeable variation across different cultural contexts [30]. To appropriately account for this variation, the need to consider person and culture variables conjointly has been pointed out [28]. Suicidal behavior has been conceptualized as a person's reaction to unbearable psychological pain [37]. Individuals experiencing psychological pain above the threshold of tolerance

may become depressed or agitated, may attempt to harm others, or may attempt to harm or destroy themselves. Both cultural codes and personal history will conjointly contribute to individual tendencies towards one or the other of the above reactions and outcomes.

The interplay between culture and person variables is considered to be a determinant of suicidal behavior in two ways. As for the first one, cultural values and codes play an important role for the alternatives available for individuals experiencing personal crisis. This way, suicide has been viewed as an "idea" [27]. When experiencing a crisis, individuals may choose suicide as one option among several others. It is thought that cultural values and codes bring this option to the awareness of suicidal persons. As for the second way, cultural values and codes play a role in shaping social attitudes towards suicidal individuals. Individuals faced with a personal crisis may dwell on the idea of and attempting self-annihilation. It is generally accepted and well-known that suicide attempts and gestures are cries for help. Positive cultural attitudes towards suicidal individuals may render it easy for suicidal persons to seek help and to get social support at the very beginning of a suicidal process. Indeed, a vast array of scientific evidence indicates that social support is one of the strongest protective factors against suicidal behavior [4, 12, 20, 35].

As for examples of empirical tests of the above framework, several studies have compared different aspects of adolescent suicidal behavior in Sweden and Turkey. According to official statistics, the suicide rate is higher in Sweden than in Turkey [11]. However, several studies found past suicidal ideation and suicide attempts to be equally common in Turkish as compared to Swedish adolescents [12, 14, 16]. Correlates of suicidal ideation and suicide attempts and cultural meanings of suicidal behavior were similar in Swedish and Turkish adolescents [12, 14, 15]. Why do as many Swedish as Turkish adolescents contemplate and attempt suicide, while definitely more Swedish than Turkish adolescents actually kill themselves? In order to account for this seeming gap between plans and outcomes, a stigma hypothesis has been put forward [13, 15]. Making a distinction between attitudes towards suicide in general, as opposed to attitudes towards suicidal individuals specifically, the stigma hypothesis states that if attitudes towards suicidal individuals are stigmatizing in a social context, then individuals engaging in suicidal behavior more likely experience social rejection and isolation. If, on the other hand, social attitudes towards suicide are permissive and liberal in a social context, then individuals experiencing a crisis may easily conceive the idea of self-killing and enter a suicidal process. Supporting the stigma hypothesis, several cross-cultural investigations have revealed that Swedish youths in contrast to Turkish youths adopt liberal attitudes towards suicide, whereas Turkish youths are more accepting of suicidal persons than their Swedish counterparts [13, 17].

The stigma hypothesis assumes that human cultures vary along dimensions of attitudes towards suicide, taken as a phenomenon, and attitudes towards persons who actually engage in suicidal behavior. In cultural contexts wherein suicide is associated with permissive and liberal attitudes, persons experiencing a personal crisis may easily conceive of the idea of self-killing. Conversely, in contexts wherein persons engaging in suicidal behavior face stigmatizing and rejecting social attitudes and reactions, at an early phase of the suicidal process they may not be able to obtain the help they cry for. Cultural values easing the idea of self-annihilation, but at the same time preventing the help suicidal persons are crying for, may constitute a kind of a trap or double bind. Having been trapped in such situations may lead to feelings of hopelessness and helplessness which in turn are the most powerful cognitive-affective features of persons finally engaging in suicidal behavior [9].

Although, as discussed above, medical students are at a greater risk for suicidal behavior, few studies have investigated the prevalence of suicidal behavior in medical students and the factors associated to this from a cross-cultural perspective. One prior account [21] compared groups of Austrian and Indian medical students. A much higher percentage of suicidal ideation in Austrian than in Indian students was found (51.5 vs. 16.8%). However, the percentage of suicide attempts was practically identical in both groups (4.9 vs. 5.9%). Austrian students displayed more permissive and liberal attitudes towards suicide than Indian students. In another study [8], corresponding attitudes of Japanese and American medical students were compared. Japanese students more strongly endorsed the ideas of a right to die and of suicide as a normal behavior. More generally, studying suicidal behavior in medical students is important in at least two respects. First, medical students, as tomorrow's doctors, will occupy gatekeeper positions in the health system. Second, despite the role of providing help and caring for the health of others, individuals in the medical profession are known to be less likely to seek help for their own mental health problems than general population controls [7].

Since medical students and professionals are at a greater risk for suicide and suicide is affected by culture, this study aimed to undertake a cross-cultural investigation of suicidal behavior and attitudes towards suicide in Austrian and Turkish medical students. Austria and Turkey have disparate cultural traditions as well as clearly different suicide rates. Compared to the Turkish culture, individualistic values are more prevalent in Austria [23]. Individualistic values are positively related to suicide rates [10, 29, 34]. Although religious traditions of both countries (Roman

Catholicism in Austria and Islam in Turkey) do not approve suicide, there is a large gap between Austria and Turkey regarding the level of secularization: religiousness and the general importance of religion are clearly higher in Turkey than in Austria, and Islam prohibits suicide strictly [2, 31]. Consistent with these country differences, Turkey has a lower suicide rate than Austria (http://www.who.int/mental_health/prevention/suicide/country_reports/en/index.html) (3.9 vs. 15.6 per 100,000 inhabitants per year) [39].

Against this background, the present study was designed as a cross-cultural investigation of suicidal behavior and attitudes towards suicide in Austrian and Turkish medical students. Taking cultural traditions and suicide mortality statistics of the two countries as well as the previous research findings (discussed above) into account, the following four hypotheses were developed and tested in the present study: (1) Austrian medical students would report more suicidal ideation and suicide attempts than their Turkish counterparts; (2) Austrian medical students would exhibit more permissive and liberal attitudes towards suicide than Turkish; (3) Turkish medical students would exhibit more positive attitudes towards suicidal persons than Austrian; (4) among both Austrian and Turkish students, acceptability of suicide would be inversely related to social acceptance of suicidal persons.

Methods

Participants

Study participants were 320 Austrian medical students (162 men, 158 women) enrolled at the Medical University of Vienna and 326 Turkish medical students (191 men, 135 women) enrolled at the Medical Faculty of the Adnan Menderes University in Aydin. There were more women in the Austrian than in the Turkish sample (49.4 vs. 41.4%), $\chi^2(1) = 4.13$, $P < 0.05$. The Austrian sample was older ($M = 22.4$ and SD = 3.5 years) than the Turkish sample ($M = 20.4$ and SD = 1.9 years), $t(644) = 8.56$, $P < 0.001$. Of the Turkish participants, 97 (29.8%) were first-year, 73 (22.4%) second-year, 75 (23.0%) third-year, 51 (15.6%) fourth-year, 24 (7.4%) fifth-year, and 6 (1.8%) sixth-year students. Of the Austrian participants, 102 (32.1%) were first-year, 84 (26.4%) second-year, 56 (17.6%) third-year, 21 (6.6%) fourth-year, 10 (3.1%) fifth-year, and 45 (14.2%) sixth-year (including higher-year) students.

Among Austrian students, average years of maternal education was higher ($M = 14.0$ and SD = 2.7 years) than among Turkish students ($M = 9.5$ and SD = 3.9 years), $t(644) = 16.95$, $P < 0.001$. Similarly, among Austrian students average years of paternal education was higher ($M = 14.7$ and SD = 2.8 years) than among Turkish students ($M = 11.5$ and SD = 3.7 years), $t(644) = 12.45$, $P < 0.001$.

Measures

Demographics

Students reported their sex, age, year of medical study, and amount of parental education (in educational years).

Suicidal behavior

Students were asked five questions with dichotomous (yes/no) response format related to past and current suicidal behavior. Item texts were as follows: (1) "Have you ever thought of killing yourself?", (2) "Have you, during the past 12 months, thought of killing yourself?", (3) "Have you ever made an attempt to kill yourself?", (4) "Have you, during the past 12 months, made an attempt to kill yourself?", (5) "Do you have thoughts of killing yourself right now?"

Current mood

This was assessed with a single-item measure ("How sad do you feel right now?") on a 7-point scale (1: Not at all sad; 7: Very sad).

Religiosity

As above, this was assessed with a single-item measure ("How religious are you?") on a 7-point scale (1: Not at all religious; 7: Very religious).

Opinions about and attitudes towards suicide

This survey section included 24 validated statements taken from prior related research [19], concerned with opinions and attitudes towards suicide and psychological problems. Responses to these items were made on 5-point scales (1: Completely disagree; 5: Completely agree). The English form of this set of items is included in Table 1.

Reactions to an imagined suicidal friend

This survey section, also validated in prior related research [17, 19], requested participants to imagine a close friend who decides to kill herself or himself and reveals this to the respondent. Using 5-point scales (1: Completely disagree; 5: Completely agree), 20 specific reactions and feelings in response to this scenario were queried. The English form of this item set is presented in Table 2.

Table 1 Factor analysis of opinions about and attitudes towards suicide

Factors/items	Factor loading
Factor 1: Punishment after death ($\lambda = 6.7$; attributable variance 18.1%)	
People who kill themselves are going to be punished in the other world	0.92
People who attempt suicide are going to be punished in the other world	0.91
People who think and plan suicide are going to be punished in the other world	0.88
People who kill themselves by committing suicide are sinful	0.86
There is a life after death	0.69
Factor 2: Acceptability of suicide ($\lambda = 3.1$; attributable variance 16.0%)	
Someone who has gone bankrupt has the right to kill him/herself	0.85
Someone who dishonored his/her family has the right to kill him/herself	0.84
Someone who is tired of living has the right to kill him/herself	0.81
Someone suffering from an incurable illness has the right to kill him/herself	0.72
People have the right to kill themselves	0.67
Killing oneself by committing suicide is a right behavior	0.53
Factor 3: Suicide as a sign of mental illness ($\lambda = 2.3$; attributable variance 10.9%)	
People who kill themselves by committing suicide are mentally ill	0.95
People who attempt suicide are mentally ill	0.93
People who think and plan suicide are mentally ill	0.88
Factor 4: Communicating psychological problems ($\lambda = 1.9$; attributable variance 8.3%)	
Young people should tell their psychological problems to their parents	0.86
A young person who thinks and plans suicide should tell this to his/her parents	0.83
People should tell their psychological problems to their friends	0.60
Factor 5: Hiding suicidal behavior ($\lambda = 1.5$; attributable variance 7.6%)	
Families who lose a daughter or son from suicide should hide this from their neighbors	0.89
Families whose daughter or son attempts suicide should hide this from their neighbors	0.87
Factor 6: Seeing suicide as a solution ($\lambda = 1.1$; attributable variance 6.7%)	
Suicide can be the only way out of life's problems	0.74
Suicide can be solution to some problems	0.69
A person who thinks and plans suicide should tell this to his/her friends and thereby ask for help	0.43
Factor 7: Open reporting and discussion of suicide ($\lambda = 1.0$; attributable variance 5.8%)	
Suicide news should be written openly in the newspapers	0.80
The matter of suicide should be discussed openly among friends	0.68

Procedure

Survey materials in Turkish and English were prepared by one researcher (M.E.). Two researchers (S.S., M.V.), using the parallel blind method [5], developed the German survey form. Data were collected among students during regular class hours, i.e., the survey form was administered to groups of students. This in turn ensured their confidential and anonymous study participation.

Analysis

Percentages of different forms of suicidal behavior stated in the samples were calculated by country and sex. Cross-tabulations (by country and participant sex) of stated suicidal ideation and suicide attempts were done. Two-way analyses of variance (ANOVA), with country and participant sex as the factors, were performed for the current mood and religiosity measures.

Exploratory factor analysis (principal components method, with varimax rotation) of the 24 items on attitudes towards suicide extracted seven factors with eigenvalues $\lambda > 1$, which accounted for 73.4% of the total variance. Factor names, factor eigenvalues, and item factor loadings are displayed in Table 1. The 20 items on social reactions towards suicidality of a close friend were likewise analyzed. This yielded five factors with $\lambda > 1$, altogether accounting for 61.3% of the total variance. Factor names, factor eigenvalues, and item factor loadings are displayed in Table 2. Factor scores for the attitudes and the reaction items, according to the results of the two factor analyses, were computed by summing up individual responses on the

Table 2 Factor analysis of social reactions to suicidality

Suppose a close friend of you tells you that s/he decided to kill him/herself. How would you react or feel?	Factor loading
Factor 1: Social acceptance ($\lambda = 4.8$; attributable variance 18.3%)	
If I was going to a movie or the theater with my friends, I would ask if s/he wants to come along	0.80
If I was going to a movie or theater, I would ask if s/he wants to come along	0.79
If I was going to arrange a party at my home, I would invite him/her	0.77
I would invite him/her to my home more often than I used to	0.76
I would call him/her more often than I used to	0.73
I would arrange a party at my home and invite my other friends and him/her, so that s/he can make new friends	0.66
Factor 2: Emotional involvement ($\lambda = 2.8$; attributable variance 12.7%)	
I would get angry with him/her because s/he had decided to take his/her life	0.70
I would tell him/her that s/he was choosing a cowardly solution to his/her problems	0.68
I would feel that s/he did not fit into my circle of friends any more	0.67
I would be afraid because s/he might be dangerous	0.64
I would have doubts about whether the things s/he said were really true	0.57
Factor 3: Helping a suicidal friend ($\lambda = 1.9$; attributable variance 11.9%)	
I would try to prevent him/her from taking his/her life	0.74
I would advise him/her to seek professional help	0.67
I would try to persuade him/her to make up his/her mind	0.65
I would try to help him/her to solve his/her problems	0.65
I would contact his/her parents and tell them about it	0.50
Factor 4: Disapproval of suicidal disclosure ($\lambda = 1.6$; attributable variance 9.4%)	
I would be surprised that s/he disclosed his/her private plans	0.89
I would be surprised that s/he revealed things that one usually does not	0.88
Factor 5: Inquiry into suicidal behavior ($\lambda = 1.2$; attributable variance 9.1%)	
I would engage in a deep discussion about suicide with him/her	0.84
I would ask a lot of questions to try and understand why	0.79

items loading on the respective factor and then dividing this sum by the number of items corresponding to that factor. Hence, the possible range of factor scores was from 1 to 5.

Multivariate analyses of covariance (MANCOVA), with country and participant sex as the factors and participant age, current mood, religiosity, and parental education as covariates, were then performed separately for the attitude factors and the reaction factors. Also, participants were categorized into suicidal versus not, according to whether they stated they had thought or attempted to kill themselves or not. Two further MANCOVAs, similar to the model described above, but with country and suicidal status (suicidal vs. not) as the factors, were then run separately for the attitude and the reaction factors. Next, two two-way ANOVAs, with country and suicidal status as the factors and current mood and religiosity scores as the dependent variables, were performed. Finally, Pearson correlation coefficients were computed among and across attitude and reaction factors and between these and current mood and religiosity.

Results

The number and percentages of students stating suicidal behavior are given in Table 3 by country. Life-time suicidal ideation was more common in Austrian than in Turkish students, $\chi^2(1) = 6.68$, $P < 0.05$. On the other hand, past 12-month and current suicidal ideation were commensurable in both groups. Both life-time suicide attempts ($\chi^2(1) = 5.54$, $P < 0.05$) and past 12-month suicide attempts ($\chi^2(1) = 4.44$, $P < 0.05$) were more frequent in Turkish than in Austrian students. More Austrian than Turkish students reported life-time, past 12-month, or current suicidal ideation ($\chi^2(1) = 8.13$, $P < 0.01$), whereas more Turkish than Austrian students reported life-time or past 12-month suicide attempts ($\chi^2(1) = 7.05$, $P < 0.02$). In both groups, there were no sex differences in life-time, past 12-month, and current suicidal ideation and suicide attempts.

The ANOVA with current mood as the dependent variable yielded only a significant effect for country, $F(1, 645) = 46.35$, $P < 0.001$. Specifically, Turkish students

Table 3 Suicidal behavior in Austrian and Turkish medical students

Type of suicidal behavior	Austria		Turkey	
	n	%	*n*	%
Suicidal ideation				
Life-time	113	35.3	84	25.9
Within the past 12 months	36	11.3	39	12.0
Current	16	5.0	12	3.7
Life-time, past 12-month, or current	121	37.8	89	27.3
Suicide attempt				
Life-time	7	2.2	19	5.8
Within the past 12 months	1	0.3	7	2.1
Life-time or past 12-month	7	2.2	21	6.4

reported more sadness ($M = 3.23$, SD = 1.81) than their Austrian counterparts ($M = 2.32$, SD = 1.51). In a similar vein, in the ANOVA with religiosity as the dependent variable, only the factor country was significant, $F(1, 645) = 127.24$, $P < 0.001$. Specifically, Turkish students reported higher religiousness ($M = 4.84$, SD = 1.69) than Austrian students ($M = 3.25$, SD = 1.84).

In the MANCOVA performed on the attitude factors, a significant effect emerged for country, $F(7, 631) = 42.02$, $P < 0.001$. Univariate F tests showed significant differences between Austrian and Turkish students on five of the seven attitude factors (Table 4). In particular, Austrian students scored significantly higher than Turkish students with regards to the acceptability of suicide ($F = 76.70$, $P < 0.001$), suicide as a sign of mental illness ($F = 30.03$, $P < 0.001$), and open reporting and discussion of suicide ($F = 23.92$, $P < 0.001$) factors, whereas Turkish students scored higher than their Austrian counterparts on the punishment after death ($F = 99.41$, $P < 0.001$) and hiding suicidal behavior ($F = 32.52$, $P < 0.001$) factors. The two samples were similar on the communicating psychological problems and seeing suicide as a solution factors.

In the MANCOVA performed on the attitude factors, a significant effect for participant sex was found, $F(7, 631) = 3.92$, $P < 0.001$. Univariate F tests revealed significant differences between men and women on the punishment after death ($F = 5.59$, $P < 0.05$) and hiding suicidal behavior ($F = 11.46$, $P < 0.005$) factors, wherein men scored higher than women. The sexes were similar on the remaining five attitude factors. Also, this MANCOVA model yielded a significant interaction of country and sex, $F(7, 631) = 2.30$, $P < 0.05$. Follow-up F tests showed that this effect was only significant for the suicide as a sign of mental illness factor ($F = 6.91$, $P < 0.01$), on which Austrian women on average scored higher than Austrian men, while mean scores of Turkish women and men were similar (Table 4).

The MANCOVA for the reaction factors yielded a significant effect for country, $F(5, 633) = 28.16$, $P < 0.001$. Univariate F tests showed country differences on the factors social acceptance ($F = 3.91$, $P < 0.05$), emotional involvement ($F = 76.70$, $P < 0.001$), helping a suicidal friend ($F = 4.26$, $P < 0.05$), and inquiry into suicidal behavior ($F = 45.16$, $P < 0.001$). Turkish students scored higher than Austrian students on the social acceptance, emotional involvement, and helping a suicidal friend factors, whereas Austrian students scored higher than Turkish students on the inquiry into suicidal behavior factor. The two country samples were similar regarding the disapproval of suicidal disclosure factor. Neither the main effect for sex, $F(5, 633) = 1.48$, $P > 0.05$, nor the interaction effect of country and sex were significant, $F(5, 633) = 2.38$, $P > 0.05$.

The MANCOVA for the attitude factors produced a significant effect of suicidal status, $F(7, 636) = 7.14$, $P < 0.001$. Follow-up univariate F tests showed that suicidal students scored higher than nonsuicidal ones on the factors acceptability of suicide, $F = 27.36$, $P < 0.001$ (suicidal $M = 2.62$, SD = 1.19; nonsuicidal $M = 2.10$, SD = 1.00) and seeing suicide as a solution, $F = 32.63$, $P < 0.001$ (suicidal $M = 2.08$, SD = 0.86; nonsuicidal $M = 1.73$, SD = 0.64). Conversely, the nonsuicidal group scored higher than the suicidal group on the communicating psychological problems factor, $F = 17.30$, $P < 0.001$ (nonsuicidal $M = 3.96$, SD = 0.69; suicidal $M = 3.72$, SD = 0.82). The interaction between country by suicidal status was not significant.

The MANCOVA performed on the reaction factors yielded a significant effect for suicidal status, $F(5, 638) = 9.34$, $P < 0.001$. Univariate F tests indicated that nonsuicidal students scored higher than suicidal students on the factors emotional involvement, $F = 9.15$, $P < 0.005$ (nonsuicidal $M = 2.61$, SD = 0.75; suicidal $M = 2.36$, SD = 0.76) and helping a suicidal friend, $F = 17.02$, $P < 0.001$ (nonsuicidal $M = 4.35$, SD = 0.53; suicidal $M = 4.15$, SD = 0.56). Again, the interaction between country by suicidal status was not significant.

In the country by suicidal status ANOVA on current mood, a significant effect for suicidal status resulted, $F(1, 642) = 25.56$, $P < 0.001$. Suicidal students reported to be more sad ($M = 3.15$, SD = 1.86) than the nonsuicidal ones ($M = 2.60$, SD = 1.63). The country by suicidal status interaction effect was not significant. The country by suicidal status ANOVA on religiosity did not yield significant effects.

The associations among and across attitude and reaction factors and between these and current mood and religiosity are assembled in Table 5. These correlations, for the most part, were nominally significant, and numerous correlations between attitude and reaction factors were negative.

Table 4 Descriptive statistics for attitudes towards suicide and reactions to suicidality factors

Attitude and reaction factors	Austria						Turkey					
	Women		Men		Total		Women		Men		Total	
	M	SD	*M*	SD	*M*	SD	*M*	SD	*M*	SD	*M*	SD
Attitudes towards suicide factors												
Punishment after death	1.86	0.73	1.95	0.87	2.68	1.25	3.33	1.03	3.53	1.20	3.45	1.13
Acceptability of suicide	2.88	1.00	2.79	1.13	2.83	1.07	1.65	0.78	1.75	0.81	1.71	0.80
Suicide as a sign of mental illness	3.32	0.98	2.94	1.07	3.13	1.04	2.54	1.09	2.60	1.17	2.57	1.14
Communicating psychological problems	3.86	0.69	3.97	0.71	3.92	0.70	3.92	0.71	3.80	0.83	3.85	0.78
Hiding suicidal behavior	2.04	0.91	2.28	0.94	2.16	0.93	2.57	0.96	2.86	1.06	2.74	1.03
Seeing suicide as a solution	1.87	0.70	1.93	0.79	1.90	0.75	1.78	0.75	1.79	0.71	1.79	0.73
Open reporting and discussion of suicide	3.59	0.77	3.43	0.94	3.51	0.86	2.99	0.80	2.85	0.99	2.91	0.92
Reactions to suicidality factors												
Social acceptance	3.88	0.51	3.95	0.65	3.92	0.59	4.10	0.51	4.16	0.65	4.14	0.60
Emotional involvement	2.16	0.64	2.22	0.69	2.19	0.66	2.75	0.70	2.93	0.70	2.86	0.71
Helping a suicidal friend	4.23	0.50	4.16	0.64	4.20	0.58	4.33	0.47	4.39	0.53	4.37	0.51
Disapproval of suicidal communication	2.92	1.11	2.70	1.10	2.81	1.10	2.30	0.95	2.56	1.08	2.45	1.04
Inquiry into suicidal behavior	3.87	1.01	4.02	1.03	3.94	1.02	3.12	1.23	3.32	1.26	3.24	1.25

Discussion

Cross-cultural investigations of suicidal behavior and attitudes are vital for a better understanding of the factors contributing to societal variation in suicidal behavior and suicide mortality. Knowledge obtained from such studies may foster the development of prevention and treatment strategies for the serious public health problem of suicidal behavior. Given the fact that completed suicide is a comparatively rare event and that there are clear ethical limitations in this field of inquiry, experimental study designs are, for the most part, infeasible to implement. However, cross-cultural investigations can be considered as experiments designed by nature and thus are appropriate and informative. Accordingly, the present study compared the prevalence of suicidal behavior and attitudes towards suicide and suicidal individuals in samples of Austrian and Turkish medical students.

Since suicide mortality is higher in Austria compared to Turkey, the first hypothesis of this research predicted more Austrian students would report suicidal behavior than their Turkish counterparts. Indeed, suicidal ideation was more common in Austrian than in Turkish medical students (37.8 vs. 27.3%). However, more Turkish than Austrian students reported a suicide attempt (6.4 vs. 2.2%), and sadness ratings were also higher in the former than in the latter group. Taken together, these results provide only partial support for the first hypothesis. This pattern of findings is similar to previous comparisons of suicidal behavior in Swedish and Turkish adolescents [12, 14, 16].

The stigma hypothesis states that cultures with high suicide rates are characterized by permissive and liberal social attitudes towards suicide in general on the one hand, but stigmatizing and rejecting attitudes towards persons actually presenting suicidal behavior on the other hand. Suicide mortality is higher in Austria than in Turkey. Accordingly, the second hypothesis predicted that Austrian students would present more permissive attitudes towards suicide than Turkish students. In support of the stigma hypothesis, this study found Austrian students were more accepting of and open to discuss suicide frankly than their Turkish counterparts. Consistent with the lower suicide mortality in Turkey, as compared to Austria, Turkish students believed more strongly than Austrian students that suicidal behavior would lead to punishment after death and that suicidal behavior in a family should be hidden. These findings are in agreement with the results of previous studies comparing corresponding attitudes in Swedish and Turkish adolescents [13, 17].

The lower suicide rate in Turkey than in Austria may partly be due to higher chances of persons with nonfatal suicidal behavior in Turkey, relative to Austria, to obtain social support. The fact that social support is one of the most powerful protective factors of suicidality makes this reasoning likely. Also derived from the stigma hypothesis, the third hypothesis predicted that Turkish students would exhibit more positive attitudes towards suicidal persons than their Austrian counterparts. The current data fully support this hypothesis. Turkish students were more accepting of and willing to help a suicidal close friend than Austrian medical students. What is more, Turkish students

Table 5 Associations (Pearson correlation) among and across attitude and reaction factors and with current mood and religiosity

Factors	Attitudes towards suicide factors							Reaction to suicidality factors				
	1	2	3	4	5	6	7	1	2	3	4	5
Attitudes towards suicide factors												
Factor 1: Punishment after death								0.24**	0.34**	0.21**	−0.09**	−0.14**
Factor 2: Acceptability of suicide	−0.50**							−0.19**	−0.32**	−0.28**	0.07	0.15**
Factor 3: Suicide as a sign of mental illness	−0.04	−0.06						0.03	0.02	0.06	0.11**	0.09*
Factor 4: Communicating psychological problems	0.00	−0.15**	0.09*					0.20**	−0.03	0.35**	−0.06	0.10*
Factor 5: Hiding suicidal behavior	0.23**	−0.20**	0.02	−0.06				0.19**	0.27**	0.12**	0.00	−0.02
Factor 6: Seeing suicide as a solution	−0.16**	0.46**	−0.16**	−0.29**	−0.06			−0.13**	−0.05	−0.26**	0.02	−0.01
Factor 7: Open reporting and discussion of suicide	−0.24**	0.23**	0.03	0.12**	−0.16**	0.04		0.02	−0.16**	0.01	0.02	0.17**
Reactions to suicidality factors												
Factor 1: Social acceptance												
Factor 2: Emotional involvement								0.07				
Factor 3: Helping a suicidal friend								0.44**	0.18**			
Factor 4: Disapproval of suicidal disclosure								−0.05	0.23**	0.01		
Factor 5: Inquiry into suicidal behavior								0.18**	0.06	0.22**	0.10**	
Current mood	0.16**	−0.07	−0.05	−0.14**	0.06	0.14**	−0.11**	0.02	0.08*	−0.03	−0.06	−0.04
Religiosity	0.62**	−0.48**	−0.05	0.04	0.14**	−0.14**	−0.21**	0.19**	0.18**	0.19**	−0.06	−0.08*

$df = 646$; * $P < 0.05$; ** $P < 0.01$

also reported to be more emotionally involved with an imagined suicidal close friend than Austrian students, more likely stating that they were ready to emotionally confront the suicidal friend because of her or his decision to commit suicide. These results are consistent with related findings from a study comparing two groups of Turkish adolescents undergoing secular versus religious education [19] as well as with cross-cultural comparisons of Swedish and Turkish high-school students [13, 18].

If liberal social attitudes towards suicide are positively related to suicide mortality, then a lower prevalence of nonfatal suicidal behavior should be observed for societies in which such liberal suicide-related attitudes are prohibited. However, previous research on Swedish versus Turkish youth has shown that such a simple relation does not hold [12, 14, 16]. The stigma hypothesis rather assumes that nonfatal suicidal behavior is less stigmatized in cultures prohibiting suicide, relative to cultures accepting suicide. In turn, individuals engaging in nonfatal suicidal behavior should more likely receive social support in suicide-prohibiting than in suicide-accepting cultures. Hence the fourth hypothesis predicted that liberal and permissive attitudes towards suicide would be negatively related to the social acceptance of suicidal persons in medical students of both countries. The current data support this prediction: seeing suicide as an acceptable option in life was associated with lower social acceptance of, emotional involvement in, and willingness to help a suicidal close friend in both Austrian and Turkish medical students. This finding replicates the result ($r = 0.43$, $P < 0.01$, for the association between acceptability of suicide and the social acceptance of a suicidal friend) of a previous comparative study of Turkish adolescents undergoing secular versus religious education [19].

Group comparisons between suicidal versus nonsuicidal students in the present research yielded meaningful and theoretically expected differences. Consistent with prior evidence [38], both Austrian and Turkish suicidal students regarded suicide more likely as an option and a solution in stressful life circumstances than nonsuicidal students. As expected, more nonsuicidal than suicidal students stated that people should communicate their psychological problems. Being depressed, seeing suicide as an option and a solution, and believing one should not tell suicidal feelings may trigger feelings of hopelessness and helplessness, which are the two most prominent emotional states in suicidality [9].

Overall, the current findings suggest that suicidal ideation and suicide attempts are rather frequent among both Austrian and Turkish medical students. In detail, more Austrian than Turkish students considered suicide, but more Turkish than Austrian students reported actual suicide attempts and had higher sadness ratings. Against the background of the higher suicide rate in Austria than in Turkey, this is a quite interesting pattern of findings, since simply assuming that a suicide attempt is a salient precursor for death by suicide would surely lead one to expect a higher, not lower, suicide rate for Turkey. The present findings may shed some light on this apparent inconsistency. Austrian students exhibited more permissive and liberal attitudes towards suicide than the Turkish, but Turkish students were more accepting of a suicidal close friend than Austrian students. Clearly, suicidality is a process, so it is conceivable that, on the basis of liberal social attitudes towards suicide in Austria, persons experiencing a personal crisis in this country may more likely or easily conceive of the idea of committing suicide. Correspondingly, on the basis of more positive social attitudes towards suicidal individuals in Turkey, persons may more likely or easily conceive of the idea of a nonfatal suicide attempt. By doing so, such persons may well expect to release interpersonal mechanisms providing social support to them. Hence, despite the higher prevalence of suicide attempts in Turkey than in Austria, the expectancy that a suicide attempt will likely activate social support systems may partly account for the actually lower suicide rate in Turkey.

This study has several limitations, which are acknowledged here. For one thing, although the self-report method is widely used in general as well as in prior related research in particular, at the same time self reports come along with some inherent limitations, including reliability and validity matters. For these reasons, future research along these lines may in addition fruitfully apply alternative ascertainment methods, foremost standardized interviews, given that the desired sample size is not prohibitively large. Next, among the suicidal behaviors measure used here, the two items querying lifetime versus 12-month prevalence of suicidal ideation could not actually distinguish between more vague thoughts of killing oneself versus more specific suicide plans. Finally, for the sake of a reasonable overall survey length, two variables (current mood and religiosity) were assessed with single-item measures rather than with multi-item scales. There are known reliability and validity limitations associated with the use of single-item measures. However, this decision, guided by survey efficiency and economy, appeared defensible, as both of these variables were merely additionally ascertained (to be used as covariates in the analysis and for general validity checks), rather than being the central constructs of this research.

Although the present findings shed some light on possible reasons for observed differences in suicide mortality between Austria and Turkey, their generalizability may be limited in several further regards. First, the samples of this cross-cultural investigation are not representative of the Austrian and Turkish general populations, as medical students clearly are select groups (young and highly educated). Second, as a multifaceted phenomenon, suicide can

not be wholly explained by social attitudes alone. Other factors, such as level of alcohol consumption, availability of mental health resources, and biological and psychological propensities, contribute to societal variation of suicidal behavior and mortality as well.

In closing, more cross-cultural research, taking these factors into consideration, is needed to account for cross-national differences in the prevalence of suicidal behavior. The present study, replicating and extending previous related accounts, suggests that, intriguingly so, many facets of social attitudes towards suicide and of reactions to suicidal individuals are inversely related. Future research should address in more detail the generality and etiology of this relationship.

References

1. Aasland OG, Ekeberg Ø, Schweder T (2001) Suicide rates from 1960 to 1989 in Norwegian physicians compared with other educational groups. Soc Sci Med 52:259–265
2. Ateş S (1975) The Koran and its holy meaning [in Turkish]. Kılıç Kitabevi, Ankara
3. Baldassin S, Alves TC, de Andrade G, Nogueira-Martins LA (2008) The characteristics of depressive symptoms in medical students during medical education and training: a cross-sectional study. BMC Med Educ 8:60
4. Bearman PS, Moody J (2004) Suicide and friendships among American adolescents. Am J Public Health 94:89–95
5. Behling O, Law KS (2000) Translating questionnaires and other research instruments: problems and solutions. Sage, Thousand Oaks
6. Bondy B, Buettner A, Zill P (2006) Genetics of suicide. Mol Psychiatry 11:336–351
7. Center C, Davis M, Detre T, Ford DE, Hansbrough W, Hendin H et al (2003) Confronting depression and suicide in physicians: a consensus statement. JAMA 289:3161–3166
8. Domino G, Takahashi Y (1991) Attitudes toward suicide in Japanese and American medical students. Suicide Life Threat Behav 21:345–359
9. Ellis TE, Rutherford B (2008) Cognition and suicide: two decades of progress. Int J Cogn Ther 1:47–68
10. Eckersley R, Dear K (2002) Cultural correlates of youth suicide. Soc Sci Med 55:1891–1904
11. Eskin M (1993) Age specific suicide rates and the rates of increase, and suicide methods in Sweden and Turkey: a comparison of the official suicide statistics. Department of Psychology, University of Stockholm (Report No. 772)
12. Eskin M (1995) Suicidal behavior as related to social support and assertiveness among Swedish and Turkish high school students: a cross-cultural investigation. J Clin Psychol 51:158–172
13. Eskin M (1995) Adolescents' attitudes toward suicide, and a suicidal peer: a comparison between Swedish and Turkish high school students. Scand J Psychol 36:201–207
14. Eskin M (1996) Cross-cultural gender differences in the psychosocial correlates of current adolescent suicidal ideation. J Gend Culture Health 1:189–205
15. Eskin M (1997) Cross-cultural tests of the gender-role consistency and stigma hypotheses of suicidal behavior. J Gend Culture Health 2:245–262
16. Eskin M (1999) Gender and cultural differences in the 12-month prevalence of suicidal thoughts and attempts in Swedish and Turkish adolescents. J Gend Culture Health 4:187–200
17. Eskin M (1999) Social reactions of Swedish and Turkish adolescents to a close friend's suicidal disclosure. Soc Psychiatry Psychiatr Epidemiol 34:492–497
18. Eskin M (2003) A cross-cultural investigation of the communication of the suicidal intent in Swedish and Turkish adolescents. Scand J Psychol 44:1–6
19. Eskin M (2004) The effects of religious versus secular education on suicide ideation and suicidal attitudes in adolescents in Turkey. Soc Psychiatry Psychiatr Epidemiol 39:536–542
20. Eskin M, Ertekin K, Dereboy C, Demirkiran F (2007) Risk factors for and protective factors against adolescent suicidal behavior in Turkey. Crisis 28:131–139
21. Etzersdorfer E, Vijayakumar L, Schöny W, Grausgruber A, Sonneck G (1998) Attitudes towards suicide among medical students: comparison between Madras (India) and Vienna (Austria). Soc Psychiatry Psychiatr Epidemiol 33:104–110
22. Hem E, Grønvold NT, Aasland OG, Ekeberg Ø (2000) The prevalence of suicidal ideation and suicidal attempts among Norwegian physicians. Results from a cross-sectional survey of a nationwide sample. Eur Psychiatry 15:183–189
23. Hofstede G (1984) Culture's consequences: international differences in work-related values. Sage, Beverly Hills
24. Joiner TE, Brown JS, Wingate LR (2000) The psychology and neurobiology of suicidal behavior. Annu Rev Psychol 56:287–314
25. Kessler RC, Borges G, Walters EE (1999) Prevalence of and risk factors for lifetime suicide attempts in the National Comorbidity Survey. Arch Gen Psychiatry 56:617–626
26. Kitchen LW (1978) Suicide among medical students. West J Med 129:441–442
27. Kral MJ (1994) Suicide as social logic. Suicide Life Threat Behav 24:245–255
28. Kral MJ (1998) Suicide and the internalization of culture: three questions. Transcult Psychiatry 35:221–233
29. Lam TH, Stewart SM, Yip PS, Leung GM, Ho LM, Ho SY, Lee PW (2004) Suicidality and cultural values among Hong Kong adolescents. Soc Sci Med 58:487–498
30. Lester D (1997) Suicide in an international perspective. Suicide Life Threat Behav 27:104–111
31. Lester D (2006) Suicide and Islam. Arch Suicide Res 10:77–97
32. Lindeman S, Laara E, Hakko H, Lonnqvist J (1996) A systematic review on gender-specific suicide mortality in medical doctors. Br J Psychiatry 168:274–279
33. Pridmore S, McArthur M (2009) Suicide and Western culture. Aust Psychiatry 17:42–50
34. Rudmin FW, Ferrada-Noli M, Skolbekken JA (2003) Questions of culture, age and gender in the epidemiology of suicide. Scand J Psychol 44:373–381
35. Rutter PA, Behrendt AE (2004) Adolescent suicide risk: four psychosocial factors. Adolescence 39:295–302
36. Schernhammer ES, Colditz GA (2004) Suicide rates among physicians: a quantitative and gender assessment (meta-analysis). Am J Psychiatry 161:2295–2302
37. Shneidman ES (1998) Further reflections on suicide and psychache. Suicide Life Threat Behav 28:245–250
38. Stein D, Brom D, Elizur A, Witztum E (1998) The association between attitudes toward suicide and suicidal ideation in adolescents. Acta Psychiatr Scand 97:195–201
39. TSI (Turkish Statistical Institute, Prime Ministry, Republic of Turkey) (2006) Suicide statistics 2006. Turkish Statistical Institute Printing Division, Ankara
40. Tyssen R, Hem E, Vaglum P, Grønvold NT, Ekeberg Ø (2004) The process of suicidal planning among medical doctors:

predictors in a longitudinal Norwegian sample. J Affect Disord 80:191–198
41. Tyssen R, Vaglum P, Grønvold NT, Ekeberg Ø (2001) Suicidal ideation among medical students and young physicians: a nationwide and prospective study of prevalence and predictors. J Affect Disord 64:69–79
42. van der Heijden F, Dillingh G, Bakker A, Prins J (2008) Suicidal thoughts among medical residents with burnout. Arch Suicide Res 12:344–346
43. Voracek M, Loibl LM (2007) Genetics of suicide: a systematic review of twin studies. Wien Klin Wochenschr 119:463–475