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Future Orientation and Suicide Risk in Hungarian College

Students: Burdensomeness and Belongingness as Mediators

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Abstract

We tested a model consistent with the notion that perceived burdensomeness and thwarted belongingness mediate the association between future orientation and suicide risk (viz., depressive symptoms & suicide ideation) in college students. The sample was comprised of 195

Hungarian college students. Results indicated that the negative associations found between future orientation and suicide risk outcomes were accounted for by both perceived burdensomeness and thwarted belongingness. The present findings highlight the importance of studying positive future cognitions in suicide risk, and provide support for perceived burdensomeness and thwarted belongingness as potential proximal mechanisms associated with heightened suicide risk in adults.

Keywords

Mental health concerns are a serious and growing problem in adult populations around the world (World Health Organization [WHO], 2013), including in college student populations (e.g., Zivin, Eisenberg, Gollust, & Golberstein, 2009). Indeed, one of the most serious concerns college students face has been, and continues to be, suicide (Kisch, Leino, & Silverman, 2005; Westefeld et al., 2006). Among college-aged adults, suicide is the second leading cause of death behind unintentional injury (e.g., fatal traffic accidents, accidental poisoning; Centers for Disease Control & Prevention, 2014). According to one model, both distal (viz., depressive symptoms) and proximal (viz., suicidal behaviors) variables increase the risk of committing suicide in college students (Bonner & Rich, 1987). Indeed, consistent with their framework, findings from numerous studies over the past three decades have consistently implicated depression and suicidal behaviors (e.g., suicide ideation) as important risk factors associated with suicide in college student populations (Farabaugh et al., 2012; Furr, Westefeld, McConnell, & Jenkins, 2001). In the present study, we examine predictors associated with suicide risk among college students from Hungary, a country that historically has had one of the highest rates of suicide worldwide between 1950 to 2009 (Värnik, 2012), and continues to have rates of suicide among adults that are typically greater than those found in the US (WHO, 2014).

Given the seriousness of suicide and its prevalence in college student populations (Schwartz & Friedman, 2009; Westefeld et al., 2006), it is not surprising that researchers have focused on identifying important predictors of suicide risk in college students. However, much of this effort over the past several decades has been predicated on a pathological framework in which various negative individual differences have been studied in relation to suicide risk (e.g., negative attributional style, perfectionism, loneliness; Bonner & Rich, 1987; Muyan & Chang, 2015). In contrast to this approach, some have increasingly argued for considering the role of positive individual differences in the study of suicide risk (e.g., Chang, Yu, & Hirsch, 2013).

Positive future cognitions represent a potentially important category of variables for understanding suicide risk in adults (Wingate et al., 2006). Indeed, although a number of positive future cognitions are associated with suicide risk (e.g., optimism, positive problem orientation, hope; Chang et al., 2013; Chang, Yu, Kahle, et al., 2013), there are at least two reasons to focus specifically on *future orientation*, that is, the belief that one's future can change for the better (Hirsch et al., 2006). First, future orientation is predicated on thoughts about realizing specific outcomes that are associated with positive adjustment within the individual (e.g., feeling good, reaching desired goals, being able to engage in effective action; Hirsch et al., 2006). In contrast, for example, optimism is predicated on a broad and general expectation that good things will happen (Scheier & Carver, 1985) and, therefore, lacks any specific reference to achieving positive adjustment. Thus, we contend that relative to positive future cognitions that may be theoretically too broad or diffuse, future orientation represents a conceptually useful variable for understanding important mental health outcomes or conditions in individuals, including suicide risk. For example, believing that one will soon feel better should serve to broaden an individual's range of perceived options for dealing with painful or stressful situations in their life, and in turn

reduce the development of suicide risk. Alternatively, despite the strong association between hopelessness and suicide risk (Beck, Weissman, Lester, & Trexler, 1974), future orientation should not be equated to the absence of hopelessness. Like pessimism, hopelessness refers to a general negative expectancy for the future. In contrast, future orientation is predicated on specific positive expectancies when encountering challenging situations. In addition, hopelessness has been found to tap into pessimistic expectancies that are on the extreme end of the outcome expectancy spectrum (Chang, D'Zurilla, & Maydeu-Olivares, 1994). Second, future orientation predicts suicide risk above and beyond general positive future cognition variables. For example, in a recent study of primary care adult patients, optimism and future orientation shared less than 30% of common variance (Chang, Yu, Lee, et al., 2013).. Also, even after accounting for the variance in suicide risk (e.g., depressive symptoms) explained by optimism, future orientation still accounted for a significant amount of additional unique variance in suicide risk. To date, however, no study has examined the role of future orientation in predicting suicide risk in a college student population.

Although one might expect to find a negative association between future orientation and suicide risk in college student populations, it is not clear if this association itself might be mediated by other important cognitions. According to the interpersonal theory of suicide (Joiner, 2005; Van Orden et al., 2010), the presence of two distinct cognitions increases an individual's risk of suicide, namely, perceived burdensomeness and thwarted belongingness. *Perceived burdensomeness* is the perception that family members and close others would be better off if one were not alive (Van Orden et al., 2010). In contrast, *thwarted belongingness* is the painful perception that one's basic need to connect with others has gone unmet (Van Orden et al., 2010). Perceived burdensomeness and thwarted belongingness represent related, but not redundant,

constructs that are proximally and sufficiently involved in predicting suicide risk (e.g., suicide ideation). Although the empirical study of perceived burdensomeness and thwarted belongingness as predictors of suicide risk in adults has been recent (Van Orden et al., 2010), there is some evidence supporting their unique predictive role in college students. For example, in a sample of 254 college students, both perceived burdensomeness and thwarted belongingness significantly and uniquely predicted the presence (or absence) of suicide ideation when students were followed up 1 month later (Van Orden, Cukrowicz, Witte, & Joiner, 2012). Likewise, in a sample of 188 college students, perceived burdensomeness and thwarted belongingness were significant unique predictors of suicide ideation frequency assessed over the past year (Ream, 2015). Accordingly, if perceived burdensomeness and thwarted belongingness represent proximal determinants of suicide risk (Joiner, 2005; Van Orden et al., 2010), then one would expect that any association found between future orientation and suicide risk in Hungarian college students might itself be due to these two maladaptive cognitions. To date, a mediation model in which perceived burdensomeness and thwarted belongingness hypothetically account for the association between future orientation and suicide risk in college students has yet to be tested.

Given these possibilities, we expected future orientation to be negatively associated, and perceived burdensomeness and thwarted belongingness to be positively associated, with suicide risk (viz., depressive symptoms & suicide ideation). Also, we determined if there is any evidence that perceived burdensomeness and thwarted belongingness mediate the negative association between future orientation and suicide risk. Specifically, we hypothesized that the inability to believe that the future will soon change for the better would be associated with self-destructive

cognitions about both being a potential burden on others and being unable to achieve important interpersonal relationships with others.

METHOD

Participants

Participants were 195 Hungarian college students (113 women & 82 men) from a large public university in Budapest, Hungary. Ages ranged from 18 to 23 years ($M = 21.02$ years, $SD = 1.06$). The majority of the students were juniors (39.5%), followed by sophomores (32.8%), freshmen (16.9%), and seniors (10.8%).

Measures

The Future Orientation Scale (FOS; Hirsch et al., 2006) is a 6-item self-report measure of an individual's belief and appreciation that the future could be changed even when experiencing stressful circumstances or negative events (e.g., "No matter how badly I feel, I know it will not last"). Respondents indicate "how important each reason is to you for dealing with stressors" using a 6-point Likert-type scale, ranging from 1 (*extremely unimportant*) to 6 (*extremely important*). In general, higher scores on the FOS indicate a greater belief that one's future can be changed for the better. We used an adapted Hungarian version of the FOS in the present study. The Hungarian translation was achieved following established guidelines for cross-cultural translation of instruments, including back translation. In the present sample, internal reliability was .85.

The Perceived Burdenomeness (PB) and Thwarted Belongingness (TB) scales from the Interpersonal Needs Questionnaire (Van Orden, Witte, Gordon, Bender, & Joiner, 2008) are 6

self-report items (e.g., “These days I feel like a burden on the people in my life”) and 9 self-report items (e.g., “These days, I often feel disconnected from other people”), respectively. Respondents report how true the item is for them using a 7-point Likert-type scale, ranging from 1 (*not at all true for me*) to 7 (*very true for me*). Higher scores on the PB and TB scales indicate greater perceived burdensomeness and thwarted belongingness, respectively. We used an adapted Hungarian version of the PB and TB scales using the same back-translation system as for the FOS. In the present sample, internal reliabilities for the PB and TB scales were .88 and .86, respectively.

The Beck Depression Inventory (BDI; Beck, Ward, Mendelson, Mock, & Erbaugh, 1961) is a commonly used 21-item measure of depressive symptoms (e.g., “I am so sad or unhappy that I can’t stand it”). Respondents rate the extent to which they have experienced the symptoms in the past week, across a 4-point Likert-type scale (for example, “0 = *I do not feel sad*” to “3 = *I am so sad or unhappy that I can’t stand it*”). Higher scores on the BDI indicate greater depressive symptoms. We used an adapted Hungarian version of the BDI in the present study (Perczel Forintos, Kiss, & Ajtay, 2007). In the present sample, internal reliability was .91.

The Frequency of Suicidal Ideation Inventory (FSII; Chang & Chang, 2016) is a 5-item scale that assesses the frequency of suicide ideation over the past 12 months (e.g., “Over the past 12 months, how often have you thought about killing yourself?”). Respondents answer on a 5-point Likert scale, from 1 (*never*) to 5 (*almost every day*). Higher scores on the FSII indicate greater suicide ideation frequency. We used an adapted Hungarian version of the FSII (Chang et al., in press) in the present study. In the present sample, internal reliability was .93.

Procedure

Approval for this study was obtained from the Institutional Review Board at the university where the study was conducted prior to data collection. Participants were solicited from upper-level psychology courses and received extra course credit upon completion of the survey. Responses were collected anonymously.

RESULTS

Correlations, means, and standard deviations for all study measures are presented in **Table 1**. As expected, future orientation correlated negatively with both depressive symptoms ($r = -.28, p < .001$) and suicide ideation ($r = -.23, p < .001$). Likewise, perceived burdensomeness and thwarted belongingness correlated positively with each other ($r = .54, p < .001$). Moreover, perceived burdensomeness and thwarted belongingness correlated positively related to both depressive symptoms ($rs = .68 \& .57$, respectively, $p < .001$) and suicide ideation ($rs = .64 \& .54$, respectively, $p < .001$). On average present students reported low levels of depressive symptoms and suicide ideation. However, these levels are consistent with those typically found in a general college student population.

Next, we tested two multiple mediation models involving perceived burdensomeness and thwarted belongingness as mediators to determine if any of the two maladaptive cognitions might account for the association between future orientation and our two measures of suicide risk. We used Preacher and Hayes' (2008) bootstrapping methods for detecting total indirect effects and specific indirect effects when multiple mediators are involved in the prediction model. Bootstrapping with 10,000 resamples yielded parameter estimates for both total and specific indirect effects. We used the 95% bias-corrected confidence interval. If the interval does not contain a zero, then the indirect effect is considered statistically significant ($p < .05$) and

demonstrates mediation (Preacher & Hayes, 2008). The results of these analyses for depressive symptoms and suicide ideation are presented in **Tables 2** and **3**, respectively. Finally, to determine if the prediction model accounted for a small, medium, or large amount of the variance in suicide risk, we used the following convention for small ($f^2 = .02$), medium ($f^2 = .15$), and large effects ($f^2 = .35$) as a general guide.

Both the total indirect effect and specific indirect effects of perceived burdensomeness and thwarted belongingness were statistically significant ($p < .05$). Thus, as shown in **Figure 1**, perceived burdensomeness was a significant mediator such that future orientation was negatively related to perceived burdensomeness ($B = -.33$), which in turn was positively related to depressive symptoms ($B = .77$). Similarly, thwarted belongingness was a significant mediator such that future orientation was negatively related to thwarted belongingness ($B = -.85$), which in turn was positively related to depressive symptoms ($B = .21$). Noteworthy, consistent with the notion of full mediation, after including perceived burdensomeness and thwarted belongingness in the prediction model, the previously significant direct effect of future orientation ($B = -.45$) became non-significant ($B = -.03$). The full prediction model involving future orientation, perceived burdensomeness, and thwarted belongingness accounted for a large ($f^2 = 1.07$) 51.8% of the variance in depressive symptoms, $F(3, 191) = 84.78, p < .0001$.

As presented in **Table 3**, both the total indirect effect and specific indirect effects of perceived burdensomeness and thwarted belongingness were statistically significant ($p < .05$). Thus, as shown in **Figure 2**, perceived burdensomeness was a significant mediator such that future orientation was negatively related to suicide ideation ($B = -.33$), which in turn was positively related to suicide ideation ($B = .29$). Similarly, thwarted belongingness was a significant mediator such that future orientation was negatively related to thwarted

belongingness ($B = -.85$), which in turn was positively related to suicide ideation ($B = .08$). Again, consistent with the notion of full mediation, after including perceived burdensomeness and thwarted belongingness in the prediction model, the previously significant direct effect of future orientation ($B = -.15$) became non-significant ($B = .02$). The full prediction model involving future orientation, perceived burdensomeness, and thwarted belongingness accounted for a large ($f^2 = .86$) 46.3% of the variance in suicide ideation, $F(3, 191) = 67.99, p < .0001$.

Overall, the multiple mediation analyses provide consistent support for the notion that perceived burdensomeness and thwarted belongingness mediated the negative association between future orientation and suicide risk in Hungarian college students.

DISCUSSION

As expected, these Hungarian students who believed that their future will soon change for the better were not only less likely to be dysphoric, less likely to perceive themselves to be a burden to loved ones, and less likely to feel thwarted belongingness, but also less likely to harbor lethal thoughts involving self-harm. Apparently, and consistent with the interpersonal theory of suicide, future orientation protected against both suicide risk and suicide thoughts. Present findings also point to the importance of studying more distinct positive cognitions like future orientation rather than broad positive variables such as optimism or hope.

Additionally, consistent with the interpersonal theory of suicide (Joiner, 2005; Van Orden et al., 2010), perceived burdensomeness and thwarted belongingness were positively and strongly associated with each other, replicating past findings obtained with college students in the US (e.g., Ream, 2015; Van Orden et al., 2012). Also, perceived burdensomeness and thwarted belongingness were also each found to be associated with both of the suicide risk

measures examined in the present study. Thus, our findings are the first to provide support for the usefulness of perceived burdensomeness and thwarted belongingness as cognitions involved in suicide risk in a Hungarian college student population.

As expected, the previously significant association between future orientation and depressive symptoms became non-significant once we included perceived burdensomeness and thwarted belongingness as potential mediators in our prediction model. Noteworthy, however, the indirect effects involving both perceived burdensomeness and thwarted belongingness in accounting for depressive symptoms were significant. The same pattern was found in accounting for suicide ideation. Thus, across both distal and proximal indices of suicide risk, perceived burdensomeness and thwarted belongingness fully accounted for the negative association between future orientation and suicide risk in these Hungarian students.

Present findings point to useful pathways for potentially reducing suicide risk in Hungarian college students. First, efforts to reduce perceptions of being a burden to others and perceptions of being unable to secure desired relationships with others might limit the development of depressive symptoms and suicide ideation. In that regard, findings support a treatment approach that allows clinicians to address concerns involving burdensomeness and low belongingness among clients at risk for suicide, namely, *self-control regulation/interpersonal psychotherapy* (SCRIPT; Stellrecht, Joiner, and Rudd (2006). Within the SCRIPT framework, a clinician first works with a client to foster personal motivation for treatment. After addressing these motivational concerns, the clinician works to help the client describe a problematic interpersonal situation in an objective manner, clarify the thoughts and behaviors that occurred when the client encountered the problematic situation, develop skills to determine whether or not those thoughts and behaviors were useful in pursuing a desired outcome associated with the

problematic situation, and identify alternative thoughts and behaviors that might be used to resolve the situation in the future. Accordingly, it would be important to determine if SCRIPT techniques might prove useful in working with Hungarian students that exhibit significant signs of suicide risk (e.g., severe depressive symptoms, high suicide ideation).

Second, our findings also underscore the potential benefits of working to foster greater future orientation as a protective factor (Chang, Yu, Lee, et al., 2013; Wingate et al., 2006). Although Van Orden et al. (2010) pointed to distinct indicators of perceived burdensomeness (e.g., belief that one is a burden on family, low self-esteem, & shame) and thwarted belongingness (e.g., loneliness, family conflict, & social withdrawal) within the interpersonal theory of suicide, our findings indicate that future orientation might represent a useful general marker of both of these maladaptive cognitions. In that regard, for example, assessing future orientation might serve as a useful diagnostic screen for identifying Hungarian students who may be harboring painful perceptions that they are both a burden to others and unable to secure desired relationships with others. Alternatively, working preventatively with Hungarian students to cultivate a belief that their future can and will change for the better might, in turn, help abate the later development of more imminent maladaptive cognitions, namely, perceived burdensomeness and thwarted belongingness, that are linked to greater suicide risk.

Despite the importance of the present findings, some limitations are worth noting. First, our sample was limited to Hungarian college students. Given that support for the unique role of perceived burdensomeness and thwarted belongingness have also been found in other international college student samples (e.g., Chinese college students; Zhang, Lester, Zhao, & Zhou, 2013), it would be useful to examine the generalizability of the present mediation findings in other cultural groups. Second, and relatedly, it would be useful to examine the generalizability

of the present findings in a high-risk group of college students. As noted previously, the present sample reported low levels of depressive symptoms and suicide ideation. Thus, for example, it would be important to determine if the present mediation model remains useful when studying Hungarian students who have made a prior suicide attempt. Related, given the modest sample size, we did not test for mediation among outliers (e.g., students who reported extremely low or high future orientation scores). Third, although our findings point to the value of perceived burdensomeness and thwarted belongingness as mediators of the association between future orientation and suicide risk in college students, it would be important to determine if these maladaptive cognitions represent unique mediators relative to other conceptually related constructs (e.g., coping behaviors). Fourth, beyond future orientation, it would be useful to determine if other positive future cognitions (e.g., optimism, hope, & positive problem orientation) might also have a significant involvement in perceptions associated with burdensomeness and belongingness. Lastly, given the cross-sectional nature of the present study, it would be useful to build on the present findings to clarify directionality. For example, a prospective design study can help determine if future orientation leads to decreases in suicide risk over time as a function of decreases in perceived burdensomeness and thwarted belongingness.

In the present study, we examined the role of perceived burdensomeness and thwarted belongingness as potential mediators of the association between future orientation and suicide risk (viz., depressive symptoms & suicide ideation) in Hungarian college students. Consistent with the interpersonal theory of suicide, we found that the negative association between future orientation and suicide risk could be fully accounted for by the confluence of perceived burdensomeness and thwarted belongingness. Overall, findings from the present study not only

highlight the importance of considering the role that positive psychological variables such as future orientation might play in suicide risk, but they also highlight the value of studying the mechanisms that might account for such a relationship.

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Table 1. Zero-Order Correlations, Means, and Standard Deviations of All Study Measures in Hungarian College Students

		1	2	3	4	5
1.	Future orientation	--				
2.	Perceived burdensomeness	-.29***	--			
3.	Thwarted belongingness	-.38***	.54***	--		
4.	Depressive symptoms	-.28***	.68***	.57***	--	
5.	Suicide ideation	-.23***	.64***	.54***	.69***	--
	M	27.43	8.78	21.60	8.55	7.07
	SD	5.04	5.52	11.45	8.23	3.34
	Score range	8–36	6–42	9–59	0–50	5–22
	Scale range	6–36	6–42	9–63	0–63	5–25

Note. N = 195.

*** $p < .001$.

Table 2. Indirect Effects of Future Orientation on Depressive Symptoms Through Perceived Burdenomeness and Thwarted Belongingness in Hungarian College Students

Outcome/Mediators	Parameter Estimate		95% BC CI	
		SE	Lower	Upper
Depressive symptoms				
Total	-.43	.09	-.63	-.25*
Perceived burdenomeness	-.25	.10	-.50	-.11*
Thwarted belongingness	-.18	.06	-.31	-.08*

Notes. N = 195. BC CI = Bias-corrected confidence interval.

* $p < .05$.

Table 3. Indirect Effects of Future Orientation on Suicide Ideation Through Perceived Burdenomeness and Thwarted Belongingness in Hungarian College Students

Outcome/Mediators	Parameter Estimate		95% BC CI	
		SE	Lower	Upper
Suicide ideation				
Total	-.17	.04	-.25	-.10*
Perceived burdenomeness	-.10	.04	-.21	-.04*
Thwarted belongingness	-.07	.03	-.13	-.03*

Notes. N = 195. BC CI = Bias-corrected confidence interval.

* $p < .05$.

Figure 1. Results of analysis testing for perceived burdensomeness and thwarted belongingness as potential mediators of the association between future orientation and depressive symptoms in Hungarian college students. All numbers represent non-standardized regression coefficients and their standard errors. $N = 195$. *** $p < .001$.

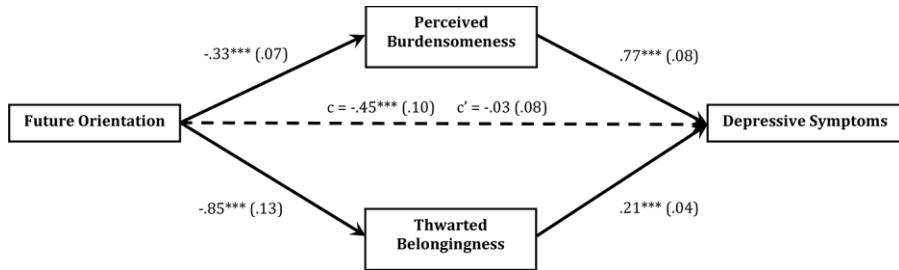


Figure 2. Results of analysis testing for perceived burdensomeness and thwarted belongingness as potential mediators of the association between future orientation and suicide ideation in Hungarian college students. All numbers represent non-standardized regression coefficients and their standard errors. $N = 195$. *** $p < .001$.

