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Research report

The interpersonal theory of suicide and adolescent suicidal behavior



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ABSTRACT

Background: Joiner's interpersonal theory of suicide (IPTS) proposes that suicide results from the combination of a perception of burdening others, social alienation, and the capability for self-harm. The theory gained some empirical support, however the overall model has yet to be tested. This study aimed to test the main predictions of IPTS in a large community sample of Israeli adolescents.

Method: 1196 Israeli Jewish and Arab high-school pupils participating in the SEYLE project completed a self-report questionnaire measuring perceived burdensomeness, thwarted belongingness, health risk behaviors, and non-suicidal self-injury (risk variables), and suicidal ideation and suicide attempts (outcome measures). The data were tested in cross-sectional regression models.

Results: Consistent with IPTS, perceived burdensomeness was found to interact with thwarted belongingness, predicting suicidal ideation. Depression mediated most of the effect of thwarted belongingness and perceived burdensomeness on suicidal ideation. Acquired capability for self-harm, as measured by health risk behaviors and direct non-suicidal self-injurious behaviors, predicted suicide attempt. However, this mechanism operated independently from ideation rather than in interaction with it, at variance with IPTS-based predictions.

Limitations: The cross-sectional design precludes conclusions about causality and directionality. Proxy measures were used to test the interpersonal theory constructs.

Conclusion: The findings support some of the IPTS predictions but not all, and imply two separate pathways for suicidal behavior in adolescents: one related to internalizing psychopathology and the other to self-harm behaviors. This conceptualization has clinical implications for the differential identification of adolescents at risk for suicidal behavior and for the development of prevention strategies.

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1. Introduction

Suicide is among the leading causes of death worldwide, especially in adolescents and young adults (World Health Organization, 2010). Empirical research has identified multiple risk factors (Bursztein and Apter, 2009), including suicidal thoughts and attempts (Large et al., 2011), psychopathology (Barzilay and Apter, 2014a), nonsuicidal self-injury (NSSI) (Klonsky et al., 2013), health-risk behaviors (HRB) (King et al., 2003), and poor familial and social support (Evans et al., 2004). There is however, a need to go beyond simple

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associations and focus on integrative causal mechanisms (Nock, 2009; Brent, 2011; O'Connor, 2011). This includes developing sound theoretical models of suicide that can both account for the evidence-based risk factors and provide insights into the process whereby suicidal behavior develops.

Joiner's interpersonal theory of suicide (IPTS) (Joiner, 2005) is one of a growing number of promising models developed in the last two decades in an attempt to answer empirical questions about the etiology and course of suicidal behavior (Barzilay and Apter, 2014b). The IPTS offers an explanation for suicidal behavior that is testable, consistent with the empirical evidence, and comprehensively addresses the interplay between intra-individual dynamic systems and interindividual risk factors. Specifically, it suggests that a powerful suicide risk is generated by the interaction of three factors: (a) the individual's experience of loneliness/isolation ("thwarted belongingness"), (b) the

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individual's perception of being a burden on others ("perceived burdensomeness"), and (c) the individual's habituation to self-harm by prior non-suicidal self-injury, suicidal behavior, or other risk behaviors ("acquired capability") (Van Orden et al., 2010). Several population-based and clinical research studies that tested the predictions of the IPTS reported a significant effect of thwarted belongingness and perceived burdensomeness on suicidal ideation (Joiner et al., 2002, 2009; Van Orden et al., 2006, 2008a, 2008b; Conner et al., 2007; Jahn and Cukrowicz, 2011; Jahn et al., 2011). Direct tests also supported links among self-harm behaviors, acquired capability, and suicide attempts (Van Orden et al., 2008a, 2010; Smith et al., 2012). A few recent studies supported the model's interactive predictions (Christensen et al., 2013, 2014).

However, the model has so far been examined only in young and older adults, but no other age groups. Furthermore, the research has been limited in terms of the range and the extent to which different painful and provocative experiences increase the likelihood of suicidal behavior. For example, Van Orden et al. (2008a) examined impulsive behaviors along with painful and provocative events without distinguishing between direct and indirect exposure to self-harm. Only few studies tested the simultaneous and interactive effects of all three IPTS factors in relation to each other and to established risk factors (e.g., depression and non-suicidal self-injury). Moreover, although several studies testing the IPTS controlled for depression (Van Orden et al., 2008a; Joiner et al., 2009) in the prediction of suicidal ideation, other potentially complex relationships were not assessed, such as mediating or moderating effects of depression on IPTS constructs.

The aim of the present study was to allow further examination of the IPTS while accounting for prior research limitations. First, by initially evaluating IPTS in a sample of adolescents. Second, by testing all three constructs proposed by the theory and examining their interrelations with internalizing and externalizing behaviors. Finally, by evaluating the effects of direct self-injurious behaviors and indirect painful and provocative experiences (health risk behaviors) that have been shown to co-occur with suicidal behaviors (King et al., 2003).

Two main hypotheses were tested: (a) The interaction between perceived burdensomeness and thwarted belongingness is related to suicidal ideation. (b) Acquired capability (using painful and provocative experiences as behavioral markers) increases the association between suicidal ideation and attempts.

2. Material and methods

2.1. SEYLE-Israel site

Data and analyses were drawn from the Saving and Empowering Young Lives in Europe (SEYLE) project (Wasserman et al., 2015). The detailed protocol of the project has been published elsewhere (Wasserman et al., 2010). In brief, SEYLE is a randomized controlled trial designed to evaluate the effectiveness of various interventions in promoting mental health and reducing suicidality and risk-taking behaviors among adolescents across 11 countries. In each country, a catchment area was identified, and a list of all eligible schools within the study sites was generated according to specific inclusion and exclusion criteria (Wasserman et al., 2010). Statistical analyses confirmed the external validity of each sample and its representativeness for the respective county (Carli et al., 2013). However, the Israeli sample was distinct in that it derived from 12 high schools throughout the country and was not restricted to one particular location, and it included a large proportion of native (non-European) Muslim Arabs. Therefore, the analyses performed for the present study pertain exclusively to the Israeli site.

Ethical approval was obtained from each of the local research ethics committees. We obtained informed consent from each participant and written consent from at least one parent, which was a prerequisite for participation. SEYLE prescribed a specific procedure to assess and immediately assist every emergency case. Emergency cases were pupils who reported either suicide attempts or severe suicidal ideation in the 2 weeks before baseline assessment. These pupils were immediately contacted for clinical assessment and referred to health-care services for treatment, if necessary.

2.2. Participants

The initial sample consisted of 1285 pupils for whom parental consent to participate was obtained. Of these, 89 were excluded because of missing data on suicidal ideation or suicide attempt (the outcome measures). The final study group consisted of 1196 subjects of mean age 15.91 (SD=.76) years (range 14–17 years); 945 were male and 226 were female; gender data were unavailable for the remaining 25. The ethnic breakdown was as follows: 57.4% Jewish, 33.8% Muslim Arab, 1.8% Druze, 2% Christian Arab, and 1.5% Christian; ethnicity data were unavailable for the remaining 3.5%.

2.3. Instruments

Participants completed a demographics questionnaire followed by a battery of self-report instruments designed to measure perceived burdensomeness, thwarted belongingness, psychiatric symptoms, health risk behaviors, and non-suicidal self-injury (risk variables), and suicidal ideation and suicide attempt (outcome measures). The pupils completed the questionnaires in Hebrew or Arabic, depending on the pupils' native language. For the present study we used the data derived from the baseline assessment.

2.3.1. Psychiatric symptoms

These were assessed with the Beck Depression Inventory (BDI-II, Beck et al., 1996), the Zung Self-Rating Anxiety Scale (Z-SAS, Zung, 1971), and the Strengths and Difficulties Questionnaire (SDQ, Goodman et al., 1998). The SDQ comprises 5 subscales of 5 items each that examine emotional symptoms, conduct problems, hyperactivity and/or inattention, peer relationship problems, and prosocial behavior. We used a composite score of hyperactivity and conduct problem items to measure externalizing symptoms. The SEYLE study reported high to very high internal reliability for all scales: Cronbach's alpha .91 for the BDI-II, .78 for the Z-SAS, .72 for the SDQ (Carli et al., 2013).

2.3.2. Suicidal ideation and suicide attempt

The five-item Paykel Suicide Scale (PSS, Paykel et al., 1974) was used to measure suicidal behavior. The scale was adapted and validated in other studies on a 6-point frequency scale (Meneese and Yutrzenka, 1990). Cronbach's alpha in our study was .85. Suicidal ideation was measured for current ideation (past two-weeks) and suicide attempt was measured during lifetime (Wasserman et al., 2015). Since attempts are uncommon, measuring current attempts would result in only few cases and therefore low power for the analyses.

2.3.3. Thwarted belongingness (peer and parental)

Peer belongingness was assessed using a composite score derived from (5 items) the Global School-based Student Health Survey (GSHS, World Health Organization, 2007), which is the international version of the Youth Risk Behavior Survey questionnaire (Brener et al., 2002) (You get along well with people your age; You feel you belong to a group; People your age like having you in the group; You feel lonely), and (5 items) the Peer Problems scale of the SDQ (I am usually on my own; I have one good friend or more; Other people my age generally like me; Other kids or young people pick on me or bully me; I get on better with adults than with people my own age). Items

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