

Moral Intuitions and Suicide Risk

Moral Intuitions and Suicide Risk: Results from a National Sample of Icelandic Youth*

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Combining insights from Moral Foundations Theory and the Durkheimian tradition, we examine the effects of moral intuitions on suicide risk. We argue that moral intuitions constitute a moral-regulative force that individuals bring with them into a range of socially structured settings and that influence their behavior independent of the structural forces in play in those settings. Focusing on Iceland, an economically advanced country with a largely secular and individualistic culture, and using data from a national sample of youth between the ages of 16 and 21 ($N = 10,710$), we find that group-oriented (binding) moral intuitions are associated with lower suicide risk while individual-oriented (individualizing) moral intuitions are associated with higher suicide risk. We also find an unexpected (non-linear) protective effect among respondents with strong individualizing moral intuitions, and some evidence that the effects of individualizing moral intuitions on suicide risk are conditioned by involvement in socially integrative relationships. Overall, our results suggest that the sociological study of suicide would be meaningfully improved by incorporating moral intuitions into the model.

Durkheim's theory of suicide has inspired sociological research and theory for well over 100 years and his basic premise—that the psychological health of individuals depends on their involvement in socially integrating and regulating communities that are neither too weak nor too strong—has received considerable empirical support (Abrutyn and Mueller 2016, 2018; Mueller, Abrutyn, and Osborne 2017; Pescosolido and Georgianna 1989; Thorlindsson and Bjarnason 1998; Wray, Colen, and Pescosolido 2011). This research, however, is largely divorced from work in other disciplines causing something of a disconnect between the sociological emphasis on structural and cultural factors and the emphasis on individual-level factors in fields such as psychology, public health,

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and law (Wray et al. 2011). To bridge this gap, the current study combines insights from Moral Foundations Theory (MFT; Haidt 2007; Graham et al. 2011) and the Durkheimian tradition to examine the effects of moral intuitions on suicide risk. We argue that moral intuitions are sociologically relevant in that they situate individuals *subjectively* in a social world that varies in its moral-regulative force.

A moral intuitionist approach posits that moral judgments originate in “fast thinking” mental processes that motivate approach and avoidance, and that operate below the level of consciousness; and that these intuitive processes are simultaneously embodied *and* socially conditioned (Bourdieu 1984; Cerulo 2010; Haidt 2012; Miles, Charron-Chenier, and Schleifer 2019; Vaisey 2009). Combining these insights with ideas from Durkheim, we hypothesize that: (1) people guided by *individualizing* moral intuitions—intuitions that point to *the individual* as the center of moral concern—will be more vulnerable to suicide; and (2) people guided by *binding* moral intuitions—intuitions that point to *the group* as the center of moral concern—will be less vulnerable.

In addition, in light of Durkheim’s idea that the protective influence of moral forces breaks down when those forces are excessively strong or weak (Durkheim 1979; see also, Abrutyn and Mueller 2016, 2018), we explore the hypothesis that (3) the relationship between suicide risk and moral intuitions is curvilinear. Specifically, we anticipate that suicide risk will be lowest when individualizing and binding moral intuitions are moderate and highest when they are more extreme. Finally, in light of Durkheim’s emphasis on the structural features of social life, we explore the hypothesis that (4) the influence of moral intuitions on suicide risk will be greater when social integration is weak. Specifically, we anticipate that when structural indicators of social integration, such as parental support, parental monitoring, peer support, and school attachment are weak, one’s vulnerability to suicide will depend more strongly on the strength and quality of one’s inner sense of moral regulation as measured by one’s moral intuitions. We examine these hypotheses using data on 10,710 youth between the ages of 16 and 21 gathered in 2016 in Iceland.¹

Sociological Models of Suicide

The sociological study of suicide has been profoundly influenced by Durkheim’s seminal ideas published in *Suicide*. Durkheim’s work is rooted in the transformation of European society from agrarian feudalism to modern industrial capitalism, during which local institutions (e.g., guilds, extended families, the church, etc.) were weakened or destroyed and a moral system emerged that emphasized the individual as the primary locus of value in society. Durkheim argued that a society’s moral order could prevent (or exacerbate) suicide by promoting (or inhibiting) voluntary submission to group constraints, and he developed a four-fold typology of suicide motives that corresponds to the extreme endpoints of his two main variables of interest: social integration and moral regulation. To Durkheim, understanding the nature of moral systems and

the extent to which individuals embrace them is essential for understanding suicide.

Durkheim argued that social integration fosters supportive social bonds and common social values according to a U-shaped pattern: Too little social integration leads to a state of loneliness and egoistic suicide, whereas too much leads to altruistic suicide, particularly when one fails to live up to group expectations (Mueller and Abrutyn 2016). Moral regulation, on the other hand, fosters existential security and a sense of shared purpose through the imposition of binding norms, obligations and roles. Too little regulation, however, causes anomic suicides among individuals whose unchecked desires lead them to despair, whereas too much causes fatalistic suicide among those whose individuality is severely suppressed with no hope of escape. Although social integration and moral regulation are distinct within Durkheim's model (but, see Johnson 1965), they have proven difficult to distinguish empirically using structural indicators, such as religious affiliation (Pescosolido and Georgianna 1989), family support and monitoring (Thorlindsson and Bjarnason 1998), and family integration (Stack 1980), as most structural indicators tap both constructs simultaneously.

Since Durkheim's original work and until quite recently, sociologists have tended to view social integration as rooted in the structural aspects of relationships, groups, and social networks, and moral regulation as the normative and moral demands these social units place on their members; and, due to the relative difficulty of measuring cultural as opposed to structural variables, social integration has received substantially more empirical attention than moral regulation (Pescosolido and Georgianna 1989; Thorlindsson and Bjarnason 1998; Wray et al. 2011; but see Abrutyn and Mueller 2016, 2018).² Abrutyn and Mueller's (2016, 2018) work is a notable exception. These authors integrate Durkheim's theory of suicide with contemporary concepts from cultural sociology, symbolic interactionism, and identity theory to explain the conditions under which excessive cultural regulation can heighten suicide risk among individuals within closely knit, culturally concentrated settings (Abrutyn and Mueller 2016, 2018; Mueller and Abrutyn 2016). Their approach goes further than any other in extending and improving the Durkheimian model, particularly with respect to the occurrence of suicide clusters. However, while Mueller and Abrutyn's theorizing effectively connects meso-level structural and cultural variables to individual-level experiences, their work stops short of theorizing about the role of moral-intuitive factors. Thus, the extent to which suicide risk is associated with individuals' intuitions regarding moral regulation remains unexplored.

We fill this gap by extending Durkheim's model using contemporary research and theory from moral psychology (Haidt 2012). We situate our work within a broad cultural framework that extends across an entire nation—what Mueller and Abrutyn (2016:63) refer to as a “depersonalized social milieu”—rather than focus on the influence of more bounded, culturally concentrated settings. More specifically, we ask whether internalized moral intuitions (that reflect the degree of moral centrality ascribed to groups versus individuals) influence suicide risk over and above well-known correlates of suicide.

A Moral Intuitionist Approach

Moral psychology provides a set of intuition-based constructs that correspond remarkably well to the structural constructs featured in Durkheim's theory of suicide. Most relevant in this regard is Haidt and colleagues' Moral Foundations Theory (MFT) (Graham et al. 2011; Haidt 2007, 2012), which organizes people's moral intuitions into five domains referred to as "moral foundations." Based on anthropological and cross-cultural studies, Haidt and colleagues (2012) argue that the capacity for experiencing moral intuitions in these domains is universal; however, because of social learning, individuals and groups often vary in the intensity with which they experience moral intuitions in each domain, thus exhibiting different "moral matrices" (Graham, Haidt, and Nosek 2009). Briefly, the *Care/Harm* foundation emphasizes caring, kindness, and the protection of the vulnerable, and moral violations include harming others or failing to provide necessary or deserved care. The *Fairness/Cheating* foundation emphasizes fair treatment, justice, and trustworthiness, and moral violations include treating people unequally or unfairly or cheating them. The *Authority/Subversion* foundation emphasizes obedience and deference to authority and social hierarchies, and moral violations include disrespect and disobedience. The *Loyalty/Betrayal* foundation emphasizes loyalty to ingroups (nations, families, clubs, teams, communities, peer groups, etc.), and moral violations include going against the expectations of these groups or pursuing one's self-interest at the group's expense. Finally, the *Sanctity/Degradation* foundation emphasizes upholding cultural standards of purity and decency, and moral violations include bodily degradations and other impure practices.³

With their focus on justice, rights, and individual welfare, modern democratic societies have tended to emphasize the first two moral foundations (Care/Harm and Fairness/Cheating) over the others (Loyalty/Betrayal, Authority/Subversion, and Sanctity/Degradation) (Stets and Carter 2012). Haidt and Graham (2009) thus refer to the former as "individualizing" since they emphasize the individual as the primary locus of moral concern. However, they point out that across cultures (and throughout history) people continue to consider community, authority, and sacredness to be important sources of moral value in their own right, independent of their ability to promote justice or safeguard the welfare of individuals (see also, Shweder 1991). Because the latter emphasize duty, interdependence, tradition, and adherence to cultural and religious practices, they are referred to as "binding."⁴

Within MFT, binding and individualizing moral intuitions are conceptually distinct (Graham et al. 2011; Haidt, Graham, and Joseph 2009) and studies show they tend to be modestly and positively correlated with one another (Niemi and Young 2016; Silver and Silver 2017; Silver and Silver 2019). Thus, individuals may have strong individualizing moral intuitions and weak binding moral intuitions, a pattern typically observed among political liberals in the United States, or their moral intuitions may be more or less equally distributed across the two domains, a pattern typically observed among US conservatives (Graham et al. 2009). Other combinations are also possible (Haidt 2012). Moreover, MFT

posits that differences in moral intuitions among individuals and groups are strongly influenced by social learning (Haidt et al. 2009) and a good amount of research suggests that factors such as gender (Graham et al. 2011), social class (Haidt, Koller, and Dias 1993; Vaisey and Miles 2014), religion (Graham et al. 2009; Miles 2014), cohort (Miles 2014; Vaisey and Miles 2014), and nationality (Graham et al. 2011; Haidt et al. 1993; Shweder et al. 1997) play a role in shaping individual- and group-oriented moral values.

Categorizing moral intuitions as “individualizing” and “binding” brings MFT into reasonable conceptual alignment with Durkheim’s macro-level theory of suicide. Specifically, within Durkheim’s framework, *social units* vary in the intensity with which their cultural systems point to group regulation or to individual autonomy as the primary source of moral value in society, leading to variation in the degree of regulation that social units are capable of providing. Within MFT, *individuals* vary in the intensity with which their moral intuitions point to the group or to the individual as the primary source of moral value in society, leading to variation in the degree to which individuals perceive themselves to be regulated by group norms and expectations. Both perspectives are concerned with the moral bond between the individual and the group—and with the degree to which group-oriented and individual-oriented moral forces affect moral behavior—with Durkheim coming at it from a societal vantage point and MFT coming at it from an individual-level vantage point. Although this conceptual linkage is not perfect, putting these approaches together enables us to explore some of the implied moral-intuitive implications of Durkheim’s arguments.

The Current Study

We are interested in the effects of binding and individualizing moral intuitions on suicide risk. We argue that moral intuitions position individuals subjectively in a social world that they experience as possessing either weaker or stronger moral-regulative forces. More specifically, we argue that endorsement of *individualizing* moral intuitions reflects a commitment to the moral centrality of individuals and positions individuals in a social world with fewer perceived constraints; while endorsement of *binding* moral intuitions reflects an intuitive commitment to group regulation and positions individuals in a social world with greater perceived constraints. Thus, we argue that moral intuitions are *real in their consequences* in that they influence the degree to which individuals experience themselves as socially and trans-situationally regulated; and because of their psychic proximity to lived experience and decision-making, they are hypothesized to influence suicide risk independent of and in conjunction with actual (and measurable) involvement in socially integrating relationships.

To the extent that a person’s moral intuitions emphasize social obligations, he or she is, from a Durkheimian standpoint, more likely to carry within him- or herself a protective moral-psychological resource. Although this resource is in theory generated largely through prior moral training and socialization

(Graham et al. 2009, 2011; Haidt et al. 1993; Miles 2014; Shweder et al. 1997; Vaisey 2009; Vaisey and Miles 2014), once internalized, it is capable of operating independently of the individual's immediate surroundings and social circumstances in much the same way that Bourdieu's habitus influences taste (Bourdieu 1984). Durkheim made such an argument in *Suicide* when he wrote: "When [moral regulation] is very strong, when the circumstances activating it are of frequent recurrence, it may . . . leave a deep impression on individuals; it arouses in them mental states of some vivacity which, once formed, function with the spontaneity of instinct . . ." (Durkheim 1979:319). In short, moral socialization may instill moral intuitions that protect against suicide.

Herein lies the promise of a moral intuitionist approach: it enables us to conceptualize an individual's *subjective commitment* to the regulating forces of society and to examine whether the strength of this commitment corresponds to suicide risk alongside structurally relevant factors (e.g., social support, life stress, suicide exposure, etc.) while not losing sight of the importance of *moral socialization* in shaping people's moral intuitions. In other words, we posit that *embodied moral intuitions constitute a moral-regulative force that individuals bring with them into a range of socially structured settings and that influence their behavior independent of or in conjunction with the structural forces in play in those settings*. If this model is correct, then moral intuitions should be relevant for understanding any behavior in which moral regulation is key, including suicide (but also crime and other forms of deviance).

Our focus on suicide is strategic in that suicide has long been studied as a behavior that is sensitive to the amount of structural integration and regulation that binds individuals to groups (Durkheim 1979; Pescosolido and Georgianna 1989). Our focus on Iceland also is strategic in that within its individualistic, secular culture, binding moral intuitions should increase the individual's inner sense of moral regulation, which should add a degree of protection against suicide; while individualizing moral intuitions should decrease this sense, thereby removing a degree of protection against suicide. Our conceptual approach, therefore, is to take into account structurally relevant indicators of social integration and regulation (i.e., parental support, parental monitoring, peer support, and school attachment) while examining the influence of two subjectively rooted measures of moral regulation derived from MFT (i.e., individualizing and binding moral intuitions). In addition, based on Durkheim's idea that the protective influence of moral forces breaks down when those forces are excessively strong or weak, we test for curvilinear effects in the relationship between individualizing and binding moral intuitions and suicide risk. And, finally, in light of Durkheim's emphasis on the importance of structural indicators of integration, we examine whether the influence of moral intuitions on suicide risk is greater when structural indicators are weak.

Based on the above arguments, our specific hypotheses are:

1. Binding moral intuitions will be negatively associated with suicide risk.
2. Individualizing moral intuitions will be positively associated with suicide risk.

3. The associations between moral intuitions and suicide risk will show evidence of non-linearity such that excessively high or low levels will be associated with higher levels of suicide risk.
4. The influence of moral intuitions on suicide risk will be greater when structural indicators of social integration (i.e., parental support, parental monitoring, peer support, and school attachment) are weak.

Methods

Data

Data for this study come from the 2016 Youth in Iceland survey administered by the Icelandic Center for Social Research and Analysis at Reykjavik University. Iceland is an economically advanced democratic nation whose population of just over 330,000 is mostly urban and concentrated in the city of Reykjavik, which is visited by over two million tourists each year, mostly from the United States, Western Europe, and Canada. As such, Iceland is culturally influenced to varying degrees by economic, political, and consumer trends from abroad, and is decidedly Western in its cultural emphasis on individualism and self-expression versus collectivism.

The Youth in Iceland Survey is administered approximately every three years to all students registered in Iceland's 30 upper secondary schools (the sample would thus be a census were it not for an imperfect response rate). Twenty-seven of these schools, enrolling 85% of students, are academically focused and three, enrolling 15% of students, are vocationally focused. In Iceland, compulsory education ends in 10th grade after which students either enter upper secondary school or look for work. The matriculation rate into post-secondary education is 96%, and as of 2016, the percentage of students expected to graduate from upper secondary school (63%) was one of the highest among OECD and partner countries (OECD n.d.). The survey was administered anonymously by teachers in a test-like environment and respondents had 80 minutes (two school periods) to complete it. 10,717 students participated in the survey for a response rate of 70%. No attempt was made to reach absentees.

Measures

Dependent variable

Suicide risk. To overcome some of the methodological problems of studying suicide, we focus on suicide risk rather than completed suicides. This focus is consistent with Durkheim's theoretical framework, which posits that suicides are related to intermediate factors—such as loss of wealth or status, family dissolution, war, etc.—events that weaken social and moral regulation and result in distressing states of mind that can elicit a suicidal response (Bjarnason 1994; Thorlindsson and Bjarnason 1998). Following prior research, we measure

Table 1. Descriptive Statistics

	M/%	SD	Range	N
Dependent Variables				
Suicidal thoughts	.282	—	0–1	10,241
Suicide attempt	.096	—	0–1	10,293
Independent Variables and Controls				
Binding moral foundations	3.213	1.104	1–6	9,547
Individualizing moral foundations	4.619	1.098	1–6	9,645
Parental support	3.480	.657	1–4	10,454
Parental monitoring	3.087	.716	1–4	10,103
Peer support	3.324	.668	1–4	10,431
School attachment	4.360	.844	1–5	10,485
Self-control	3.091	.654	1–5	9,692
Self-efficacy	3.618	.835	1–5	10,049
Suicide exposure	.352	—	0–1	10,316
Life stress	1.161	1.419	1–5	10,701
Parental education	3.594	1.256	1–5	9,859
Foreign language	.025	—	0–1	10,593
Female	.502	—	0–1	10,539
Age	2.335	1.239	1–5	10,320

suicidal thoughts and attempts separately (Plemmons et al. 2018; Svob et al. 2018). To measure *Suicidal Thoughts*, respondents were asked whether the following statement applied to them (ever): “I have seriously considered dying by suicide.” To measure *Suicide Attempts*, respondents were asked whether the following statement applied to them (ever): “I have attempted suicide.” For both questions, affirmative responses were coded 1 and negative responses were coded 0. Table 1 presents descriptive statistic for the sample. As shown, 28.2% of the sample reported considering suicide, whereas 9.6% reported attempting it.

Independent variables

Moral Intuitions. Consistent with prior studies (e.g., Niemi and Young 2016; Silver and Abell 2016; Silver and Silver 2017; Smith et al. 2014; Vaisey and Miles 2014), we initially operationalized respondents’ binding and individualizing moral intuitions using the two-part, 30-item Moral Foundations Questionnaire (MFQ) developed and validated by Graham et al. (2011). However, although the MFQ is intended for cross-cultural use, we found that, consistent with studies conducted outside the United States (c.f. Schreurs et al. 2018), the MFQ items did not covary as expected in our sample. As such, we used exploratory factor

analyses (principal axis factoring with varimax rotation) to construct the binding and individualizing moral intuitions measures.

First, we determined that the 15 items comprising Part 1 of the MFQ (in which respondents rate the relevance of various moral concerns to their decision-making) lacked adequate discriminant validity, as all items loaded strongly on a single factor (Appendix Table A1 provides a complete list of Part 1 items). Thus, we retained only items from Part 2 of the scale, in which respondents rated their agreement (1 = strongly disagree, 6 = strongly agree) with three statements for each of the five moral foundations (e.g., “One of the worst things a person could do is hurt a defenseless animal,” measuring Care/Harm intuitions). We also conducted a factor analysis of Part 2 items and retained only items that loaded on the anticipated factors (results available on request). Our moral intuitions measures thus use nine of the Part 2 items (shown in Appendix Table A1). Five out of the nine items corresponding to individualizing moral intuitions were averaged to form the *individualizing moral intuitions* scale ($\alpha = .82$) and the remaining four items were averaged to form the *binding moral intuitions* scale ($\alpha = .72$). Both measures range from 1–6 and were coded so that higher values indicate greater endorsement of the relevant moral intuitions. Each measure possesses adequate content validity: the individualizing moral intuitions measure includes both Care/Harm and Fairness/Cheating items, and the binding moral intuitions measure includes Authority/Subversion, Loyalty/Betrayal, and Sanctity/Degradation items. The bivariate correlation between them is $r = .25$. Scores on the individualizing moral intuitions measure were relatively high ($M = 4.6$, $SD = 1.1$), whereas scores on the binding moral intuitions measure were lower ($M = 3.2$, $SD = 1.1$).⁵

Family and Peer Support. Following prior research on the importance of social integration, we measure adolescents’ *parental support* and *peer support*. Respondents were asked how easy or difficult it would be to receive the following from their parents and friends, respectively: “caring and warmth,” “advice regarding school,” “advice regarding work,” “discussion of personal matters,” and “help on other matters.” Response options ranged from 1 = very difficult to 4 = very easy. The five items for each source of support were averaged to form a parental support scale ($\alpha = .90$) and a peer support scale ($\alpha = .90$). We also measure *parental monitoring*. Respondents were asked how well the following four statements applied to them: “My parents know who I am with during the evenings,” “My parents keep track of where I am in the evening,” “My parents know my friends,” and “My parents know my friends’ parents.” Response options ranged from 1 = does not apply to me at all to 4 = applies to me very well. The five items were averaged to form the parental monitoring scale ($\alpha = .76$). Finally, reflecting both social integration and the influence of a conventional institution, we measure *school attachment* using four items: “I feel bad at school,” “I feel bad during classes,” “I feel bad during recess,” and “I feel I do not belong in school.” Response options ranged from 1 = always applies to me to 5 = almost never applies to me. The four items were averaged to form the school attachment scale ($\alpha = .89$). Among the parental and peer measures, respondents generally reported high levels of parental support

($M = 3.5$, $SD = 0.7$), parental monitoring ($M = 3.1$, $SD = 0.8$), and peer support ($M = 3.3$, $SD = 0.7$), measured on 4-point scales, as well as high levels of school attachment ($M = 4.4$, $SD = 0.8$), measured on a 5-point scale.

Suicide Risk Factors. We also measure several known risk factors for suicide and poor mental health. Numerous studies find that exposure to stressful life events such as divorce or death of a close friend or family member is associated with mental health problems, substance abuse, and suicide (Dohrenwend 2000; Sigfusdottir et al. 2013; Thoits 1995; Turner and Lloyd 1999). To measure *life stress*, respondents were asked whether they experienced a range of negative life events in the past year including severe arguments at home, physical violence at home, separation or divorce of parents, separation from a friend, a severe accident, serious illness, severe accident or illness in the family, death of a friend, or death of a parent or a sibling. Items were scored dichotomously (1 = yes, 0 = no) and summed to create a scale ranging from 0–21. Because the distribution was positively skewed (45% of the sample reported no stressful events and only 3% reported 5 or more), we truncated the *life stress* measure to range from 0 to 5 or more.

Although Durkheim acknowledged the potential effect of contagion on individual suicides, he dismissed its effect on societal suicide rates (Abrutyn and Mueller 2014b; Baller and Richardson 2002). However, subsequent research has shown that having a friend or family member exhibit suicidal behavior is positively associated with an exposed adolescent's own suicidality (Bjarnason and Thorlindsson 1994; Evans, Hawton, and Rodham 2004) even after controlling for measures of social integration, regulation, and psychological distress (e.g., Abrutyn and Mueller 2014b; Bjarnason 1994; Mueller, Abrutyn, and Stockton 2015; Thorlindsson and Bjarnason 1998). To measure *suicide exposure*, respondents answered yes or no to whether they experienced either of the following: a good friend or close family member tried to die by suicide, or a good friend or close family member succeeded in dying by suicide. Respondents who answered yes to either item were coded as 1 = exposed to suicide, all others were coded as 0.

Low self-control is a robust predictor of a range of deviant behaviors, including suicidality (Lynam et al. 2011). To measure *self-control*, we use a scale developed by Tangney, Baumeister, and Boone (2004), in which respondents were asked to evaluate on a scale from 1 = applies to me very well to 5 = does not apply to me at all, how well thirteen statements applied to them (e.g., “I am good at resisting temptations,” “I wish I had more self-control,” “I often make decisions without weighing all the pros and cons,” etc.). Responses were averaged so that higher values indicate greater self-control ($\alpha = .76$). We also include a measure of *self-efficacy* in which respondents were asked to evaluate on a scale from 1 = does not apply to me at all to 5 = almost always applies to me, how well ten statements applied to them (e.g., “I am able to adapt to change,” “I try to see the lighter side of problems,” “I am able to cope with stress,” etc.). The items were averaged with higher values indicating greater self-efficacy ($\alpha = .93$).

Demographic Characteristics. Socioeconomic factors are associated with a range of health and mental health outcomes, including depression and suicide (Denney et al. 2009). We measured *parents' education* by asking respondents to indicate the educational attainment of both their mother and father. Response options were 1 = finished primary school or less, 2 = started school at the secondary level, 3 = finished secondary level, 4 = started school at the university level, or 5 = completed a university degree. The items for mother and father were averaged so that values ranged from 1–5, with higher values representing higher parental education; where only one parent was present that parent's educational attainment was used. Age is coded 1 = 14–16 years old (33.7%), 2 = 17 years old (25.2%), 3 = 18 years old (20.1%), and 4 = 19 years old (14.4%), and 5 = 20–21 years old (5.6%). Sex is coded 1 for girls and 0 for boys (referred to as *Female* in the analyses). *Foreign language at home* was measured with a single item asking whether Icelandic was spoken at home (coded 1 for yes and 0 for no).⁶

Analysis

The analyses are presented in three stages. First, we estimate two sets of nested logistic regression models predicting suicidal thoughts and suicide attempts (shown in Table 2). These analyses examine the main effects of the moral intuition measures on suicide risk. The first set of models predicts suicidal thoughts and suicide attempts from the suicide risk factors and social and demographic variables, and the second set of models introduces the individualizing and binding moral intuition measures. In these (and subsequent) models, we control for school-level confounds by including dummy variables for respondents' school identifiers. Next, to test for curvilinear effects, we estimate models including squared terms for each of the moral intuition measures (shown in Figure 1). Finally, to examine whether higher levels of social integration attenuate the effects of the moral intuitions measures, we estimate models including interaction terms for each of the moral intuitions and social integration measures (parental support, parental monitoring, peer support, and school attachment; selected findings shown in Figure 2).⁷

As shown in Table 1 (above), missing data rates varied by measure with the highest rates observed for self-control (11%), the moral intuition measures (8%), parental education (8%), and parental monitoring (6%); altogether, only 8,092 respondents (76%) provided answers to all relevant dependent and independent variables. Thus, we used chained multiple imputation ($M = 20$) to restore missing data.⁸ Supplemental analyses indicated that the valence, significance, and size of model coefficients, including curvilinear effects, were robust to various methods for addressing missing data, including using a congenial imputation model without auxiliary variables and using listwise deletion only.

Results

We begin by estimating models assessing the relationships between the moral intuitions and suicide measures. Table 2 presents logistic regression models

Table 2. Logistic Regression Models Predicting Suicide Risk from Moral Intuitions and Controls (n = 10,710)

	DV: Suicidal Thoughts				DV: Suicide Attempt			
	Model 1		Model 2		Model 3		Model 4	
	b	SE	OR	SE	b	SE	b	SE
Binding MFs	—	—	—	.026	.931	—	—	.038
Individualizing MFs	—	—	—	.152***	1.165	—	—	.041
Parental support	-.304***	.044	.738	.044	.729	-.306***	.737	.060
Parental monitoring	-.230***	.040	.794	.040	.791	-.164**	.849	.058
Peer support	-.074	.044	.928	.044	.923	-.032	.969	.061
School attachment	-.565***	.033	.568	.033	.568	-.396***	.673	.041
Self-control	-.027	.043	.973	.044	.944	-.085	.918	.068
Self-efficacy	-.274***	.035	.760	.036	.729	-.332***	.718	.051
Suicide exposure	.980***	.053	2.665	.053	2.640	1.554***	4.732	.084
Life stress	.246***	.017	1.278	.017	1.274	.212***	1.236	.023
Parental education	-.006	.023	.995	.023	.991	.009	1.009	.035
Foreign language	-.992***	.186	.371	.185	.402	-.390	.677	.246
Female	.458***	.057	1.582	.061	1.423	.364***	1.439	.090
Age	.019	.021	1.019	.021	1.007	-.021	.979	.031
Pseudo R ²	.206			.209		.230		.231

Note: All models include dummy variables for respondents' school identifier (not shown). MFs = Moral foundations. DV = dependent variable. b = unstandardized regression slope. SE = standard error. OR = odds ratio.

*p < .05.
**p < .01.
***p < .001.

predicting suicidal thoughts and attempts from the social and demographic variables (models 1 and 3), as well as models introducing the binding and individualizing moral intuitions (models 2 and 4).

The first set of models shows that, among the social and demographic controls, self-efficacy, parental support, parental monitoring, and school attachment are significantly associated with reduced suicidal thoughts and attempts, whereas suicide exposure, life stress, and female sex are associated with increased suicidal thoughts and attempts. Speaking a foreign (i.e., non-Icelandic) language at home is significantly associated with lower levels of suicidal thoughts only. Self-control, parental education, and age are not significantly associated with suicidal thoughts or attempts. These results serve as a validity check indicating that the patterns exhibited in these data are generally consistent with those found in prior studies.

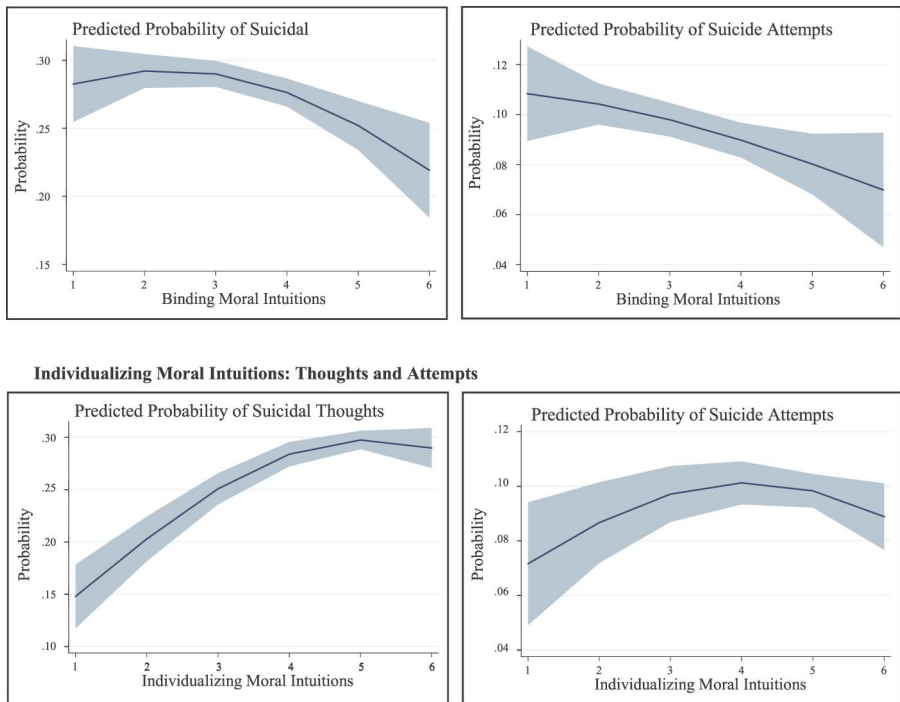
The second set of models introduces the individualizing and binding moral intuitions. As hypothesized, the more strongly respondents endorse *binding* moral intuitions, the *lower* are their levels of both suicidal thoughts and attempts. Specifically, for respondents with a low score of “1” on the binding moral intuitions scale, the predicted probability of having suicidal thoughts is 30.4% and the predicted probability of a suicide attempt is 11.1%, whereas at a high score of “6” the predicted probabilities of suicidal thoughts and attempts drop to 25.3% and 7.7%, respectively. On the other hand, the more strongly respondents endorse *individualizing* moral intuitions, the *higher* are their levels of suicidal thoughts (but not suicide attempts). Indeed, for suicidal thoughts, the effect of individualizing moral intuitions is larger than that of binding moral intuitions: at a score of “1” on the individualizing moral intuitions scale, the average predicted probability of having suicidal thoughts is 20.4%, which rises to 31.6% at a score of “6.” In contrast to our expectations, however, individualizing moral intuitions were *not* linearly associated with an increase in suicide attempts.

It is instructive to compare effect sizes for the moral intuition measures to other variables in the model. Because of their conceptual similarity, we focus on the social integration variables (i.e., parental support, parental monitoring, peer support, and school attachment). For binding moral intuitions, the probability of suicidal thoughts at one standard deviation below the mean is 29.3%, whereas the probability of suicidal thoughts at one standard deviation above the mean is 26.9% (a decrease of 2.4 percentage points). For individualizing moral intuitions, the probability of suicidal thoughts at one standard deviation below the mean is 25.8% and the probability of suicidal thoughts at one standard deviation above the mean is 30.9% (an increase of 5.1 percentage points). In comparison, moving from one standard deviation below the mean to one standard deviation above the mean, the probability of suicidal thoughts decreases by 6.4 percentage points for parental support (from 31.1% to 24.7%); by 4.8 percentage points for parental monitoring (from 25.3% to 30.1%); by 1.6 percentage points for peer support (from 28.9% to 27.3%); and by 15.5 percentage points for school attachment (from 35.5% to 20.0%). A similar pattern of results emerges for the effects of binding moral intuitions on suicide attempts: the probability of a suicide attempt at one standard deviation below

the mean is 10.4%, whereas the probability of a suicide attempt at one standard deviation above the mean is 8.7% (a decrease of 1.7 percentage points); for individualizing intuitions, which do not have a significant relationship with attempts, the estimated change is only 0.2 percentage points (from 9.5% to 9.7%). In comparison, for the integration variables, moving from one standard deviation below the mean to one standard deviation above the mean, the probability of suicidal thoughts decreases by 2.8 percentage points for parental support (from 10.6% to 7.8%); by 1.5 percentage points for parental monitoring (from 8.7% to 10.2%); by 0.3 percentage points for peer support (from 9.7% to 9.4%); and by 4.6 percentage points for school attachment (from 11.1% to 6.5%). Overall, the results indicate that the effects of the binding and individualizing moral intuitions on suicidal thoughts, and the effects of the binding moral intuitions on suicide attempts, are generally within range of the social integration variables (although smaller than some, particularly school attachment and parental support).

The next stage of the analysis introduces squared terms for the binding and individualizing moral intuitions measures. Figure 1 shows the predicted probabilities of suicidal thoughts and attempts at different levels of individualizing and binding moral intuitions, net of controls.⁹ For binding moral intuitions, as shown, there is a significant quadratic relationship for suicidal thoughts ($b = -.037, p = .028$), but not for attempts ($b = -.016, p = .533$). Moreover, the effect is in an unexpected direction based on Durkheim's theoretical framework: increasingly high levels of binding moral intuitions appear to protect against suicidal thoughts (with about 17% of respondents scoring above 4, where the curvilinear effects begin). Notably, individualizing moral intuitions also exhibit curvilinear relationships with both suicidal thoughts ($b = -.069, p < .001$) and suicide attempts ($b = -.049, p = .024$), indicating that the null effects observed for suicide attempts in the previous set of analyses masked a curvilinear relationship between individualizing moral intuitions and suicide risk. Again, neither relationship is in the expected direction: rather than exacerbating suicide risk, as Durkheim might have predicted, very high levels of individualizing moral intuitions cause the slopes to level off for suicidal thoughts and appear to have increasingly *protective* effects for suicide attempts. Given that most respondents reported high levels of individualizing moral intuitions (with 74% scoring above 4 and 38% scoring above 5 on the 6-point individualizing moral intuitions scale), these findings suggest that individualizing moral intuitions protect against suicide for a substantial proportion of Icelandic youths. Overall, these results suggest that scoring in the upper ranges of both the binding and individualizing moral intuitions measures is associated with lower levels of suicide risk.¹⁰

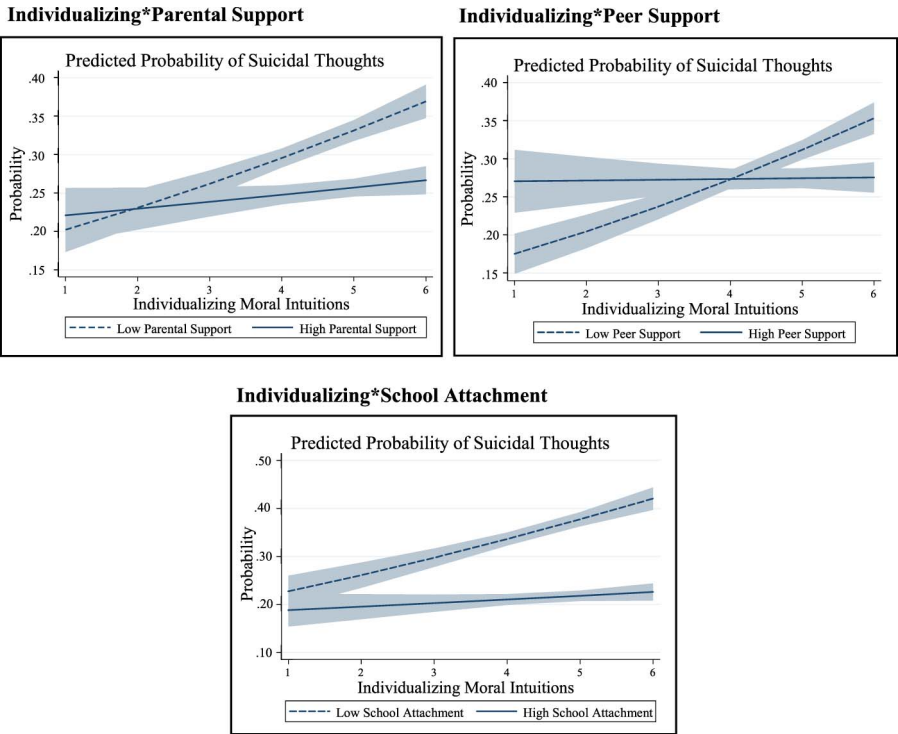
Finally, we examine interaction effects among the moral intuition measures and social integration measures (i.e., parental support, parental monitoring, peer support, and school attachment). To examine these effects, we estimated sixteen models that predicted suicidal thoughts and attempts from interaction terms for the individualizing and binding moral intuitions measures and each of the social integration measures, net of controls (models available on request). Results show

Figure 1. Predicted Probabilities of Suicide Risk with 95% Confidence Intervals (n = 10,710).

Average predicted probabilities are calculated from logistic regression models that include squared terms for individualizing (or binding) moral intuitions and control for the following variables: binding (or individualizing) moral intuitions, self-control, self-efficacy, suicide exposure, life stress, parental support, parental monitoring, peer support, school attachment, parental education, language, sex, age, and school identifier. 95% confidence intervals are shown.

that in most of the models, the interaction terms were negative but modest in size and not statistically significant. However, one set of interaction terms emerged as substantively large and statistically significant. Specifically, in predicting suicidal thoughts, the individualizing moral intuitions measure had negative interactions with three of the four social integration measures (i.e., parental support, peer support, and school attachment). Figure 2 shows the average predicted probability of suicidal thoughts for youths high in social integration and for youths low in social integration at differing levels of moral intuitions. The graphs show that the positive relationship between individualizing moral intuitions and suicidal thoughts is strong when social integration is low, but weak or negligible when social integration is high. Thus, the individualizing moral intuitions increase the risk of suicidal thoughts in the absence of social

Figure 2. Predicted Probabilities of Suicidal Thoughts at Low and High Levels of Social Integration with 95% Confidence Intervals (n = 10,710).



For each integration measure, “Low Integration” is measured at one standard deviation above the mean and “High Integration” is measured at one standard deviation above the mean (for peer support) and at scale endpoints (for parental support and school attachment). Average predicted probabilities are calculated from logistic regression models that include the relevant *individualizing moral intuition*integration* measure and as well as individualizing moral intuitions, binding moral intuitions, self-control, self-efficacy, suicide exposure, life stress, parental support, parental monitoring, peer support, school attachment, parental education, language, sex, age, and school identifier. 95% confidence intervals are shown.

integration, especially parental and peer support and school attachment, suggesting that the adverse effects of individualizing moral intuitions on suicidal thoughts are reduced when structural indicators of social integration are strong.

Discussion

This study drew on Durkheim’s theory of suicide and on Moral Foundations Theory (MFT) to examine the role of binding and individualizing moral intuitions. We conceptualized moral intuitions as subjectively construed indicators of moral regulation and we operationalized suicide risk as suicidal thoughts and

suicide attempts. We argued that endorsement of group-oriented binding moral intuitions (in which *the group or society* is the center of moral concern) positions individuals subjectively in a social world with greater perceived constraints; and endorsement of individualizing moral intuitions (in which *the individual* is the center of moral concern), positions individuals subjectively in a social world with fewer perceived constraints. Following Durkheim and other scholars who posit a protective effect of regulation, we hypothesized that binding moral intuitions would be associated with decreased suicide risk and that individualizing moral intuitions would be associated with increased suicide risk. These hypotheses were supported by the data after controlling for a number of known risk factors for suicidality. Explaining variation in suicide risk amidst a strong lineup of control variables was a high bar for the moral intuition measures to have cleared. Our results thus support the conclusion that extending Durkheim's insights regarding moral regulation to include moral intuitions is warranted, and that MFT provides a useful framework for doing so.

In absolute terms, the effect sizes for the binding and individualizing moral intuitions were modest, and other risk and protective factors remained strong predictors of suicide risk when the moral intuitions measures were included in the models. We thus view our moral intuitionist approach as an adjunct to, not a replacement for, current approaches to modeling suicide risk. This view seems reasonable since moral intuitions occur in the context of structured situations and ongoing relationships captured by other measures. They therefore should not be expected to account for the lion's share of variation in studies of complex behaviors such as suicide. Nonetheless, we find that they do exert an influence independent of personal and situational factors, leading us to conclude that moral intuitions are an important piece of the puzzle as to why some people are at greater risk of dying by suicide than others.

We argued that categorizing moral intuitions as "individualizing" and "binding" enables researchers to measure moral cognition within a framework (MFT) that resonates with ideas put forth by Durkheim over 100 years ago. This approach acknowledges that groups vary with regard to the moral regulation they offer individuals *and* that individuals vary in the degree to which their moral intuitions point to the group or to the individual as the primary source of moral value. Our framework thus enables us to extend Durkheim's conceptualization of moral regulation without abandoning the fundamental Durkheimian notion that moral regulation is linked to social groups. Indeed, our findings regarding the interaction between individualizing moral intuitions and structural indicators of social integration in predicting suicidal thoughts suggest that social integration can provide protective benefits in individuals whose moral intuitions might otherwise leave them vulnerable to suicidal thoughts. These findings also suggest that when structural indicators of social integration are weak, one's vulnerability to suicide depends more strongly on the strength and quality of one's inner sense of moral regulation as measured by one's moral intuitions.

A related benefit of incorporating moral intuitions into sociological studies of suicide is the potential for fostering dialogue with researchers in other disciplines. During the past two decades, research on morality has grown dramatically

in law, philosophy, neuroscience, and psychology (Haidt 2012). The work of sociologists, however, has remained insular despite the fact that morality is and has been a central theme in sociological writings dating back to its founding thinkers (Hitlin and Vaisey 2013). The study of suicide seems a particularly fertile juncture for showing how sociological insights can augment and improve upon work in other areas. Specifically, by positing that moral regulation exists both inside the individual (in the form of moral intuitions) and outside the individual (in the form of contextually rooted norms and expectations), and by suggesting that both influence suicide risk, the approach taken here remains faithful to sociology's focus on moral regulation as a binding social force without diminishing the importance of the intrapsychic factors that are of interest to researchers in other disciplines.

Our results also underscore the need to expand the conceptualization of morality to include *binding* moral forces (Hitlin and Vaisey 2013; Silver and Abell 2016), as we find that binding moral intuitions constitute a previously undetected protective factor against suicide risk, over and above the effects of individualizing moral intuitions. We also find that individualizing moral intuitions have a complex relationship with suicide risk, increasing suicidal thoughts at higher levels but protecting against suicide attempts at both high and low levels. Thus, our findings suggest that when it comes to understanding the link between moral regulation and suicide risk it is necessary to consider group-oriented as well as individual-oriented moral intuitions. Expanding the moral domain to include binding moral intuitions enabled this complex and intriguing moral picture to emerge.

Regarding individualizing moral intuitions, the differing effects for suicidal thoughts and attempts may seem puzzling at first, particularly given the effects of the binding moral intuitions are relatively consistent across indicators of suicide risk. We interpret this pattern as reflecting an important difference between thoughts and actions, namely, their effects on other people. For suicidal thoughts, the results were as we expected: youths who scored higher on the individualizing moral intuitions scale were generally more likely to report having considered suicide, particularly when their involvement in socially integrative relationships was weak. However, whereas increasingly high levels of individualizing moral intuitions exacerbate suicidal thoughts, they protect against suicide attempts. One interpretation of this finding is that, just as individuals who score high on individualizing moral intuitions are less likely to engage in deviant behaviors that harm others (Silver and Abell 2016; Stets and Carter 2012), those who score high on individualizing moral intuitions may also be less likely to engage in actions, such as suicide, that *indirectly harm others*. That is, individuals whose moral intuitions emphasize individualizing concerns with harm and fairness may be especially attuned to the potential for suicide to harm others (e.g., family members, friends, etc.) in addition to the self. Thus, although individualizing moral intuitions may increase thoughts of suicide, they may ultimately protect against death by suicide. Future studies of the relationship between moral intuitions and suicide should continue to explore the social and contextual factors that influence the strength and direction of these relationships.

It is difficult to say for sure if the curvilinear relationship observed between moral intuitions and suicide risk supports Durkheim's idea that moderate levels of moral regulation are most protective because we are examining a relatively homogeneous society that lacks the kinds of regulative extremes that Durkheim posited were most detrimental with regard to suicide. Thus, the range within which we are measuring the youth population's moral intuitions likely varies along a continuum that is itself fairly moderate. Our ability to draw definitive conclusions is further limited because we are focusing on a set of measures—moral intuitions—which Durkheim did not directly discuss. One way to more fully explore the influence of pronounced (or weak) moral intuitions on suicide risk would be to gather data in “suicide hotspots,” similar to the approach taken by Mueller and Abrutyn (2016). Doing so would enable researchers to examine measures of moral intuitions at their most extreme. In light of our research design, however, the most we can conclude is that the influence of individualizing moral intuitions may level off and become protective at high levels. Although our research design does not allow us to fully test the curvilinearity assumptions inherent in Durkheim's model, our results suggest that further exploration of the curvilinear issue with regard to moral intuitions is warranted.

Our study also suggests interesting possibilities for extending Abrutyn and Mueller's (2016, 2018) theory of over-regulation and suicide. For example, one might expect individuals who are members of the kinds of strongly integrated, culturally concentrated communities that are of interest to Abrutyn and Mueller *and who possess strong binding moral intuitions* to be particularly susceptible to shame (Scheff 1998) and thus especially likely to experience psychological distress and suicidal thoughts when they violate their group's “cultural directives” (Abrutyn and Mueller 2018). Similar arguments would apply to other culturally concentrated contexts in which suicides have been found to cluster (e.g., high schools, cult communities, colleges, military units, etc.). Here again, future studies would benefit from examining the social and contextual factors that moderate the association between moral intuitions and suicide risk.

This study has both strengths and limitations. Its strengths lie in applying a novel theoretical framework for examining suicide risk building on Durkheim and incorporating findings from the growing body of research in moral psychology, and testing this approach using a large, national sample of adolescents. The data, however, are limited in that they come from a sample of youth from a single nation, Iceland. Since, as described above, moral intuitions scores have been shown to vary by nation (Graham et al. 2011; Schreurs et al. 2018) and since, due to their developmental stage, the moral intuitions scores of adolescents are likely to be more malleable than those of adults, the generalizability of our results to other nations and other age groups is unknown. A related issue is that we used respondents' current moral intuitions scores to measure prior suicide risk. Given that some research indicates that moral intuitions may be less stable than theorized by MFT (Smith et al. 2017), it remains unclear whether and to what extent our results would replicate in a longitudinal analysis.

In addition, although we followed prior research in using the thirty-item Moral Foundations Questionnaire (MFQ-30) to measure moral intuitions, we

found that—consistent with other studies conducted outside of the United States (Schreurs et al. 2018)—the Part 1 items lacked discriminant validity, leading us to use a subset of the MFQ-30 items to construct our moral intuitions measures. Future research should explore whether the high correlations among the MFQ-30 items in the Iceland Youth Survey is a function of the Icelandic cultural context or some other factor, such as the young age of the sample, and whether similar relationships between moral intuitions and suicide risk emerge in samples drawn from different locales. Although the current study provides preliminary support for the utility of a moral intuitionist approach, additional research is needed to replicate this work in other national contexts.

Another limitation is that we examined suicide risk (i.e., thoughts and attempts), not completed suicides. The extent to which binding and individualizing moral intuitions predict completed suicides, therefore, remains a question for future research. In addition, the survey instrument used here did not include questions about religion. Given the centrality of religion in previous tests of Durkheim's theory of suicide (e.g., Pescosolido and Georgianna 1989) and in cross-cultural studies of "suicide acceptability" (e.g., Stack 2013; Stack and Kposowa 2016), and given religion's general importance as a cultural force intertwined with morality (Graham and Haidt 2010; McKay and Whitehouse 2015), future studies of the effects of moral intuitions on suicide should attempt to incorporate measures of religiosity.

Finally, as discussed at the outset, research in moral psychology suggests that moral judgments are strongly influenced by intuitive process. And yet the most widely used instrument for measuring moral intuitions (i.e., the Moral Foundations Questionnaire used here) is based on self-report responses to Likert items. The degree to which Likert responses capture intuitions is debatable (Brekhus and Ignatow 2019; Miles et al. 2019; Smith et al. 2017). Thus, to examine the influence of moral *intuitions* per se it would be helpful for future researchers to adopt measurement strategies specifically designed for that purpose, such as the Brief Implicit Associations Test or the Affect Misattribution Procedure, both of which have shown promise as measures of intuitive mental processes involved in moral cognition (Miles et al. 2019).

In closing, it is interesting to consider that while modernization has brought with it a decline in the importance of binding moral values such as community, authority, and sacredness, and a corresponding rise in moral individualism and self-expressionism (Durkheim 1979; Giddens 1991; Inglehart 1990), and while this pattern of change has brought many benefits (Hampton and Wellman 2018), it is also correlated with increased rates of suicide (Wray et al. 2011). Against this backdrop, the results of the current study suggest that socially shared systems of norms, values, and obligations capable of stimulating an intuitive commitment to the binding influence of groups may be a factor in promoting mental health, particularly within economically advanced, secular and individualistic cultures such as the one examined here.

Although this assertion may seem at odds with recent work suggesting that autonomy and self-actualization are positive for individuals (Schwartz and Sortheiz 2018) and that densely knit networks may be experienced as oppressive

(Hampton and Wellman 2018; Mueller and Abrutyn 2016), it may also be the case that self-actualization, which describes a positive experience of autonomy, moderates the effects of individualizing moral intuitions on suicide risk such that being high in individualizing moral intuitions but *not* feeling comfortable with and empowered by it, may increase psychological distress and raise suicide risk. This speculation may help to explain our finding that the relationship between individualizing moral intuitions and suicide risk is non-linear. More specifically, individuals with the highest levels of individualizing moral intuitions may include a disproportionate number who feel satisfied with their individualizing moral orientation. A better understanding of the lived experiences of individuals who vary in their endorsements of individual-oriented and group-oriented moral intuitions would therefore seem an interesting point of departure for future research.

Notes

1. Iceland is an economically advanced country with a largely secular and individualistic national culture. The country's suicide rate (13.1 per 100,000) is ranked 43 out of 177 nations catalogued by the World Health Organization in 2017. This compares to a rate of 14.3 and rank of 38 for the U.S., 16.3 and 27 for Finland, 15.4 and 32 for Sweden, and 10.1 and 69 for Norway. Worldwide, suicides increased 60% during the last four decades and are now among the three leading causes of death among 16–21-year olds (Sigfusdottir et al. 2013).
2. Although Durkheim was primarily interested in explaining suicide *rates*, he was also concerned with the influence of contextual factors on *individuals* (Abrutyn and Mueller 2014a); however, he did not discuss how to measure such influences at the individual level (Mueller et al. 2017; Thorlindsson and Bjarnason 1998). Thus, most prior sociological work focuses on social integration (conceptualized as supportive social networks) and is pitched at the macro- or meso-levels, leaving the individual-level implications of Durkheim's moral-regulative framework largely unexplored.
3. Graham et al. (2018) suggests the possibility of a sixth foundation, Liberty/Oppression, but this has not yet been integrated into the measurement instrument.
4. An analogous distinction between individual- and group-oriented forms of morality is made in the literature on values (e.g., Longest, Hitlin and Vaisey 2013; Inglehart 1990; Miles 2015; Schwartz 2012).
5. Because our moral intuition scales are unconventional, we replicate our main analyses using the full MFQ-30, which combines all Part 1 and Part 2 items (these results are shown in Appendix Table A2).
6. Due to the homogenous nature of the Icelandic population, respondents were not asked to report their race or ethnicity. Nor were they asked about their religious affiliation or church attendance. As of 2018, Iceland's largest immigrant populations were from Poland (39% of immigrants),

Lithuania (6%), and the Philippines (4%); and according to the Association of Religion Data Archives website, as of 2019, over 75% of Icelanders consider themselves religious, but only 12% attend religious services at least monthly.

7. The full set of models with squared terms and with interaction terms are available from the authors on request.
8. The imputation model included all variables in the analyses as well as the school identifier (seven respondents missing a school identifier were dropped from the analysis prior to imputation). We also included five auxiliary variables that were correlated with the missingness of variables in the analysis (i.e., soda consumption, impact of disabilities on academic performance, and academic rigor, career opportunities, and peer preferences as factors in university selection) and two auxiliary variables that were correlated with scores on several variables (i.e., telling someone about suicidal thoughts and self-reported mental health) (Collins, Schafer, and Kam 2001; Mustillo 2012).
9. To obtain average predicted probabilities using Stata's "mimrgns" command, we compute all squared and interaction terms passively (i.e., post-imputation). The passive approach may bias squared terms toward zero (White, Royston, and Wood 2011), leading some to recommend the "just another variable" (JAV) approach (i.e., calculating squared and interaction terms pre-imputation; see von Hippel 2009). However, although JAV reduces bias, it is incompatible with many post-estimation commands, including "mimrgns." We thus followed White et al.'s (2011) recommendation to estimate models using both passive and JAV approaches as a robustness check in situations where neither is ideal. Results obtained using both approaches were substantively similar.
10. We also estimated models with higher order polynomial terms for the moral intuitions measures (none were significant), as well as models assessing curvilinear effects in the social integration variables. We found significant effects for parental support² ($b = -.105$, $p = .017$) and school attachment² ($b = -.104$, $p < .001$) for suicidal thoughts only. The protective effects of these variables were stronger at higher scale scores.

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Appendix Table A1. Moral Foundations Questionnaire Items.^a

MFQ-30 PART 2 SCALE (AGREE/DISAGREE)	Moral Foundation	Scale
Respect for authority is something all children need to learn	Authority	
Men and women each have different roles to play in society	Authority	Binding
If I were a soldier and disagreed with my commanding officer's orders, I would obey anyway because that is my duty	Authority	Binding
I am proud of my country's history.	Loyalty	
People should be loyal to their family members, even when they have done something wrong	Loyalty	
It is more important to be a team player than to express oneself	Loyalty	Binding
People should not do things that are disgusting, even if no one is harmed	Sanctity	
I would call some acts wrong on the grounds that they are unnatural	Sanctity	Binding
Chastity is an important and valuable virtue	Sanctity	
Compassion for those who are suffering is the most crucial virtue	Care	Individualizing
One of the worst things a person could do is hurt a defenseless animal	Care	Individualizing
It can never be right to kill a human being	Care	Individualizing
When the government makes laws, the number one principle should be ensuring that everyone is treated fairly	Fairness	Individualizing
Justice is the most important requirement for a society	Fairness	Individualizing
I think it's morally wrong that rich children inherit a lot of money while poor children inherit nothing	Fairness	

Note: **Bolded** items loaded on the appropriate factor and are included in the final moral intuition scales (factor analysis results available from the authors on request).

^aPart 1 items (coded 1 = not relevant at all to 6 = extremely relevant) included: Whether or not someone suffered emotionally (Care); Whether or not some people were treated differently than others (Fairness); Whether or not someone's action showed love for his or her country (Loyalty); Whether or not someone showed a lack of respect for authority (Authority); Whether or not someone violated standards of purity and decency (Sanctity); Whether or not someone cared for someone weak or vulnerable (Care); Whether or not someone acted unfairly (Fairness); Whether or not someone did something to betray his or her group (Loyalty); Whether or not someone conformed to the traditions of society (Authority); Whether or not someone did something disgusting (Sanctity); Whether or not someone was cruel (Care); Whether or not someone was denied his or her rights (Fairness); Whether or not someone showed a lack of loyalty (Loyalty); Whether or not an action caused chaos or disorder (Authority); Whether or not someone acted in a way that God would approve of (Sanctity).

Appendix Table A2. Logistic Regression Models Predicting Suicide Risk from the Full MFQ-30 (*n* = 10,710)^a

	DV: Suicidal Thoughts		DV: Suicide Attempts	
	Model 1		Model 2	
	b	SE	b	SE
Binding MFs	−.087	.049	−.114	.072
Individualizing MFs	.269**	.045	.117	.066
Parental support	−.315***	.044	−.308***	.058
Parental monitoring	−.244***	.040	−.155**	.056
Peer support	−.089*	.044	−.041	.059
School attachment	−.558***	.032	−.389***	.041
Self-control	−.053	.045	−.088	.065
Self-efficacy	−.335***	.037	−.337***	.052
Suicide exposure	.964***	.052	1.544***	.084
Life stress	.242***	.018	.210***	.023
Parental education	−.014	.023	.003	.033
Foreign language	−.885***	.191	−.364	.244
Female	.331***	.060	.339***	.088
Age	.005	.021	−.028	.032
Pseudo R ²	.210		.230	

Note: All models include dummy variables for respondents' school identifier (not shown). MFs = Moral foundations. DV = dependent variable. b = unstandardized regression slope. SE = standard error.

**p* < .05.

***p* < .01.

****p* < .001.

^aWe replicate the main findings (presented in Table 2) using the full MFQ-30. The full individualizing measure is comprised of all Part 1 and Part 2 items corresponding to Care and Fairness (for a total of 12 items; alpha = .90). The full binding moral measure is comprised of all Part 1 and Part 2 items corresponding to Authority, Loyalty, and Sanctity (for a total of 18 items; alpha = .90). The correlation between these measures is .77. *Given the factor analysis results and high bivariate correlation between the scales, both of which suggests a lack of discriminant validity between the scales, we urge caution in interpreting the results reported below.* We note that the most divergent findings were for binding moral intuitions, which is unsurprising given that a greater number of items from the binding moral intuitions scale were problematic.

Appendix Table A2 (above) shows models predicting suicidal thoughts and attempts from the full MFQ-30 measures (as in Table 2 in the main analysis). As in the main analysis, individualizing moral intuitions are positively and significantly associated with suicidal thoughts, but not attempts. However, the effects of the binding moral intuitions are not significant for either outcome. Additional models including squared terms showed curvilinear effects for both the individualizing moral intuitions scale (*b* = −.065, *p* < .001) and the binding moral intuitions scale (*b* = −.082, *p* = .021) in predicting suicidal thoughts, but not attempts (*b* = −.025, *p* = .307 for individualizing; *b* = −.021, *p* = .484 for binding). These models and their accompanying figures are available from the authors on request.