



# Parental overprotection and youth suicide behavior in low- and middle-income countries: a multilevel analysis of cross-national data

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## Abstract

**Objectives** Research on youth suicide behavior has emphasized parent–child relations as a critical protective factor. This study investigates whether “too much” regulation of children, i.e., overprotection, may actually increase the likelihoods of youth suicide intent and plan.

**Methods** Data are drawn from the subset of the Global School-based Student Health Survey (2000–2012), consisting of children living in 48 low- and middle-income countries. Two-level hierarchical linear models are fitted to examine the potential curvilinear (U-shaped) association between parental monitoring and suicide behavior among youth.

**Results** Adjusting for individual- and country-level covariates, significant support is found for non-monotonicity specifically among boys: Greater parental involvement in male children’s lives lowers both suicide ideation and suicide plan to some extent but, after certain thresholds, increases the odds of both outcomes. Results for girls, however, are much less pronounced.

**Conclusions** In resource-poor countries marked by some of the highest teenage suicide rates in the world, overprotective parenting style is found to have negative and gendered consequences on the mental health of youth. More research is needed to confirm its replicability in economically more developed societies.

**Keywords** Youth suicide behavior · Parental monitoring · Overprotection · Global School-based Student Health Survey

## Introduction

According to the World Health Organization’s Mortality Database of young people (aged 15–19), suicide was the fourth leading cause of death for them globally (Wasserman et al. 2005). The latest report estimates that, after automobile accidents, suicide claims more young lives than any other cause (WHO 2017). While youth suicide behavior is a grave public health concern throughout the world today, not every young person is equally susceptible to it. As of 2015, 78% of all self-imposed lethal acts

occurred in low- and middle-income countries (LMICs) (WHO 2017). In light of the fact that 90% of the world’s children live in such economically underprivileged areas, understanding why and under what conditions they contemplate and commit suicide deserves special attention (WHO 2014). The vast majority of data and research concerning youth suicide, however, are based on North American and European cases (Ibrahim et al. 2014; Page et al. 2013; Randall et al. 2014). Consequently, the extant research community lacks understanding of “the true extent of teenage suicide..., resulting in a Western bias” (McLoughlin et al. 2015: 765).

Based on data primarily from high-income countries, researchers have investigated a variety of potential factors underlying suicide. They include, for example, depression (Baumann et al. 2013), anxiety (Storch et al. 2015), poor self-esteem (McMahon et al. 2010), loneliness (Saffer et al. 2014), hopelessness (Bolland 2003), substance use (Litwiller and Brausch 2013), bullying involvement (Yen et al. 2015), peer victimization (D’Augelli et al. 2005), physical

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abuse (Fisher et al. 2012), adverse childhood experiences (Cluver et al. 2015), sexual orientation (Arnarsson et al. 2015), and gender (Eskin 2012). In addition to above-mentioned risk factors, prior studies have also examined the ways in which certain protective factors are related to youth suicide. In particular, scholars have emphasized the role of social support in the form of peer and familial (e.g., parent–child) relations. Quality relationships with friends and family are known to have a positive influence on adolescent mental health (Eskin 2012; Fotti et al. 2006; McMahon et al. 2010). Relational social support provides a stress-buffering mechanism, especially for vulnerable subjects such as those who are suicide-prone (Kerr et al. 2006; Whitlock et al. 2014).

### Parent–child relations and youth mental health

While research on the protective role of peer relations has gained fairly consistent empirical support, findings concerning the parental role in relation to adolescent suicidality have been much more divergent. On the one hand, studies have found “parental warmth” (Farrell et al. 2015) and “parental nurturance” (Fotti et al. 2006) to be highly protective against suicidality and suicide attempt. It is argued that family support or parent–child relationship may be the single most pivotal factor in shielding young people from deadly self-destructive behavior (Bilgin et al. 2007; Kerr et al. 2006). A substantial literature demonstrates that youth who receive more care and supervision from their parents are much less likely to think about, plan and/or engage in suicide (Kidd et al. 2006; Yen et al. 2014).

On the other hand, a growing number of studies have challenged the notion that parental involvement and supervision are, by definition, protective. According to them, parenting style is crucial. That is, while “good” parenting can be salubrious, “poor” parenting may exacerbate children’s mental and psychological problems and thereby raise the odds of youth suicide behavior. Indeed, “parental disconnectedness” (Borowsky et al. 2001) and “improper parental rearing” (Xing et al. 2010) have been demonstrated to be a persistent risk factor. Similarly, some scholars have stressed the concept of “affectionless control” measured using the parental bonding instrument (PBI). Originally defined as a combination of low on care and high on control or overprotection (Parker et al. 1979), it has been shown to correlate strongly with internalizing (Campos et al. 2010; Saffer et al. 2014) and externalizing (Hiramura et al. 2010; Lobera et al. 2011) problems among children and adolescents. According to a systematic review, parenting style that is neglectful and/or “overly controlling” also adds to youth suicide outcomes (Goschin et al. 2013).

Currently, there is a lack of scholarly consensus on the association between parent–child relations and suicide intent, plan, and attempt among youth. As the issue remains subject to further inquiry, it is unclear as to how much or what kind of parental involvement is protective of youth against suicide behavior. Put another way, whether more parental regulation and monitoring necessarily provide better protection remains an empirical question. *Under*-protection (i.e., lack of proper support by parents) has been found to elevate the likelihood of suicide thinking and attempt among young people (Bilgin et al. 2007; Fotti et al. 2006; Kidd et al. 2006). Yet, *over*-protection has also been known to correlate with higher levels of youth suicidality, though the data support has been much less consistent on this matter (Goschin et al. 2013). According to one noteworthy study based on a small Western sample, parents who are too demanding and controlling toward their children increase their suicidality by making them worry more and experience higher levels of social anxiety (Affrunti and Ginsburg 2012). Using non-probability US data, another concludes that poor parent–child relational dynamics elevate the likelihoods of suicide ideation and attempt (Saffer et al. 2014).

### Study aim

What is the precise nature of the linkage between suicide (ideation and plan) and parent–child interaction among youth? Does a curvilinear relationship exist suggesting ill effects of parental overprotection? Is there an “optimal” level or range of parental involvement in relation to youth suicide intent and plan? The primary aim of this research is to empirically probe these critical questions, specifically in the context of resource-poor countries. Prior findings have mainly stressed the negative impact of perceived *lack* of parental closeness and support on the mental health of children. As a result, relatively little is known about the impact of “too much” parental care and monitoring. The current research shifts the analytic focus to this understudied and unsettled topic: the extent to which parental overprotection may possibly increase the propensity toward thinking about and planning for suicide among youths living in less advanced economies.

A recent meta-analysis of research published between 2003 and 2014 on teenage suicide throughout the world reveals only four articles with a cross-national design, out of which two analyzed more than just three cases (McLoughlin et al. 2015). This study adds to suicidology by using a large dataset comprising probability samples of school-aged children collected across dozens of LMICs. In addition to the empirical contribution, the current research also advances the literature by testing, for the first time, a complex (non-monotonic) association between parent–

child relationship and youth suicide behavior in a multi-country context and using a multilevel analytic framework. In so doing, it provides novel findings from which general theoretical lessons and implications can be drawn concerning one of the most pressing public health issues facing children and adolescents the world over (WHO 2014).

## Methods

### Study design

Data for this study come from the Global School-based Student Health Survey (GSHS), a cross-national project conducted by the World Health Organization (WHO) in collaboration with UNICEF, UNESCO, and UNAIDS. Technical assistance was provided by the US Centers for Disease Control and Prevention (CDC). The survey was carried out in participating LMICs, targeting students aged 13–17 years old through a self-administered questionnaire during one regular class period. In selecting subjects, a two-stage probability sampling technique was used, where the primary sampling units consisted of schools with a probability proportional to their enrollment size. In the second step, a systematic sample of classes in the selected school was obtained, in which all attending students were eligible to participate in the survey.

Consistent with the GSHS study protocol, questionnaires were administered to all eligible participants in an anonymous, voluntary manner. Explicit written permission was obtained from each participating school and from all classroom teachers, along with the parental consent. Since 2000, the first year in which the data collection began, more than 94 countries (over 450,000 students) have participated in the GSHS, out of which 80 countries have made their data publicly available at the time of this study. Countries for which the questions about suicide intent and its risk/protective factors had not been asked were automatically dropped from the analysis. Five countries were further excluded since, according to the World Bank classification, they belong in the high-income category (HIC): namely, Kuwait, Brunei, UAE, Cayman Islands, and British Virgin Islands. The final pooled dataset contains 142,716 students in 48 LMICs. With the listwise deletion of cases with item-level missing data, the effective sample sizes for suicide intent and suicide plan, respectively, are 124,016 and 124,474. Table 1 summarizes the countries analyzed in the dataset according to continents (for more detailed cross-national description, see McKinnon et al. 2016). The study protocol for each country was approved by an ethics committee affiliated with the respective Ministries of Health and Education. Details of the contact persons in charge of the GSHS design and the

human subjects approval, along with the information on data collection procedures (core questionnaires, item rationale, fact sheets, response rate, etc.), are available at the official CDC Web site ([www.cdc.gov/gshs](http://www.cdc.gov/gshs)).

### Measures

Two outcome variables are used to examine youth suicide behavior: *Suicide Ideation* and *Suicide Plan*. The former measures the occurrence of having seriously contemplated committing suicide in the past, and the latter measures whether or not a concrete plan was carried out for it. As for the main predictor variable, *Parental Monitoring* is operationalized by creating a scale based on survey items that tap levels of parental involvement in three distinct areas of children's life: academic, emotional, and social. To test for the possible curvilinear association, a quadratic term is also calculated (*Overprotection*). The two predictors were then transformed into standardized scores, with the mean of zero and the standard deviation of one. Alternative models (not shown) were estimated using raw, i.e., unstandardized, variables. Main results did not differ from those reported and discussed below.

For a more stringent test of the relationship between children's suicide behavior and overregulation by parents, a number of mediators and confounders are included in the analysis at the student level: age, gender, food scarcity (as a proxy for household socioeconomic background), general mental health and emotional state (anxiety and loneliness), truancy, violence victimization, peer hostility, and friendship size. In addition, at the country level, per capita GDP measure, along with a variable indicating the survey year, is also taken into account to adjust for possible contextual effects. Details of coding and survey items used for the variable construction are presented in Table 2. Table 3 summarizes the descriptive statistics.

### Analytic approach

The GSHS data are hierarchically nested, that is, individual students are clustered in different nations. As a result, running standard regression models can produce biased parameter estimates by underestimating the standard errors (Raudenbush and Bryk 2002; Snijders and Bosker 2011). To remedy this methodological problem and simultaneously test individual- and contextual-level effects, multi-level random intercepts models are estimated. Since the dependent variables are dichotomous, Hierarchical Generalized Linear Models (HGLMs) with a Bernoulli logit function are fitted. To address the problem of collinearity, all non-dummy student-level variables are centered at the group mean. The country-level variable is grand-mean centered. The analysis uses the recommended weights

**Table 1** Summary of countries in the subset of data analyzed

Countries based on WHO region	Income classification	Year of survey	Suicide ideation	Suicide plan
Africa				
Algeria	UMC	2010	0.22	0.29
Benin	LIC	2006	0.23	0.29
Botswana	UMC	2002	0.27	0.29
Kenya	LIC	2000	0.18	0.16
Malawi	LIC	2008	0.19	0.21
Mauritania	LIC	2007	0.11	0.07
Mauritius	UMC	2007	0.18	0.19
Namibia	LMC	2004	0.17	0.13
Senegal	LIC	2005	0.23	0.17
Seychelles	UMC	2007	0.11	0.08
Uganda	LIC	2000	0.16	0.13
Tanzania	LIC	2003	0.22	0.21
Zimbabwe	LIC	2003	0.19	0.18
Americas				
Anguilla		2009	0.22	0.21
Antigua	UMC	2006	0.20	0.16
Argentina	UMC	2004	0.19	0.17
Chile	UMC	2001	0.05	0.04
Colombia	LMC	2007	0.18	0.21
Costa Rica	UMC	2006	0.01	0.00
Ecuador	LMC	2004	0.09	0.10
Grenada	UMC	2005	0.09	0.06
Guyana	LMC	2001	0.17	0.16
Jamaica	LMC	2007	0.15	0.14
Peru	LMC	2007	0.14	0.13
Saint Lucia	UMC	2004	0.07	0.08
Saint Vincent	LMC	2004	0.21	0.14
Suriname	LMC	2006	0.14	0.07
Trinidad/Tobago	UMC	2004	0.35	0.34
Uruguay	UMC	2006	0.29	0.24
Eastern Mediterranean				
Djibouti	LMC	2006	0.10	0.08
Iraq	LMC	2009	0.16	0.11
Jordan	LMC	2001	0.14	0.17
Libya	UMC	2007	0.14	0.11
Morocco	LMC	2003	0.19	0.19
Pakistan	LIC	2006	0.07	0.06
Europe				
Macedonia	LMC	2004	0.17	0.17
Tajikistan	LIC	2005	0.31	0.41
South East Asia and Western Pacific				
India	LIC	2006	0.19	0.19
Indonesia	LIC	2004	0.33	0.40
Maldives	LMC	2006	0.30	0.28
Myanmar	LIC	2004	0.18	0.22
Sri Lanka	LMC	2008	0.08	0.11

**Table 1** (continued)

Countries based on WHO region	Income classification	Year of survey	Suicide ideation	Suicide plan
Thailand	LMC	2005	0.19	0.18

*Data source* Global School-based Student Health Survey (2000–2012)

*LIC* Low-income country; *LMC* low middle-income country; *UMC* upper middle-income country; *WHO* World Health Organization; income classification follows the World Bank guideline. Information on Anguilla, an overseas British territory, is not available. Values for suicide ideation/plan are shown as proportions

**Table 2** Summary of variable definition and coding

Variable name	Survey questions and coding
Suicide Ideation ( <i>N</i> = 124,016)	“During the past 12 months, did you ever <i>seriously</i> consider attempting suicide?” Coded 1 if “Yes”
Suicide Plan ( <i>N</i> = 124,474)	“During the past 12 months, did you make a plan about how you would attempt suicide?” Coded 1 if “Yes”
<b>Student-level</b>	
Age	“How old are you?” (e.g., 1 = 11 years old or younger; 2 = 12 years old; 3 = 13 years old; 6 = 16 years old)
Female	“What is your sex?” (female = 1)
Truancy	“During the past 30 days, on how many days did you miss classes or school without permission?” (1 = 0 days, 2 = 1–2 days, 3 = 3–5 days, 4 = 6–9 days, 5 = 10 or more days) The responses are recoded so that “0 days” = 0 and 1 otherwise
Violence victim	“During the last 12 months, how many times were you physically attacked?” (e.g., 1 = 0 times, 2 = 1 time, 3 = 2 or 3 times,... 7 = 10 or 11 times, 8 = 12 or more times)
Loneliness	“During the past 12 months, how often have you felt lonely?” Coded on a 5-point scale (1 = Never, 2 = Rarely, 3 = Sometimes, 4 = Most of the time, 5 = Always)
Anxiety	“During the past 12 months, how often have you been so worried about something that you could not sleep at night?” (Same as above)
Peer hostility	“During the past 30 days, how often were most of the students in your school kind and helpful?” Reverse-coded on a 5-point scale (e.g., 5 = Never, 3 = Sometimes, 1 = Always)
Food scarcity	“During the past 30 days, how often did you go hungry because there was not enough food in your home?” Coded on a 5-point scale (e.g., 5 = Always, 3 = Sometimes, 1 = Never)
Friendship size	“How many close friends do you have?” (1 = 0 friend, 2 = 1 friend, 3 = 2 friends, 4 = 3 or more friends)
Parental monitoring	“During the past 30 days, how often did your parents or guardians check to see if your homework was done?” “During the past 30 days,... understand your problems or worries?” “During the past 30 days,... really know what you were doing with your free time?” Coded on a 5-point scale (e.g., 1 = Never, 3 = Sometimes, 5 = Always) The three survey items were combined to create a scale variable (Cronbach’s Alpha = .67)
Overprotection	<i>Parental Monitoring squared</i>
<b>Country-level (<i>N</i> = 48)</b>	
GDP	Per capita Gross Domestic Product (in current US\$) from the year in which the survey was conducted (Data available at <a href="http://data.worldbank.org/indicator/NY.GDP.PCAP.CD">http://data.worldbank.org/indicator/NY.GDP.PCAP.CD</a> )
Survey year	The year in which the survey was conducted, with values ranging from 1 to 13 (e.g., 2000 = 1, 2001 = 2, 2002 = 3,..., 2012 = 13)

*Data source* Global School-based Student Health Survey (2000–2012)

provided by the GSHS to account for the unequal probability of selection of individual respondents. Statistical modeling is performed using the latest version of HLM 7 (Raudenbush et al. 2011).

## Results

Before running multilevel models, an unconditional model without any of the covariates is run to confirm the existence of dependence or clustering of individual observations (students) across the higher level units (nations). The key

**Table 3** Summary of descriptive statistics

	Mean/proportion	SD	Min.	Max.
Outcome measure				
Suicide ideation	.16	–	0	1
Suicide plan	.14	–	0	1
(Student-level variables)				
Age	4.33	1.26	1	6
Female	.49	–	0	1
Truancy	1.45	.85	1	5
Violence victim	1.84	1.54	1	8
Loneliness	2.23	1.12	1	5
Anxiety	2.12	1.09	1	5
Peer hostility	2.84	1.31	1	5
Food scarcity	1.89	1.07	1	5
Friendship size	3.39	.95	1	4
Parental monitoring	9.06	3.41	3	15
Overprotection	93.77	63.22	9	225
(Country-level variables)				
GDP	7.78	1.01	5.39	9.59
Survey year	6.47	3.35	1	13

*Data source* Global School-based Student Health Survey (2000–2012)

issue is whether students in the same country are more similar with one another in terms of thinking about and planning for suicide, in comparison with those in other countries. Between-country cluster variance components indicate a significant degree of variability for the two outcome variables, *Suicide Ideation* ( $\tau = .72$ ,  $\chi^2 = 6592.97$ ,  $df = 47$ ,  $p < .001$ ) and *Suicide Plan* ( $\tau = 1.37$ ,  $\chi^2 = 8868.82$ ,  $df = 47$ ,  $p < .001$ ). The intraclass correlation (ICC) is also calculated to gauge the degree of data clustering. As shown in Model 1 in Table 4, about 18% of the variation in suicide ideation is due to country-level factors. According to Model 1 in Table 5, almost 30% of the variation in planning for suicide is attributed to contextual effects. As a next step, and for the main purposes of this study, multilevel models are fitted to probe the potential linkage between parental overregulation and youth suicide behavior.

### Cross-national findings for suicide ideation

Results from predicting *Suicide Ideation* are presented in Table 4; statistical output related to *Suicide Plan* is presented in Table 5. First, with respect to thinking about committing suicide, all of the student-level control variables emerge as significant predictors, as shown in Model 2 in Table 4. Specifically, older and female students are more prone to engage in suicide thought. Kids who have

experienced more physical altercations, suffered from lack of food, and skipped school more frequently exhibit higher odds. Put another way, victims of violence, individuals from low-status families, and delinquent students are more likely to entertain the possibility of ending their lives. Two mental health indicators further reach the level of significance: Loneliness and anxiety are positively associated with suicide ideation. Finally, negative assessment of overall peer relations (hostility) increases suicide thought, while having more friends reduces the odds of such occurrence. These findings more or less substantiate earlier studies using data on young people residing in higher-income, i.e., Western, countries (for a general overview, see WHO 2014).

A preliminary test for nonlinear effect was performed using the Box-Tidwell transformation (Cohen et al. 2002). Statistical results from running the two initial regression models (one for *Suicide Ideation* and another for *Suicide Plan*) containing the untransformed and transformed measures for *Parental Monitoring* indicated a significant curvilinear component to it. According to these baseline models (not shown) excluding the control variables, the odds of suicide ideation are about 19% lower for each unit (one standard deviation) increase in the parental involvement measure; while the odds of suicide plan are about 15% lower. Model 3 summarizes the output that includes the background controls along with the variables of main interest, *Parental Monitoring* and *Overprotection*. *Ceteris paribus*, the two predictors are significantly related to the odds of suicide ideation among school-based children in LMICs. The coefficient sign for *Parent Monitoring* is negative and that for *Overprotection* is positive. In other words, the association between parental monitoring of children and their propensity to think about committing suicide is curvilinear. The last model (Model 4) incorporates the GDP variable, along with *Survey Year*, which is positively related to the outcome. That is, controlling for individual characteristics, living in an economically “more developed” country among the LMICs increases the odds of suicide thought for youths. Inclusion of the contextual-level measures does not alter the strength or the magnitude of the non-monotonic association initially shown (in Model 3).

### Cross-national findings for suicide plan

Is there a similar nonlinear pattern found for suicide plan? Evidence for this is provided in Table 5. Looking at Model 2, which contains only the control variables, all of the coefficients are once again significant with the signs pointing in the same directions as before with respect to suicide thought (from Table 4). After adjusting for these variables, according to Model 3, a consistent and robust

**Table 4** Multilevel logistic regression models predicting youth suicide *ideation* (Global School-based Student Health Survey 2000–2012)

	Model 1			Model 2			Model 3			Model 4		
	Coef.	(SE)	Odds ratio	Coef.	(SE)	Odds ratio	Coef.	(SE)	Odds ratio	Coef.	(SE)	Odds ratio
<b>Fixed effects</b>												
<b>(Student-level)</b>												
Age				0.04	(.01)	1.04**	0.03	(.01)	1.03 <sup>#</sup>	0.03	(.01)	1.03 <sup>#</sup>
Female				0.24	(.03)	1.28***	0.27	(.03)	1.31***	0.27	(.03)	1.31***
Truancy				0.17	(.02)	1.18***	0.16	(.02)	1.18***	0.16	(.02)	1.18***
Violence victim				0.14	(.01)	1.15***	0.14	(.01)	1.15***	0.14	(.01)	1.15***
Loneliness				0.30	(.01)	1.35***	0.29	(.01)	1.33***	0.29	(.01)	1.33***
Anxiety				0.30	(.01)	1.35***	0.30	(.01)	1.35***	0.30	(.01)	1.35***
Peer hostility				0.12	(.01)	1.12***	0.05	(.01)	1.05***	0.05	(.01)	1.05***
Food scarcity				0.09	(.01)	1.09***	0.08	(.01)	1.08***	0.08	(.01)	1.08***
Friendship size				− 0.19	(.02)	0.83***	− 0.18	(.02)	0.84***	− 0.18	(.02)	0.84***
Parental monitoring							− 0.24	(.02)	0.79***	− 0.24	(.02)	0.79***
Overprotection							0.07	(.02)	1.07***	0.07	(.02)	1.07***
<b>(Country-level)</b>												
GDP										0.49	(.22)	1.64*
Survey year										− 0.07	(.06)	0.93
Constant	− 2.01***	(.21)	0.13	− 2.35***	(.22)	0.10	− 2.39***	(.22)	0.09	− 1.80***	(.43)	0.17
<b>Random effects</b>												
Level-1 variance component	0.72***			0.74***			0.73***			0.58***		
ICC	18.0%			18.4%			18.2%			15.0%		

GDP Gross domestic product; ICC intraclass correlation; GSHS Global School-based Student Health Survey

<sup>#</sup> $p < 0.1$ , \* $p < 0.05$ , \*\* $p < 0.01$ , \*\*\* $p < 0.001$

curvilinear relationship once again emerges between parental monitoring and the outcome variable. Specifically, overregulating or overprotecting children can add to their psychological distress, as evidenced by the heightened likelihood of making a concrete plan for suicide. As a final test, the GDP and the survey year variables are included in the analysis. Consistent with the earlier case with suicidality, Model 4 shows that national wealth is positively linked with the students' respective propensity for suicide plan, while adjusting for multiple background variables measured at the individual level.

In models not shown, cross-level interaction models were estimated to examine whether national wealth moderates the association between parent–child relations and youth suicide behavior. Results were not significant. Findings from the two sets of multilevel models suggest that in the context of underdeveloped and developing countries, excessive supervision and monitoring of children can produce detrimental results in terms of higher odds for suicide intent and suicide plan. To graphically illustrate the curvilinear relationship, predicted probabilities of the two outcome variables are plotted against the aggregated

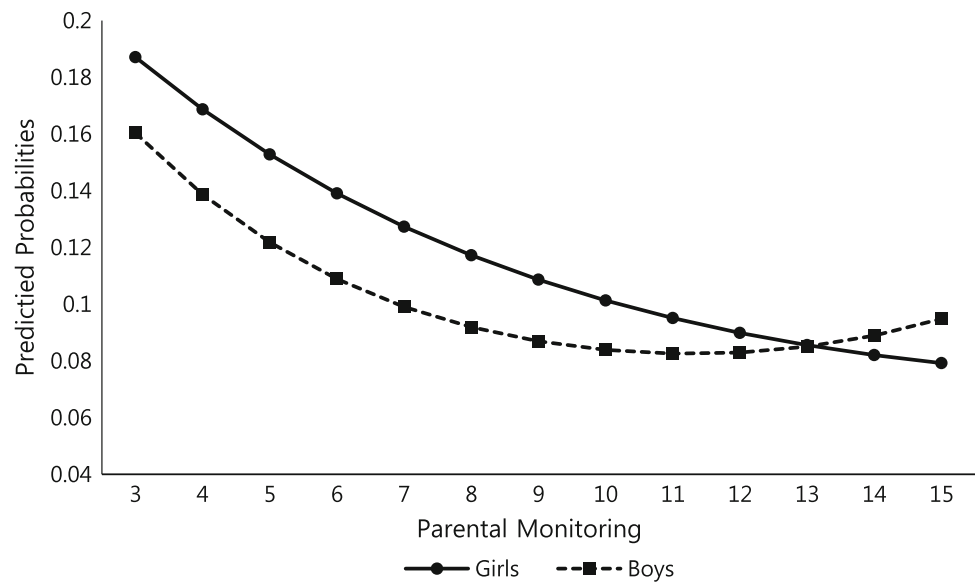
parental monitoring scores using gender-stratified data, while holding other variables in the equation at their numerical means. In both graphs, a “U-shaped” association is visible for boys, while a much straighter (and downward-sloping) line exists for girls, indicating a gender difference. Among boys, as shown in Fig. 1, parental monitoring gradually lowers suicide *ideation* but only to a certain point (threshold value of 11), after which it increases. A parallel finding emerges with respect to suicide *plan* and parental monitoring for male students only, according to Fig. 2, as overprotection is shown to elevate the probabilities. It should be noted, however, that although overprotection is positively associated with higher odds of suicide ideation and plan especially among boys, “too much” parental involvement is nevertheless better than no parental support. For example, according to Fig. 1, children with the lowest parental monitoring score of 3 have a predicted probability of 0.16 on the suicide ideation scale in comparison with those with the most overprotective parents at the far right end of the data distribution, which has a much lower corresponding probability of 0.1.

**Table 5** Multilevel logistic regression models predicting youth suicide *plan* (Global School-based Student Health Survey 2000–2012)

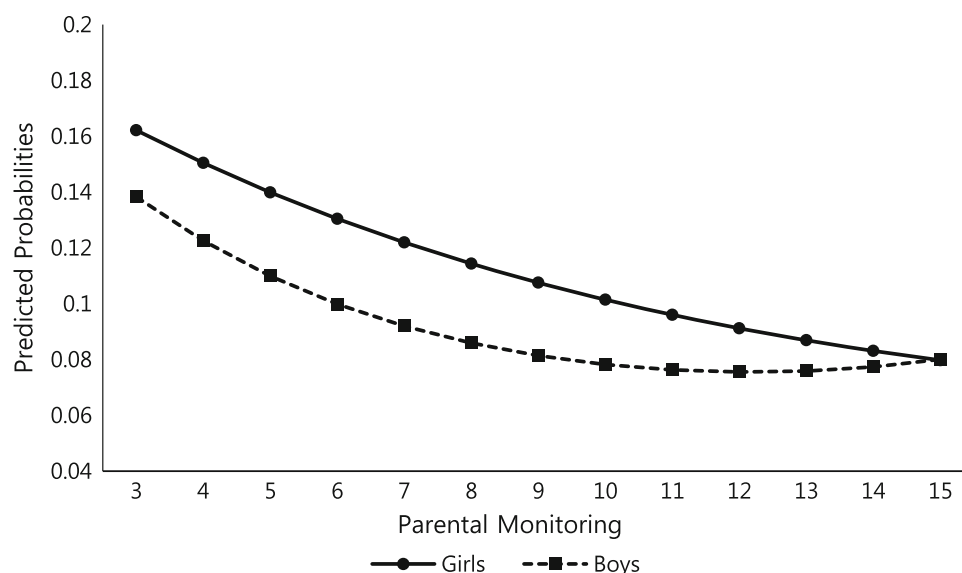
	Model 1			Model 2			Model 3			Model 4		
	Coef.	(SE)	Odds ratio	Coef.	(SE)	Odds ratio	Coef.	(SE)	Odds ratio	Coef.	(SE)	Odds ratio
<b>Fixed effects</b>												
<b>(Student-level)</b>												
Age				0.05	(.01)	1.05***	0.04	(.01)	1.04**	0.04	(.01)	1.04**
Female				0.26	(.03)	1.30***	0.30	(.03)	1.34***	0.30	(.03)	1.34***
Truancy				0.15	(.02)	1.16***	0.13	(.02)	1.14***	0.13	(.02)	1.14***
Violence victim				0.15	(.01)	1.16***	0.15	(.01)	1.17***	0.15	(.01)	1.17***
Loneliness				0.26	(.01)	1.30***	0.25	(.01)	1.28***	0.25	(.01)	1.28***
Anxiety				0.30	(.02)	1.34***	0.29	(.02)	1.34***	0.29	(.02)	1.34***
Peer hostility				0.10	(.01)	1.10***	0.03	(.01)	1.03*	0.03	(.01)	1.03*
Food scarcity				0.08	(.01)	1.08***	0.07	(.02)	1.07***	0.07	(.02)	1.07***
Friendship size				− 0.19	(.02)	0.83***	− 0.18	(.02)	0.84***	− 0.18	(.02)	0.84***
Parental monitoring							− 0.24	(.02)	0.79***	− 0.24	(.02)	0.79***
Overprotection							0.03	(.02)	1.03*	0.03	(.02)	1.03*
<b>(Country-level)</b>												
GDP										0.68	(.30)	1.97*
Survey year										− 0.09	(.08)	0.91
Constant	− 2.23***	(.30)	0.11	− 2.55***	(.29)	0.08	− 2.60***	(.29)	0.07	− 1.84***	(.58)	0.16
<b>Random effects</b>												
Level-1 variance component	1.38***			1.34***			1.32***			1.05***		
ICC	29.6%			28.9%			28.6%			24.2%		

GDP Gross domestic product; ICC intraclass correlation; GSHS Global School-based Student Health Survey

\* $p < 0.05$ , \*\* $p < 0.01$ , \*\*\* $p < 0.001$

**Fig. 1** Nonlinear relationship between parental monitoring and predicted probabilities of youth suicide *intent* (Global School-based Student Health Survey 2000–2012)

**Fig. 2** Nonlinear relationship between parental monitoring and predicted probabilities of youth suicide *plan* (Global School-based Student Health Survey 2000–2012)



## Discussion

Young people in disadvantaged socioeconomic settings are more vulnerable to suicidal tendencies, in comparison with their privileged counterparts (Farrell et al. 2015; Swahn et al. 2012). A report by the World Health Organization identifies, in particular, family context (quality parenting style) for youths as one of the main factors that protect them against suicide (WHO 2014). Parent-mediated social support is indeed a powerful force in delivering psychological assurance and stability to children and adolescents. Research indicates that perceived parental care or connectedness is one of the most robust sources of protection for their mental well-being (Borowsky et al. 2001; Saffer et al. 2014). As this study demonstrates, however, more is not necessarily better. Certainly, there is an appropriate degree of parental involvement and care that is pivotal for shielding young people from suicidal impulses. Yet, overregulation can produce deleterious effects, especially when it comes to boys living in less developed economies.

A major implication of the current research is that parental overprotection may be “too much of a good thing.” How can we make sense of this seemingly paradoxical phenomenon? The literature on social support and stress-coping mechanism is of relevance here. The so-called self-determination theory (Ryan and Deci 2000) concerning motivation and well-being posits three basic human needs: competence, relatedness, and autonomy. In particular, autonomous individuals are much less likely to perceive environmental events and stimuli as being stressful (Weinstein and Ryan 2011). Autonomy or self-efficacy, in other words, is a fundamental component in sustaining emotional health (Milyavskaya and Koestner 2011). Prior research indicates that overprotective social support, even among

adults, can at times weaken individual autonomy and thus undermine psychological well-being. This happens when social support, rather than empowering the receiver, “induces feelings of being controlled” (Zniva et al. 2017: 227). Proper amounts of social support can serve to buffer stress (Cohen and Wills 1985). Too much of it, however, may have the opposite result of reducing self-efficacy, a precursor to poor subjective and objective health outcomes (Joeke et al. 2007).

With respect to youth mental health specifically, there is also evidence that overprotection can lead to negative consequences. Children raised by overprotective parents tend to view their external environment as being excessively threatening and unmanageable, which in turn increases their anxiety level. Such children are more prone to depend on their parents for daily survival and, as a result, suffer from reduced self-competence in coping with reality, which also leads to more heightened sense of anxiety (Affurunti and Ginsberg 2012). Since anxiety strongly correlates with suicide behavior (Boden et al. 2007; Storch et al. 2015), too much parental intervention and monitoring, despite good intentions, can indirectly raise the risk for children’s self-destructive thoughts and actions. Overprotective parenting style is further related to maternal anxiety symptoms (Clarke et al. 2013), a factor also known to contribute to children’s psychopathology including suicidality.

Despite the recognition of its negative potential, the extant literature on suicidology has “neglected suicides predicated on *too much integration or regulation*” (Abrutyn and Mueller 2016: 56; italics added). Instead, the bulk of prior research has emphasized the processes by which limited or lack of social support contributes to suicide thought, plan, and attempt. That is, the theoretical lens has

largely been oriented toward the protective role of social capital available in and through relationships. Underlying this focus is the assumption that for the young, “connectedness” is the most optimal way to minimize and even prevent suicide occurrences (Whitlock et al. 2014). While fully acknowledging the validity of this perspective, the current study has sought to explore a potential “dark side of social capital” (Villalonga-Olives and Kawachi 2017). The main insight from this study is that quantity matters when it comes to parental monitoring. Conventional wisdom suggests that quality parent–child relationship is essential for reducing internalizing and externalizing problems of young people. It should also be noted that overprotection has the unintended effect of possibly adding to their self-destructive tendencies, in particular, for the male gender in LMICs.

An integrative systematic review on the linkage between social capital and adolescent mental health recommends developing a robust theoretical framework to better specify the underlying mechanisms (McPherson et al. 2014). In light of the empirical findings discussed herein, that framework should incorporate the negative implications of overprotection. Too much parental involvement can become a risk factor since it can adversely “influence children’s sense of their own identity and autonomy, which in turn can raise the risk of suicidal ideation” (Goschin et al. 2013: 5). By analyzing population-based data on school-aged children in underdeveloped and developing countries, this study provides substantial evidence in support of this view. The question of whether the aforementioned statistical results are replicable using data on high-income countries is worthy of future investigation.

## Limitations and future directions

The findings reported above should be viewed in light of data limitations. First of all, the GSHS data are cross-sectional. Therefore, it is not possible to infer conclusively the causal direction between youth suicide and parental monitoring, as it is possible that overprotection may result from, rather than precede, suicidal behavior of children. In the statistical models presented above, survey year was included at the country level to control for time variation. Nevertheless, there may be unaccounted confounding effects associated with it. Another shortcoming is that the two outcome variables were measured using single-item questions, a common practice related to problems of reliability and accuracy.

Another issue is that the main predictor is measured solely based on subjective evaluations given by student respondents, which may be biased. In addition, it was operationalized by creating a quadratic term for the combined parental involvement in children’s academic,

emotional, and social lives. As an alternative, using the parental bonding instrument (PBI) may better gauge overprotection with respect to the concept of “affectionless control,” which has been shown to have good construct validity and vary significantly with youth internalizing problems (Campos et al. 2010; Saffer et al. 2014). Aside from student self-reported information, the GSHS also contains very little objective data on family socioeconomic background. Future studies would benefit from separately collected data on, for example, household income and parental educational attainment as well as history of family mental illnesses.

Limitations notwithstanding, this research advances the existing scholarship by offering novel findings on the non-monotonic association between parental monitoring and youth suicide behavior in less developed parts of the world. It remains to be seen whether similar findings can be reproduced in the context of higher-income countries. Is the reported U-shaped relationship among boys peculiar to LMICs or universally valid? The answer holds critical implications globally for the mental and psychological health of children and adolescents. As a comprehensive WHO report makes all too clear, preventing suicide has become “a global imperative” (WHO 2014). Research using better measurements and covering more countries across a broader spectrum of economic development would go a long way in unpacking the conditions under which parent–child relations either produce protective resources that contain youth suicide behavior or, to the contrary, create additional stress that exacerbates it.

## Compliance with ethical standards

**Conflict of interest** The author declares no conflict of interest.

## References

- Abrutyn S, Mueller AS (2016) When too much integration and regulation hurts: reenvisioning Durkheim’s altruistic suicide. *Soc and Men Health* 6:56–71
- Affrunti NW, Ginsburg GS (2012) Maternal overcontrol and child anxiety: the mediating role of perceived competence. *Child Psychiatry Hum Dev* 43:102–112
- Arnarsson S, Thorsteinsson EB, Bjarnason T (2015) Suicide risk and sexual orientation among adolescents: a population-based study in Iceland. *Scan J Public Health* 43:497–505
- Baumann M, Karavdic S, Chau N (2013) Psychological quality of life and employability skills among newly registered first-year students. *Health* 5:617–626
- Bilgin M, Cenkseven F, Satar S (2007) An analysis of parent-female adolescent relationships in female adolescent suicides. *Crisis* 28:190–197

- Boden J, Ferguson D, Horwood J (2007) Anxiety disorders and suicidal behaviours in adolescence and young adulthood: findings from a longitudinal study. *Psych Med* 37:431–440
- Bolland JM (2003) Hopelessness and risk behaviour among adolescents living in high-poverty inner-city neighbourhoods. *J Adolesc* 26:145–158
- Borowsky IW, Ireland M, Resnick MD (2001) Adolescent suicide attempts: risks and protectors. *Pediatrics* 107:485–495
- Campos RC, Besser A, Blatt SJ (2010) The mediating role of self-criticism and dependency in the association between perceptions of maternal caring and depressive symptoms. *Depress Anxiety* 27:1149–1157
- Clarke K, Cooper P, Creswell C (2013) The parental overprotection scale: associations with child and parental anxiety. *J Affect Disord* 151:618–624
- Cohen S, Wills TA (1985) Stress, social support, and the buffering hypothesis. *Psychol Bull* 98:310–357
- Cohen J, Cohen P, West S, Aiken L (2002) *Applied multiple regression/correlation analysis for the behavioral sciences*, 3rd edn. Lawrence Erlbaum Associates Publishers, London
- Cluver L, Orkin M, Boyes ME, Sherr L (2015) Child and adolescent suicide attempts, suicide behavior, and adverse childhood experiences in South Africa: A prospective study. *J Adol Health* 57:52–59
- D'Augelli AR, Grossman AH, Salter NP, Vasey JJ, Starks MT, Sinclair KO (2005) Predicting the suicide attempts of lesbian, gay, and bisexual youth. *Suicide Life Threat Behav* 35:646–660
- Eskin M (2012) The role of childhood sexual abuse, childhood gender nonconformity, self-esteem and parental attachment in predicting suicide ideation and attempts in Turkish young adults. *Suicidol Online* 3:114–123
- Farrell CT, Bolland JM, Cockerham WC (2015) The role of social support and social context on the incidence of attempted suicide among adolescents living in extremely impoverished communities. *J Adolesc Health* 56:59–65
- Fisher HL, Moffitt TE, Houts RM, Belsky DW, Arseneault L, Caspi A (2012) Bullying victimisation and risk of self harm in early adolescence: longitudinal cohort study. *BMJ* 344:e2683
- Fotti SA, Katz LY, Afifi TO, Cox BJ (2006) The associations between peer and parental relationships and suicidal behaviors in early adolescents. *Can J Psychiatry* 51:698–703
- Goschin S, Briggs J, Blanco-Lutzen S, Cohen LJ, Galynker I (2013) Parental affectionless control and suicide. *J Affect Disord* 151:1–6
- Hiramura H, Uji M, Shikai N, Chen Z, Matsuoaka N, Kitamura T (2010) Understanding externalizing behavior from children's personality and parenting characteristics. *Psychiatry Res* 175:142–147
- Ibrahim N, Amit N, Suen MWY (2014) Psychological factors as predictors of suicidal ideation among adolescents in Malaysia. *PLoS ONE* 9:e110670
- Joeke K, Elderen TV (2007) Self-efficacy and overprotection are related quality of life, psychological wellbeing and self-management in Cardiac patients. *J Health Psych* 12:4–16
- Kerr DC, Preuss LJ, King CA (2006) Suicidal adolescents' social support from family and peers: gender-specific associations with psychopathology. *J Abnorm Child Psychol* 34:103–114
- Kidd S, Henrich CC, Brookmeyer KA, Davidson L, King RA, Shahar G (2006) The social context of adolescent suicide attempts: interactive effects of parent, peer, and school social relations. *Suicide Life Threat Behav* 36:386–395
- Litwiller BJ, Brausch AM (2013) Cyber bullying and physical bullying in adolescent suicide: the role of violent behavior and substance use. *J Youth Adolesc* 42:675–684
- Lobera JJ, Rios PB, Casals OG (2011) Parenting styles and eating disorders. *J Psychiatr Ment Health Nurs* 18:728–735
- McKinnon B, Gariépy G, Sentenac M, Elgar FJ (2016) Adolescent suicidal behaviours in 32 low-and middle-income countries. *Bull World Health Organ* 94:340
- McLoughlin AB, Gould MS, Malone KM (2015) Global trends in teenage suicide: 2003–2014. *Q J Med* 108:765–780
- McMahon EM, Reulbach U, Corcoran P, Keeley HS, Perry JJ, Arensman E (2010) Factors associated with deliberate self-harm among Irish adolescents. *Psychol Med* 40:1811–1819
- McPherson KE, Kerr S, McGee E, Morgan A, Cheater FM, McLean J, Egan J (2014) The association between social capital and mental health and behavioural problems in children and adolescents: an integrative systematic review. *BMC Psych* 2:7
- Milyavskaya M, Koestner R (2011) Psychological needs, motivation, and well-being: a test of self-determination theory across multiple domains. *Personal Individ Differ* 50:387–391
- Page RM, Saumweber J, Hall PC, Crookston BT, West JH (2013) Multi-country, cross-national comparison of youth suicide ideation: findings from Global School-based Health Surveys. *School Psychol Int* 34:540–555
- Parker G, Tupling H, Brown LB (1979) A parenting bonding instrument. *Br J Me Psych* 52:1–10
- Randall JR, Doku D, Wilson ML, Peltzer K (2014) Suicidal behaviour and related risk factors among school-aged youth in the Republic of Benin. *PLoS ONE* 9:e88233
- Raudenbush S, Bryk A (2002) *Hierarchical linear models*. Sage Publications, Thousand Oaks, CA
- Raudenbush S, Bryk A, Congdon R (2011) *HLM 7: hierarchical linear and nonlinear modeling*, Lincolnwood IL. Scientific software international, inc
- Ryan R, Deci E (2000) Self-determination theory and the facilitation of intrinsic motivation, social development, and wellbeing. *Am Psych* 55:68–78
- Saffer BY, Glenn CR, Klonsky ED (2014) Clarifying the relationship of parental bonding to suicide ideation and attempts. *Suicide Life Threat Behav* 45:518–528
- Snijders TA, Bosker RJ (2011) *Multilevel analysis: an introduction to basic and advanced multilevel modeling*, 2nd edn. Sage Publishers, London
- Storch EA, Bussing R, Jacob ML, Nadeau JM, Crawford E, Mutch J, Mason D, Lewin AB, Murphy TK (2015) Frequency and correlates of suicidal ideation in pediatric obsessive-compulsive disorder. *Child Psychiatry Hum Dev* 46:75–83
- Swahn MH, Palmier JB, Kasirye R, Yao H (2012) Correlates of suicide ideation and attempt among youth living in the slums of Kampala. *Int J Environ Res Public Health* 9:596–609
- Villalonga-Olives E, Kawachi I (2017) A dark side of social capital: a systematic review of the negative health effects of social capital. *Soc Sci Med* 194:105–127
- Wasserman D, Cheng Q, Jiang G (2005) Global suicide rates among young people aged 15–19. *World Psychiatry* 4:114–120
- Weinstein N, Ryan R (2011) A self-determination theory approach to understanding stress incursion and responses. *Stress and Health* 27:4–17
- Whitlock J, Wyman PA, Moore SR (2014) Connectedness and suicide prevention in adolescents: pathways and implications. *Suicide Life Threat Behav* 44:246–272
- World Health Organization (2014) Preventing global suicide: a global imperative. [http://www.who.int/mental\\_health/suicide-prevention/world\\_report\\_2014/en/](http://www.who.int/mental_health/suicide-prevention/world_report_2014/en/). Accessed 12 Oct 2017
- World Health Organization (2017) Suicide data. [http://www.who.int/mental\\_health/prevention/suicide/suicideprevent/en/](http://www.who.int/mental_health/prevention/suicide/suicideprevent/en/). Accessed 12 Oct 2017
- Xing XY, Tao FB, Wan YH, Xing C, Qi XY, Hao JH, Su PY, Pan HF, Huang L (2010) Family factors associated with suicide attempts among Chinese adolescent students: a national cross-sectional survey. *J Adolesc Health* 46:592–599

- Yen CF, Lai CY, Ko CH, Liu TL, Tang TC, Wu YY, Yang P (2014) The associations between suicidal ideation and attempt and anxiety symptoms and the demographic, psychological, and social moderators in Taiwanese adolescents. *Arch Suicide Res* 18:104–116
- Yen CF, Liu TL, Yang P, Hu HF (2015) Risk and protective factors of suicidal ideation and attempt among adolescents with different types of school bullying involvement. *Archives of Suicide Research* 19:435–452
- Zniva R, Pauli P, Schulz SM (2017) Overprotective social support leads to increased cardiovascular and subjective stress reactivity. *Biological Psy* 123:226–234