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Suicide Ideation, Depression, and Family Structure in Elementary Students

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1 **Suicide Ideation, Depression, and Family Structure in Elementary Students**

2 **Introduction**

3 It is commonly thought that young children do not have the developmental capacity to
4 understand the concept of suicide, let alone experience suicide-related thoughts or behaviors
5 (Wise & Spengler, 1997). This reflects the lack of research on suicide in children under 12. In
6 fact, there are no evidence-based measures (Tishler, Reiss, & Rhodes, 2007) or even evidence-
7 based treatment recommendations (Anderson, Keyes, & Jobes, 2016; Jobes et al., 2019) for
8 children under 12 with suicidal behavior.

9 The reality is that children can and do die by suicide. Recent data indicate that suicide
10 deaths for children under 12 are on the rise (Centers for Disease Control and Prevention, 2018)
11 and are now the second leading cause of death in the United States for children 10 to 14.
12 Between 1990 and 2000, 780 children aged 12 and under died by suicide. Between 2006 and
13 2016, that number rose to 908, an increase of 16.4% (CDC, 2018). We are not aware of any data
14 that report suicide attempts in this under 12 age group.

15 A few studies have tried to examine the prevalence of suicidal ideation in this age group.
16 Most of the studies examined community samples and primarily used one question to measure
17 suicidal ideation. Giannetta and colleagues (2012) surveyed 387 students in the Philadelphia
18 school district and found nearly 6% of students between the ages of 10 and 12 reported suicidal
19 ideation and/or self-harm behavior. By comparison, Freeman, Mokros, and Poznanski (1993)
20 studied 223 children between the ages 6 and 12 (using a one-item measurement to assess suicidal
21 ideation on a seven-point scale) and found a 16.6% prevalence rate for suicidal ideation. In a
22 much larger cross-sectional study, Kovess-Masfety and colleagues (2015) attempted to measure
23 suicidal ideation in elementary students in Europe. Their survey used computerized cartoon

24 images and voiceover “yes” or “no” questions for the students to answer; one item was used to
25 measure suicidal ideation. The cartoon depicted a child standing on the edge of a bridge looking
26 down, and the voiceover asked, "Do you often think about death or killing yourself?" Nearly
27 17% of students answered “yes” to this question; however, this question does not clearly assess
28 suicidal ideation. Children may have answered “yes” because they have frequent thoughts about
29 death rather than thoughts of killing themselves. It is important to note that in all studies
30 previously discussed, suicidality or suicide ideation is measured through a single item and mostly
31 dichotomously (either no thoughts of suicide or some amount of suicidal thoughts). While
32 valuable, this method of analysis limits our understanding of the extent of suicide ideation that a
33 child experiences.

34 Family structure and relationships have been found to be an important aspect of
35 understanding suicide-related thoughts and behaviors in youth. Family conflict and cohesion
36 have been identified as important risk and protective factors, respectively (Brent et al., 2009;
37 Chioqueta & Stiles, 2007; Halstead, Pavkov, & Hecker, 2014). Families of suicidal youth have
38 been shown to have greater difficulty in communication, lower levels of cohesion, maladaptive
39 control, and higher levels of conflict (Brent et al., 2008; Connor & Rueter, 2006; Garber &
40 Flynn, 2001; Kerr, Preuss & King, 2006; Ursoniu, Putnoky, Vlaicu, & Vladescu, 2009).
41 Parenting and attachment styles have been found to be associated with suicide-related thoughts
42 and behaviors (Cruz, Narciso, Munoz, Pereira, & Sampaio, 2013; Sheftall, Mathias, Furr, &
43 Dougherty, 2013; Sheftall, Schoppe-Sullivan, & Bridge, 2014). While nearly all of our
44 understanding of the connection between family relationships and suicidal behavior comes from
45 adolescents, there is some evidence these connections exists for younger children as well (for
46 review, see Anderson et al., 2016; Hetrick et al., 2012; Tishler et al., 2007), though this evidence

70 **Participants**

71 All 115 children between the ages of 8 and 12 ($M = 9.65$) attended the same rural
72 intermediate elementary school in northern Wisconsin. Participants were randomly selected from
73 classes in which the first author was a counselor, including three third grade classes ($N = 47$),
74 two fourth grade classes ($N = 37$), and two fifth grade classes ($N = 31$) at the same school.
75 Students were given an informed consent to take home to their parents or guardians. All students
76 also assented to participate. The gender composition of the sample was 60.9% female ($N = 70$)
77 and 39.1% male ($N = 45$). Of the sample, 57.4% identified themselves as White ($N = 66$) and
78 42.6% as non-White ($N = 49$). A breakdown of the subjects by gender, race, and grade is
79 provided in Table 1. The participants' demographics closely resembled those of the whole
80 school—55.8% White, 31.9% Native American, 9.3% two or more races, 2.1% Hispanic, 0.6%
81 Black, and 0.3% Asian. According to school district records, 15% of students at the school have
82 an identified disability, and 67.2% are identified as economically disadvantaged; however, we
83 did not assess for either disability or economic status in our survey.

84 *****TABLE 1 HERE*****

85 **Measures**

86 **Demographics.** Students filled out a brief demographic survey that included age, gender,
87 race, and who lived at home with them. Gender, race, and living with mother, father, or both
88 parents were dummy-coded into dichotomous variables: gender was coded to 0 = female and 1 =
89 male; race was coded to 0 = racial minority (non-White) and 1 = racial majority (White);
90 whether they lived with mother/father/both parents/neither parent were all coded to 0 = no and 1
91 = yes.

92 **Suicide ideation.** Suicide ideation was measured through a simplified version of the

93 Suicidal Ideation Questionnaire-Junior (SIQ; Reynolds & Mazza, 1999). The items were adapted
94 both to a 4-point scale (*Never, Sometimes, Often, Always*; scored 0, 1, 2, 3) and to be presented
95 in present tense (e.g., “*I think it would be better if I was not alive*” rather than “*I thought it would*
96 *be better if I was not alive*”) to make it more developmentally appropriate for younger children
97 (Mellor & Moore, 2013). Total possible scores for the suicide ideation item ranged from 0 to 27.
98 The internal consistency for suicide ideation was excellent ($\alpha = .96$).

99 **Depression.** Depression was measured through an 11-item adapted and abbreviated
100 version of the Children’s Depression Inventory (CDI; de la Vega et al., 2016; Olorunju, Akpa, &
101 Afolabi, 2018). Table 2 shows these 11 CDI items and the order in which they were included.
102 Our CDI variation includes questions such as, “*I am sad all the time*” or “*All bad things are my*
103 *fault.*” We also altered the 3-option response (*Not at all, Sometimes, Always*) to a 4-option
104 (*Never, Sometimes, Often, Always*; scored 0, 1, 2, 3) to better match a survey these students were
105 accustomed to taking and to mirror the suicide ideation measure. Total possible scores for the
106 depression item ranged from 0 to 30. The internal consistency for depression was strong ($\alpha =$
107 0.89).

108 **Data Analysis**

109 All data screening and analyses were run using RStudio 1.1.414. Descriptive statistics of
110 all variables are included in Table 2. We ran bivariate correlation analyses for each variable and
111 then a series of exploratory and confirmatory factor analyses to determine if the data showed
112 more than one factor. We then reported fit indices as indicated by Kline (2010).

113 *****TABLE 2 HERE*****

114 **Results**

115 **Factor Analysis**

116 We estimated two factors (depression and suicide) to show from our analyses; scree plot
117 analysis (see Figure 1) supported this estimation, suggesting two strong factors and potentially
118 suggesting a third factor. We then constrained the models to load to 1- (null), 2-, and 3-factor
119 solutions. The 2-factor model loaded better than the single factor (null) model, with clear factors
120 representing depression and suicide ideation (see Table 3) with only one item (Q-4/CDI-07)
121 loading on both depression and suicide factors. The 3-factor solution also clearly showed a
122 depression factor and two suicide-related factors (which we named *death ideation* and *suicide*
123 *plans*). The same item cross-loaded in the 3-factor solution (Q-4/CDI-07) two factors, in addition
124 to Q-2/CDI-25. After rotation (oblimin), the depression factor accounted for 58% of the variance
125 and the suicide factor accounted for 42% in the 2-factor solution. In the 3-factor solution,
126 depression accounted for 38% of the variance, death ideation accounted for 37%, and suicide
127 plans accounted for 25%.

128 We then compared fit indices for the null (1-factor), 2-, and 3-factor solutions. The 2-
129 factor model improved all fit indices from the null model and the 3-factor improved all indices
130 compared to the 2-factor solution (see Table 4). The 2-factor solution showed moderate fit on
131 several indices (Chi-square and SRMR), but the 3-factor solution showed good fit on all indices.
132 However, given extant recommendations (Kline, 2010) to achieve for parsimony, our scree plot
133 analysis, and a priori theory, we opted to maintain suicide ideation as a single factor for
134 correlational analyses.

135 *****FIGURE 1 HERE*****

136 *****TABLE 3 HERE*****

137 *****TABLE 4 HERE*****

138 **Bivariate Analyses**

162 Q4/CDI-07) loaded almost identically on more than one factor (depression and death ideation).
163 While further analyses are required to refine the measure to achieve simple structure, our results
164 clearly indicate that, at this particular school in Wisconsin, children under 12 do have suicidal
165 thoughts, and these thoughts are different from depressive thoughts. Future research may follow
166 this line to further explore how children are conceptualizing suicide- and depression-related
167 thoughts.

168 Though suicidality in children under 12 has historically been an understudied area, our
169 findings are consistent with existing literature. In this study, we found that living with a father or
170 living with both parents (which was almost exclusively meant living with a father in addition to a
171 mother) was a protective factor against suicide for children under 12. While there may be some
172 unique contribution to well-being or health contributed by living with a father, we suspect that
173 living with a father (or both parents) likely represents some feelings about self, access to
174 resources, or exposure to adverse childhood experiences (e.g. attachment, loneliness, access to
175 healthcare, neglect, abuse) as is proposed by the Interpersonal Psychological Theory of Suicide
176 (Van Orden et al., 2010).

177 Further, given that family-based treatments have shown promise with adolescents (Frey
178 & Hunt, 2018) and the apparent connection between maternal and paternal presence, our findings
179 may mean that parents (fathers and mothers) have important (but perhaps unique) roles in
180 preventing childhood depression and suicide as has been identified with older youth (Salzinger et
181 al, 2007; Hetrick et al, 2012; Anderson et al, 2016 Tishler et al, 2007). Additionally, the
182 Interpersonal-Psychological Theory of Suicide (IPTTS; Van Orden et al., 2010), a predominate
183 theory on suicidal behavior, specifically identifies a lack of stable, caring relationships as a major
184 risk for suicide. Adolescents and young adults may experience more connection, fit, and support

185 with peers and family of choice than with their parents (Nickerson & Nagle, 2005). Living with
186 one or both of their parents is likely the primary way young children experience stable, caring
187 relationships.

188 There is a great deal of research yet to be done to better understand suicide-related
189 thoughts and behaviors in children (and adolescents or adults for that matter). It may be
190 beneficial to further study the utilization of theories of suicide, such as the Interpersonal-
191 Psychological Theory of Suicide (IPTS; Van Orden et al., 2010) or the 3-Step Theory of Suicide
192 (Klonsky & May, 2015). The IPTS may be especially useful in making sense of suicide-related
193 thoughts and behaviors in children because of its ability to integrate various intersecting aspects
194 of risk for suicide. Namely, thwarted belongingness proposes to capture the experience of
195 loneliness; perceived burdensomeness proposes to capture many of the critical and disapproving
196 interactions children may experience; and the acquired capability for suicide proposes to capture
197 and make sense of both biological predispositions for suicidal behavior and many of the
198 experiences known to be risk factors (e.g., abuse, neglect, bullying, other diagnoses, family
199 history of suicide). In addition to utilizing extant theories to understand and explain suicide-
200 related thoughts and behaviors in children, applying a systems or ecological approach is
201 warranted. Frey, Hans, and Sanford (2016) highlight several valuable ways a family systems-
202 based approach to studying suicide may make sense.

203 A systems-based approach that more thoroughly examines many of the ecological and
204 cultural influences on suicide-related thoughts and behaviors in children is especially relevant.
205 Interestingly, one of the few historical studies on suicide in children (Rosenthal & Rosenthal,
206 1984) found that children with suicidal ideation were likely to have been the result of an
207 unwanted pregnancy. While it seems unlikely that an a child coming from an unwanted

208 pregnancy in-and-of-itself would create suicidal ideation in a child, examining the family and
209 ecological system within which this child exists is likely to shed light on the processes relevant
210 to increased suicide risk (e.g., likely to have less access to healthcare, or more harsh and critical
211 parents).

212 Suicide rates are highest among Native American and Indigenous group compared to any
213 other racial/ethnic group in the United States (NIMH, 2020). The children in our sample, with
214 nearly one-third identifying as Native American and close to half as non-White (43%) and two-
215 thirds living in poverty, likely experience higher than average rates of depression and suicide-
216 related thoughts and behavior given the likelihood of family exposure to adverse childhood
217 events. Additionally, future research may look into adding a component of resources available to
218 children under 12 who have suicidal ideation (e.g., counselor to student ratio within schools,
219 suicide awareness/prevention trainings, mental health discussions within curriculum, if the
220 family has health care) in order to understand what is needed within a population.

221 **Limitations**

222 Despite our belief that this study provides evidence that children can and do think about
223 suicide differently than depression, there were a number of limitations in the study. First,
224 although valid and reliable assessments were adapted for the design of the present assessment,
225 the assessments themselves have not been sufficiently tested for reliability and validity to ensure
226 they are fully psychometrically sound. Further psychometric testing and factor analyses of the
227 measures would be helpful for refining a brief assessment for suicide in children. Second, the
228 implications of home structure are limited due to the method in which we collected this data.
229 Namely, it is not possible to distinguish children that were removed from a home, and it is not
230 possible to distinguish with whom they lived prior to their removal. Third, the concept of race

231 was unfamiliar to many of the younger children, and survey administrators spent a lot of time
232 answering students' questions about how to respond to the open-ended question about their racial
233 background. Though the administrators of the survey did help students appropriately respond to
234 the question about race, it is likely that others with questions provided an answer without asking
235 for clarification and therefore may not have accurately responded. Finally, while our sampling
236 strategy did appear to give us an accurate representation of one school in rural northern
237 Wisconsin, these data cannot be accurately expanded to represent all children, or even all
238 children in Wisconsin, as the school is nearly one-third Native American with more than two-
239 thirds of the students living in households considered economically disadvantaged (see specifics
240 in methods section about participants), and 15% having some registered disability. These three
241 demographic characteristics (of race, socioeconomic status, and having a disability) are often
242 found to be associated with increased rates of suicide-related thoughts and behaviors and may
243 have influenced our findings. However, the disability rate closely aligns with national and
244 Wisconsin-specific (13.7% and 14% respectively; Riser-Kositsky, 2019) disability rates.

245 **Conclusion**

246 The current study provides evidence that children between ages 8 and 12 can differentiate
247 the ideas of depression and suicide and experience them in a related, though different, manner—
248 like adolescents and adults. While suicide prevention and screening programs are becoming
249 more common in middle and high schools in the United States, some schools do not include this
250 curriculum because they wrongly assume exposure to this material increases students' risk of
251 suicide (Joe & Bryant, 2007). Research by Gould and colleagues (2005), among others, shows
252 there is not an increase in suicide risk after asking questions about suicide. In fact, research
253 shows that school-wide screening identifies more students in need of mental health services.

254 Additionally, there are evidence-based school curriculums, such as the Signs of Suicide, that can
255 reduce suicidality and increase awareness (Joe & Bryant, 2007). We suggest that education about
256 suicide be included in curriculum for younger children, as the current study suggests those
257 children do think about suicide.

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Table 1.*Demographics and Outcome Means*

	N	CDI (mean)	SI (mean)	SI (non-zero)
Gender				
Male	45	10.60	4.09	18 (40.00%)
Female	70	9.47	4.11	40 (57.14%)
Race				
Racial Minority	49	10.41	4.67	29 (59.18%)
Racial Majority	66	9.97	3.67	29 (43.94%)
Grade				
3	47	10.28	3.43	27 (57.45%)
4	37	10.46	4.62	20 (54.05%)
5	31	9.61	4.48	11 (35.48%)
Totals	115	10.16	4.10	58 (50.40%)

Note. CDI= Depression; SI=Suicide Ideation;

Table 2
Correlations, Mean, SD, Across Study Items (N=115)

	CDI	SI	Dad	Mom	Both	Neither	Grade	Gender	Race
CDI	1.00								
SI	0.59***	1.00							
Dad	-0.14	-0.19*	1.00						
Mom	-0.24**	-0.15	0.23*	1.00					
Both	-0.27**	-0.19*	0.80***	0.64***	1.00				
Neither	0.10	-0.01	-0.52***	-0.65***	-0.41***	1.00			
Grade	-0.03	0.07	-0.05	-0.08	-0.13	-0.02	1.00		
Gender	-0.08	0.00	0.03	0.10	0.04	-0.12	0.01	1.00	
Race	-0.03	-0.08	0.21*	0.23*	0.28**	-0.17	-0.04	0.11	1.00
Descriptive Statistics for each item:									
Mean	10.16	4.10	0.74	0.82	0.64	0.09	9.65	0.39	0.57
SD	7.33	6.60	0.44	0.39	0.48	0.28	1.02	0.49	0.50

Note: *p<.05, **p<.01, ***p<0.001; CDI= Depression; SI= Suicide Ideation; Both = Both Parents; Neither = Neither Parent

Table 3***Exploratory Factor Analysis of Adapted SIQ items (1–4;11–15) and Depression Items***

Item	One Factor	Two Factor		Three Factor		
	Null	Depression	Suicide	Depression	Death Ideation	Suicide Plans
Q1 (CDI-03)	0.51*	0.54*	0.08	0.53	-0.13	0.28
Q2 (CDI-25)	0.45*	0.42*	0.13	0.38	0.41	-0.23
Q3 (CDI-24)	0.52*	0.78*	-0.10	0.72*	0.00	-0.02
Q4-R (CDI-07)	0.73*	0.39	0.43	0.37	0.38	0.12
Q5 (CDI-05)	0.35*	0.46*	-0.01	0.44*	-0.02	0.05
Q6 (CDI-08)	0.54*	0.72*	-0.02	0.67*	-0.03	0.09
Q7 (CDI-01)	0.61*	0.74*	0.04	0.69*	0.09	0.02
Q8 (CDI-08)	0.51*	0.68*	-0.03	0.63*	0.04	0.01
Q9 (CDI-10)	0.55*	0.69*	0.01	0.66*	-0.03	0.12
Q10 (CDI-11)	0.62*	0.63*	0.12	0.61*	-0.08	0.29
Q11-R (CDI-20)	0.68*	0.65*	0.17	0.60	0.40	-0.13
Q12 (SIQ1)	0.90*	0.16	0.79*	0.17	0.60*	0.25
Q13 (SIQ2)	0.87*	0.05	0.84*	0.10	0.21	0.70*
Q14 (SIQ3)	0.84*	0.04	0.82*	0.08	0.04	0.88*
Q15 (SIQ4)	0.87*	0.05	0.84*	0.08	0.20	0.75*
Q16 (SIQ11)	0.88*	-0.10	0.98*	-0.05	0.70*	0.32
Q17 (SIQ12)	0.83*	-0.15	0.97*	-0.12	0.79*	0.22
Q18 (SIQ13)	0.84*	0.18	0.70*	0.18	0.66*	0.12
Q19 (SIQ14)	0.75*	0.26	0.56*	0.25	0.62*	-0.01
Q20 (SIQ15)	0.79*	0.04	0.78*	0.02	0.89*	-0.04

Note: Factor loadings above $|\cdot30|$ are in bold. Factor loadings more than 2 times larger than the others are marked with an asterisk; -R indicates the item was reverse coded

Table 4*Fit statistics for exploratory factor analysis*

Factor #	Chi-Square	df	CFI	TLI	RMSEA	SRMR	BIC
1	546.65*	170	0.775	0.746	0.147 90 % CI [0.13–0.15]	0.10	-259.99
2	354.42*	151	0.878	0.845	0.116 90 % CI [0.09–0.12]	0.05*	-362.06
3	224.40*	133	0.945*	0.920*	0.086 90 % CI [0.06–0.10]*	0.04*	-406.67

*Note: * indicates the model fit was at least acceptable*

Figure 1.



