Original research

The Relationship between Internalizing and Externalizing Symptomatology and Parent/Adolescent Suicide Report Concordance: Implications for Prevention and Clinical Practice

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Abstract: Adolescent suicide is a global public health problem. Currently, most suicide prevention and treatment programs rely heavily on youth self-report in order to determine adolescent suicide risk. Parents may be useful informants, however, as there are times when parents are more likely to report suicidality than youth, particularly when youth display externalizing symptomatology, such as aggression and delinquency. This study compared parent-adolescent suicide report concordance among adolescents with internalizing versus externalizing symptoms and examined whether internalizing or externalizing youth were more or less likely than parents to report adolescent suicidal ideation. Using data from a subsample of adolescents recruited from inpatient and partial hospitalization programs for a separate study (n = 64), a one-sided z-test for proportions was used to compare parent-adolescent suicide report concordance for subsamples of adolescents with internalizing versus externalizing symptomatology. Two-sided z-tests for proportions were used to compare the proportions of parents and adolescents reporting adolescent suicidal ideation for discordant pairs in each subset. There were no statistically significant discrepancies in reports of suicidal ideation for the internalizing and externalizing subsets, nor were adolescents significantly more likely than parents to report adolescent suicidal ideation. Among the discordant pairs in the externalizing subset, the proportion of parents who reported that their adolescents had expressed suicidal ideation (60%) was higher than the proportion of adolescents who actually reported experiencing suicidal ideation (40%), though this difference was not statistically significant. For internalizing adolescents, the proportion of parents who reported their children had expressed suicidal ideation (63.0%) was significantly smaller than the proportion of adolescents who reported experiencing suicidal ideation (81.5%; p < .05). The clinical implications of these preliminary findings point to the importance of including parents in the process of assessing suicidality in order to help them recognize warning signs in their children.

Keywords: Adolescent Suicide Prevention, Family-Based Interventions, Suicide Screening, Suicide-Related Symptomatology
the previous year, 15% report having made a plan, and 9% report making an attempt (CDC, 2016). The World Health Organization (WHO) has included a goal to decrease the rates of suicide by 10% internationally under its current Mental Health Action Plan (WHO, 2016). Additionally, the U.S.’s Surgeon General has released an updated strategic plan for U.S. suicide prevention that includes a focus on providing clinical and community-based prevention services as well as suicide prevention surveillance, which involves improving upon the timeliness, quality, and usefulness of routine data collection efforts regarding suicide-related risk factors, behaviors, and mortality (U.S. Department of Health and Human Services, 2012).

Many of the suicide prevention and treatment efforts directly targeted towards youth rely on protocols that focus on screening and assessment. Universal and targeted suicide risk screening protocols have been implemented in settings such as primary care (Wintersteen, 2010; Wintersteen & Diamond, 2013), emergency rooms (Ballard et al, 2017; Horowitz et al., 2001), general medical hospitals (Horowitz et al., 2013), and schools (Aseltine & DeMartino, 2004; Aseltine, James, Schilling, & Glanovsky, 2007; Cotter et al., 2015; Surgenor, Quinn, & Hughes, 2016; Torcasso & Hilt, 2017). Additionally, adolescents who receive treatment through mental health settings are routinely assessed for suicide risk as part of the general intake process and treatment.

Suicide risk screening and assessment protocols for adolescents, however, typically rely solely on adolescent self-report. In a recent review, Surgenor and colleagues (2016) summarized existing school-based screening and prevention protocols; not a single protocol involved parents in the screening and assessment process. Additionally, when teachers across Europe were surveyed as part of the SEYLE study of school-based gatekeeper and suicide prevention trainings, only a small proportion reported that “talking to parents” was the best step children could take in addressing mental health (SEYLE Final Report, n.d.), further underscoring a general lack of emphasis on the role of parents in mental health prevention and treatment.

Despite the fact that school-based suicide prevention programs have been found to be effective at decreasing suicidal behavior among adolescents across Europe (Wasserman et al., 2015), in the U.S. only 12 states currently require suicide prevention, intervention, and postvention programs be provided in schools. Additionally, the majority of these policies do not explicitly require parental involvement. Only one state (Utah) includes a policy that requires schools to offer seminars to parents; the other three states that include parent-related suicide prevention policies (Oklahoma, Utah, and Virginia) only require notification of parents once a child is determined to be at risk for suicide (AFSP, n.d.).

More generally, clinical recommendations for the screening and assessment of youth suicide recommend involving parents in the process only after youth have been identified at risk (Gordon & Melvin, 2014), while some other protocols for suicide risk screening do not even mention the inclusion of parents (National Action Alliance for Suicide Prevention, 2013). Even empirically supported suicide risk screening protocols, such as the Columbia Suicide Screen (CSS) (Shaffer et al., 2004), rely solely on youth self-report in order to assess suicide risk. The sole reliance on youth self-report to assess suicide risk is concerning because multiple studies have found that concordance between parent and adolescent reports of suicidality are typically low (Dhossche, Ferdinand, van der Ende, Hofstra, & Verhulst, 2002; Lewis, Bertino, Bailey, Skewes, Lubman, & Toumbourou, 2014; Thompson, et al., 2006). While these studies have also found that adolescents are typically more likely to report suicidality than their parents, several studies have found instances in which parents report suicidality but adolescents do not (Dhossche et al., 2002; Sansone, Wiederman, & Jackson, 2008; Walker, Moreau, & Weissman, 1990). Given the safety concerns related to suicide, having a higher number of false positives in suicide risk screening and assessment is preferable (Horowitz, Ballard, & Pao, 2009). If there are times when parents may be able to provide information not provided by the adolescent that indicates higher suicide risk, including parents in the screening and evaluation processes may be beneficial.

One way to understand when and how parent and youth reports may differ is by understanding suicidal thoughts and behaviors in relation to internalizing versus externalizing symptomatology. Externalizing behaviors are those behaviors that are typically outwardly observable, such as aggression, acting out, delinquency, and substance use. Internalizing symptomatology (such as depression, anxiety, and hopelessness), on the other hand, tends to be more difficult to observe by others (De Los Reyes & Kazdin, 2005). Both of these categories of symptomatology have been associated with increased suicide risk among adolescents (Fordwood, Asarnow, Huizar, & Reise, 2007; Hills, Cox, McWilliams, & Sareen, 2005; Joffe, Offord, & Boyle, 1988; Kashani, Goddard, & Reid, 1989), but parents have been found to be more likely to recognize externalizing than internalizing
In the Northeastern United States. Because the aim of the present study was to measure parent-adolescent report concordance, only data from the subsample of participants from the original study that had completed measures from both parents and children (n = 64) were analyzed. The sample included adolescents ages 12-18, whose parents (or adolescents, if age 18) provided written informed consent, and who did not have a developmental delay or a psychotic disorder. All adolescents under the age of 18 also provided assent.

**Measures**

**Parent/Adolescent Suicide Report Concordance** To measure parent/adolescent concordance of adolescent suicidal ideation, two analogous items from the Children’s Depression Inventory (CDI-2; Kovacs, 2011) and the Child Behavior Checklist (CBCL; Achenbach & Rescorla, 2001) were compared. To measure the adolescent respondents’ reports of suicidal ideation, an item from the CDI-2 was recoded into a dichotomous (yes/no) variable, indicating any suicidal ideation. The item from the CDI-2 asks youth to pick from three statements to describe the one that best characterizes how they felt over the past two weeks: “I do not think about killing myself,” “I think about killing myself, but would not do it,” or “I want to kill myself.” Any respondent who indicated either of the second two choices (suicidal thoughts with no intent or suicidal thoughts with intent) was coded as having suicidal ideation and any respondent who reported no thoughts of suicide was coded as having no suicidal ideation. To measure parental reports of adolescent suicidal ideation, an item on the CBCL was also recoded into a dichotomous (yes/no) variable, indicating any adolescent suicidal talk. The item on the CBCL asks parents to report “how true” (0 = not true, 1 = somewhat or sometimes true, 2 = very true or often true) it is that the adolescent talks about killing him or herself. Responses of 1 or 2 were recoded to indicate having suicidal talk, and responses of 0 were recoded as indicating no suicidal talk.

**Internalizing and Externalizing Symptomatology**

Internalizing and externalizing symptomatology were measured using the internalizing and externalizing subscales of the CBCL, both of which have demonstrated strong test-retest reliability, internal consistency, and criterion and construct validity (Achenbach et al., 2001). T-scores on the internalizing and externalizing subscales of the CBCL were used to categorize adolescents as having primarily internalizing versus externalizing symptomatology in their children (De Los Reyes et al., 2005; Salbach-Andrae, Klinkowski, Lenz, & Lehmkuhl, 2009; Wong, Jenvey, & Lill, 2012). In addition, parents of adolescents with high levels of delinquent and acting out behaviors have been more likely to report adolescent suicidal ideation than their children (Ko, Wasserman, McReynolds, & Katz, 2004). If parents are more likely to be aware of suicidal ideation among adolescents who exhibit acting out behaviors and adolescents with acting out behaviors are less likely to self-report suicidal ideation, there is a strong argument for including parents in routine screening and evaluation practices.

In order to further explore the utility of including parents in the screening and assessment process, this study examined the relationship between adolescent and parent suicide report concordance and the presence of internalizing vs. externalizing symptomatology in a sample of adolescents with a recent history of inpatient or partial hospitalization. Specifically, this study explored whether: 1) parent/adolescent concordance of adolescent suicidal ideation was associated with the presence of externalizing behavior, 2) parents were more likely than adolescents to report adolescent suicidal ideation when externalizing behavior was present, and 3) parents were less likely than adolescents to report adolescent suicidal ideation when only adolescent internalizing behaviors were present. Based on the finding that parents are more likely to recognize externalizing than internalizing behaviors (De Los Reyes et al., 2005; Salbach-Andrae et al., 2009; Wong et al., 2012), it was hypothesized that concordance rates would be higher for adolescents who exhibited externalizing behaviors compared to those with internalizing behaviors only. Secondly, it was hypothesized that for adolescents with externalizing behaviors, when discordance was present, parents would be more likely than adolescents to report adolescent suicidal ideation. Finally, for adolescents with internalizing symptoms only, it was hypothesized that, when discordance was present, adolescents would be more likely than parents to report adolescent suicidal ideation.

**Method**

To address the research aims, secondary analyses were conducted using data collected from adolescents in a previous study examining suicide trajectories following inpatient and partial hospitalization. The original study consisted of a sample of adolescents (n = 116) recruited from inpatient and partial hospitalization programs in a university-affiliated adolescent psychiatric hospital.
symptomatology. Adolescents who had a T-score above the clinical cutoff of 63 specified by Achenbach et al. (2001) were labeled as “externalizing” for group comparisons, regardless of the score on the internalizing subscale, and adolescents who had a T-score above 63 for the internalizing subscale but not the externalizing subscale were labeled as “internalizing.”

Statistical Analyses
The relationship between parent/adolescent concordance of adolescent suicidal ideation and externalizing behavior was determined by calculating the proportion of agreement between adolescent reports of suicidal ideation and parent reports of adolescent suicidal talk for the externalizing and internalizing groups and then comparing them using a two-sided z-test for proportions. To examine whether parents were more or less likely than adolescents to report adolescent suicidal ideation when externalizing behaviors were present, a one-sided z-test for proportions was used. This compared the proportion of parental reports of adolescent suicidal ideation to the adolescent reports of suicidal ideation among discordant pairs identified in the externalizing subset. A similar analysis was performed for the internalizing group in order to determine if parents were more or less likely than adolescents to report adolescent suicidal ideation when only internalizing behaviors were present.

Results
Participant ages in the study sample ranged from 12-18 years (M = 14.67, SD = 1.45) and 73% were female. 71.9% identified as White, 22.0% identified as two or more races, 1.6% identified as Asian, and 1.6% identified as Hispanic. As data regarding DSM-5 diagnoses were not available for the sample, data from the CBCL was utilized to report on the diagnostic profile of the sample. Mean scores were highest for the Affective Problems subscale of the CBCL (M = 11.75, SD = 4.72), the Conduct Problems subscale (M = 6.91, SD = 6.48), and the Attention Deficit/Hyperactivity problems subscale (M = 6.13, SD = 3.40) (See Table 1).

Table 1
Mean Scores for DSM Subscales of the CBCL

<table>
<thead>
<tr>
<th></th>
<th>M</th>
<th>SD</th>
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<tbody>
<tr>
<td>Affective Problems</td>
<td>11.75</td>
<td>4.72</td>
</tr>
<tr>
<td>Anxiety Problems</td>
<td>4.86</td>
<td>2.85</td>
</tr>
<tr>
<td>Somatic Problems</td>
<td>3.68</td>
<td>2.86</td>
</tr>
<tr>
<td>Attention Deficit/Hyperactivity Problems</td>
<td>6.13</td>
<td>3.40</td>
</tr>
<tr>
<td>Oppositional Defiant Problems</td>
<td>4.84</td>
<td>2.68</td>
</tr>
<tr>
<td>Conduct Problems</td>
<td>6.91</td>
<td>6.48</td>
</tr>
</tbody>
</table>

The overall concordance rates of the total sample, internalizing subset, and externalizing subset are depicted in Table 2. Discordance between parents and adolescents was present in approximately one-third of the sample. While there were higher rates of concordance in the externalizing subset (73.0%), compared to the internalizing subset (59.3%), this difference was not statistically significant (p = .25).

Table 2
Concordance rates for Total Sample and Internalizing and Externalizing Subsets

<table>
<thead>
<tr>
<th></th>
<th>n (parent/child pairs)</th>
<th>% Concordance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Sample</td>
<td>64</td>
<td>67.2</td>
</tr>
<tr>
<td>Externalizing Subset</td>
<td>27</td>
<td>59.3</td>
</tr>
<tr>
<td>Internalizing Subset</td>
<td>37</td>
<td>73.0</td>
</tr>
</tbody>
</table>

Table 3 depicts the percentages of parent versus adolescent reports of adolescent suicidal ideation for the internalizing and externalizing subsets in total as well as for the discordant pairs. In the externalizing subset, when both concordant and discordant pairs were included in the analysis, similar proportions of adolescents reported adolescent suicidal ideation (73.0%) as parents (78.4%). Among the externalizing adolescents, when only the discordant pairs were examined, a higher proportion of parents reported that their adolescents made suicidal statements (60.0%) compared to the proportion of adolescents who reported experiencing suicidal ideation (40.0%), although this difference was not statistically significant (p = .19). For the internalizing subset,
the percentage of adolescents reporting suicidal ideation was higher than the percentage of parents who reported observing suicidal talk in both the total sample and the discordant pairs. For the discordant pairs, significantly more adolescents (72.7%) reported suicidal ideation when compared to the proportion of parents who reported observing suicidal talk (26.3%, p < .05) (See Table 3).

Table 3
Percent of Parents and Youth Reporting Suicidality for Total Sample and Discordant Pairs

<table>
<thead>
<tr>
<th></th>
<th>Total Sample</th>
<th>Discordant Pairs Only</th>
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<tbody>
<tr>
<td></td>
<td>n</td>
<td>% Parents Reporting Suicidality</td>
</tr>
<tr>
<td>Internalizing Subset</td>
<td>27</td>
<td>63.0</td>
</tr>
<tr>
<td>Externalizing Subset</td>
<td>37</td>
<td>78.4</td>
</tr>
</tbody>
</table>

*p < 0.05

Discussion
There were no statistically significant differences in parent/adolescent concordance rates for adolescents with externalizing symptoms compared to those with internalizing symptoms only. For youth with externalizing behaviors, when discordance was present, there were no statistically significant differences in whether or not parents were more likely than adolescents to report adolescent suicidal ideation. However, as hypothesized, parents of internalizing adolescents were significantly less likely than adolescents to report adolescent suicidal ideation. It is important to note that findings were in the expected direction for the first two hypotheses, but inadequate power may have influenced significance levels. Therefore, replicating the study with a larger sample is warranted.

The results of this study suggest that parents may not be as aware of their adolescents’ internalizing symptoms as they are of externalizing behaviors, and that parents may be more likely to report adolescent suicidal ideation in cases where their children display externalizing behaviors only. Internalizing behavior among adolescents has been connected to less functional family environments (Jozefiak, Wallander, & Wallander, 2016; Riesch, Jacobson, Sawdewy, Anderson, & Henriques, 2008) and internalizing adolescents have been found to be at high risk for suicidal ideation and behaviors (Verona & Javdani, 2011), emphasizing the importance of intervention in these families. To prevent adolescent health risks such as suicidal thoughts and behaviors, interventions with youth may benefit from emphasizing family-focused treatment targets such as parent-child connectedness (Ackard, Neumark-Sztainer, Story, & Perry, 2006; Kuramoto-Crawford, Ali, & Wilcox, 2016), perceived love and support from parents (Susukida, Wilcox, & Mendelson, 2016), and family and child resiliency (Brent, 2016). In fact, one study found that parent-child communication in specific may play a mediating role in the alleviation of suicide risk among youth (Mark et al., 2013).

In addition to stimulating thoughts about interventions with youth at risk for suicide, this study also indicates that it may be helpful to think about when and how to incorporate parents into suicide risk screening practices. Currently, there is no empirical evidence about whether including questions for parents in suicide risk screening is more effective than only questioning the youth (Horowitz, Bridge, & Boudreaux, 2014). In addition, there are no clinical guidelines for how to proceed if parents and youth disagree in their answers to suicide risk screening questions (Horowitz et al., 2014). Although this study does not directly support the need to include parents in screening protocols, it does indicate the potential importance of teaching parents how to identify the presence of suicidal ideation among their adolescents. At a minimum, having parents be aware of elevated suicide risk in their child allows them to help with means restriction and suicide prevention safety planning strategies which are crucial elements of what do after there is a positive screen (Horowitz et al., 2014). As such, this study highlights the need to educate parents on how to recognize suicidal ideation and other internalizing symptoms in their children, and once these symptoms are observed, how to communicate with them effectively to mitigate suicide risk.

While this study provides some preliminary evidence of the relationship between parent-adolescent suicide report concordance and internalizing/externalizing symptomatology, these results should be considered within the limitations of the present study. First, because a clinical sample was used, the results may not be
generalizable to adolescents not receiving intensive mental health services. Secondly, the time frames for parent and child measurement tools were different (2 weeks for adolescents vs. 6 months for parents), which may have contributed to an over-reporting of adolescent suicidal ideation by parents on the whole. Also, the item on the CBCL only asks parents to identify the extent to which their adolescent verbalized suicidal ideation; this may not necessarily be an accurate measure of parents’ perception of their adolescent’s suicide risk. This study also did not examine differences between younger and older adolescents; parental involvement (and reporting) may differ for younger vs. older adolescents. Finally, the study sample was small, and replication of these findings with a larger, more representative sample of adolescents would offer more support for these preliminary findings.

Despite its limitations, this study provides some preliminary insight into the differences between internalizing and externalizing adolescents in regards to parent-adolescent suicide report concordance and suggests some possible areas for improving family-based screening and intervention protocols. More research into the exact nature of the relationship between suicide report concordance and different types of symptomatology among suicidal adolescents would help to illuminate this area further. It is recommended that future studies attempt to replicate these results with larger, more generalizable samples of adolescents and their parents.

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