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A closer look at Self-Reported Suicide Attempts:

False Positives and False Negatives

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Abstract

The validity of self-reported suicide attempt information is undermined by false positives (e.g., incidences without intent to die), or by unreported suicide attempts, referred to as false negatives. In a sample of 1381 Austrian adults, we explored the occurrence of false positives and false negatives with detailed probing questions. Removing false positives decreased the rate of suicide attempters from 4.3% to 2.7%. Probing questions also revealed 0.8% false negatives. We recommend using probing questions for both suicide attempt-reporters and those who do not report a suicide attempt to increase the validity of suicide related information that is self reported.

A closer look on Self-Reported Suicide Attempts: False Positives and False Negatives.

The epidemiology of suicidal behavior is a major topic in the public health field, reflected, for example, in large World Health Organization (WHO) research projects (De Leo, Billi-Brahe, Kerkhof, & Schmidtke, 2004). Reliable and valid assessment is crucial for correct estimations of suicidal behavior. Population surveys often include one single item only (e.g., “Have you ever attempted suicide?”), with the validity and reliability of this procedure remaining doubtful (Welch, 2001). Notable exceptions are the CDC’s Youth Risk Behavior Surveys, where injuries resulting from the suicide attempt are solicited, or the National Comorbidity Surveys (NCS) which assessed intent to die (e.g., Kessler, Borges, & Walters, 1999). Knowing intent to die is crucial to distinguish suicide attempts from self harm (O’Carroll et al., 1996; Silverman et al., 2007).

More detailed assessment, such as in the studies described above, revealed validity problems of self reported suicide attempts that were solicited with a single item. For example, in a sample of young adults the rate of suicide attempters decreased from 10% to 1% after eliminating attempts that did not result in hospitalization. (Meehan, Lamb, Saltzman, & O’Carroll, 1992). Similarly, in the NCS, 47% of suicide attempters did not intend to die (Kessler et al., 1999). Reported suicide attempts that were not actually carried out or that lacked intent to die will be further denoted as “*false positives*”.

The validity of self-reported suicide attempts may also be undermined by “*false negatives*”, i.e. unreported suicide attempts. This may be because participants have a different subjective definition of “suicide attempt”, or because the term “suicide” is taboo. False negatives are discussed to occur among street youth or in cases of drug overdose (Kidd, 1996). However, to our knowledge, this has not been empirically investigated so far.

Study objectives

In our study, we explored the validity of self-reported suicide attempt information in a non-clinical adult sample. We tried to detect false positives by using detailed probing questions in addition to a single gate question on suicide attempts. To detect false negatives, similar probing questions had to be completed by those who did not report suicide attempt in the gate question.

Method

Sample

From December 2004 until May 2006, each of 85 trained psychology students distributed 20 questionnaires, making up a total of 1700 distributed questionnaires. The students recruited participants within their social networks (friends, families, relatives, colleagues). A sampling scheme was used to achieve a representative sample with respect to age, sex, and level of education. Of the 1435 returned questionnaires (84% response rate) some were excluded because they were blank or contained obviously joking answers (7), because gender was not reported (1), because the age was lower than 18 years (34) or because the gate questions on suicide attempts was left blank (8). Finally, 1385 (81%) questionnaires were entered into the data set for the analysis. About half (52%) of the study participants were female. The mean age was 37.80 ($SD = 14.44$) and ranged from 18 to 84 years. Nearly half (48%) had a degree of education lower than A-level, 38% had A-level, and 14% were academics. Compared to the Austrian population, our participants were younger (Austrian mean age in the range of 18 to 84 years: 46.64 years (Statistik Austria, 2006a) and they had a higher degree of education [Austria: 77% lower than A-level, 16% A-level, 8% academics (Statistik Austria, 2006b)].

Measures

The four-page questionnaire included sociodemographic items (age, gender, level of

education) and sexuality related items for a different study-purpose. The crucial gate question on suicide attempts was “Have you ever attempted suicide?” with “yes/no” options separately for the past year and for previous years. *Intent to die* was quantified with the multiple-choice item “How strong was the wish to die” (very strong / strong / likely not strong / I definitely did not want to die). The *lethality* of suicide attempt methods was determined according to Rhyne, Templer, Brown, & Peters (1995). Lethality scores were either low (<13) or high (> 69), therefore a dichotomous variable was created (low vs. high lethality).

Follow up items:

To detect *false negative suicide attempts* probing questions were given on a separate page and had to be completed by participants who did not report a suicide attempt in the gate question. The first follow up item was “There was an incidence where I hurt or harmed myself, or where I intended to do so, but I do not think this was a suicide attempt (e.g. overdose of alcohol or medication, standing in front of an abyss, jumping in front of a car, cutting wrists, and the like”). In case a participant reported such an incidence, he or she had to describe the incidence with open ended items (“What was the reason for the incidence?”, “What method did you use?”, “What kind of injuries did you have?”, “Who treated the injuries?”). If there were more such incidences, than the most serious had to be described. In addition, participants had to categorize the incidence with the item “If there was such an incidence, what describes it best?” with one to the following 6 options: 1) I only thought seriously about hurting/harming myself; 2) I had everything prepared but did not hurt/harm myself; 3) I stopped hurting/harming myself in the last second. I knew that it would not have been lethal; 4) I stopped hurting/harming myself in the last second. I knew that it would have been lethal; 5) I hurt/harmed myself, but I knew that I would not have died from this; 6) I hurt/harmed myself and I knew that I would die from this. Related

procedures were used in previous studies (Savin-Williams, 2001; Tremblay, 2000). The item on aborted suicide attempt is from Barber, Marzuk, Leon, & Portera (2001, p. 68).

To detect *false positive suicide attempts*, participants who reported a suicide attempt in the gate question had to complete probing questions that were almost identical to those detecting false negatives. The only difference was, that instead of “incidence” or “harm/injury” the expression “suicide attempt” was used. If there were several suicide attempts, then the most serious one had to be described.

Categorization of suicide attempts

We classified self reported suicide attempts as false positives if intent to die was lacking (“I definitely did not want to die”), or if the attempt was aborted or only planned/ideated (Figure 1). If a participant described the incidence as aborted suicide attempt, but also reported injuries, then we classified him or her as suicide attempter, following the definition of Barber et al. (1998). Participants were false negatives if they answered “No” to the gate question on suicide attempts but then reported an incidence of self-harm with some intent to die which was also carried out, not just planned or aborted.

Results

False positive suicide attempts

Based on the gate question, 4.3% (60 of 1385) of study participants reported that they had attempted suicide at least once in their lifetime (women: 4.7%, men: 4.0%). The probing questions revealed that one quarter (15 of 60) of self-reported suicide attempts were false positive, thus decreasing the rate of suicide attempters from 4.3% to 2.7% (see Figure 1).

Few (3) were false positive because of lacking intent to die. Most (12) participants were false positives because they aborted the suicide attempt. No false positives resulted from

attempts that were only ideated or planned. False positives and false negatives did not differ significantly with respect age or education. Forty-one percent (11 of 38) of true actual suicide attempters and 33% (4 of 12) of false positives chose highly lethal methods, the difference being nonsignificant. Thirty-seven percent (14 of 35) of true suicide attempters had their injuries treated in a hospital, 11% (4) by a doctor, 32% (12) by themselves, 11% (4) had no injuries and 10% (3) did not respond to the related item.

False negative suicide attempts

Nearly 10% of participants who did not report a suicide attempt stated in the follow up questions that they deliberately harmed/injured themselves or planned to do so, and 52% of them had at least some intent to die (Figure 1). However, most of these participants (62%) only planned the incidence or aborted the incidence and reported no injuries (15%). This leaves 11 individuals (0.8% of the total sample) who were classified as false negatives because they carried out an incidence of self harm with some intent to die. Eighty-two percent (9 of 11) of false negatives were carried out with low lethal methods. Eighteen percent (2 of 11) of false negatives resulted in injuries treated in a hospital, 18% (2) were treated by a doctor, 45% (12) by themselves, and 18% (2) did not respond to the related item.

Discussion

Similar to existing studies, a substantial proportion (25%) of self-reported suicide attempts were false positive, mainly because the suicide attempt was not actually carried out. Such false positives could possibly be avoided by adding items on aborted suicide attempts in surveys. False positive attempts that turned out to have been aborted are clinically relevant because they frequently co-occur with actual attempts and because the suicidal intent is comparable to actual suicide attempts (Barber et al., 1998). Only a few self-reported suicide attempts were false

positive because there was no intent to die. This contrasts the results of the NCS, where nearly half of the suicide attempters did not want to die (Kessler et al., 1999). Different measurements of suicide intent may have caused these differences. Using scales with established psychometric properties for the assessment of suicide intent (Beck, Schuyler, & Herman, 1974) would have been advantageous, however, the length of these scales makes it difficult to incorporate them in epidemiological surveys where suicidality is only one of many variables.

To our knowledge, our study is the first one that explores the occurrence of false negative suicide attempts: Nearly one percent of participants did not report a suicide attempt but they reported an incidence of self-harm/injury that was carried out with some intent to die. One percent may seem low at first sight, but we think it is quite substantial when compared to the 3% rate of true positive suicide attempts. Participants may have refused to report their suicide attempt in the gate question because of the stigma associated with the term “suicide” or because of other reasons that could be explored in future qualitative studies.

Among the caveats of our study is its retrospective design. Memory biases or temporal changes of subjective definitions of “suicide attempts” might have influenced the validity of self-reported suicide attempts. In addition, our classification procedure of false positives and false negatives was based on self-reports again that might have been prone to similar biases already apparent in the gate questions on suicide attempts (e.g., taboo-issues).

Nonetheless, our study stresses the importance of a closer look on the nature of self-reported suicide attempts. Further inquiring may also uncover actual suicide attempters among those who did not report a suicide attempt in a single gate question. We recommend using follow-up questions for both suicide attempt-reporters and those who do not report a suicide attempt to increase the validity of suicide related information that is self reported.

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