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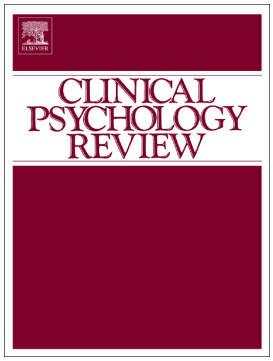

The benefits and risks of asking research participants about suicide: A meta-analysis of the impact of exposure to suicide-related content

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The Benefits and Risks of Asking Research Participants about Suicide: A Meta-analysis of the Impact of Exposure to Suicide-Related Content

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Abstract

One obstacle potentially hindering research on suicide is the assumption that assessing suicide may make individuals more likely to engage in suicidal thoughts or behaviours; a concern expressed by ethics committees, researchers, and clinicians. However, decisions which are overly cautious and restrictive when approving research proposals will hinder important research in this area. The present aim was to conduct a meta-analysis to examine whether asking about suicide or exposure to suicide-related content in research studies led to changes in participants' levels of distress, suicidal ideation, or suicide attempts. A systematic search of peer-reviewed and unpublished literature from 2000 to 2017 identified 18 studies. Exposure to suicide-related content led to significant, albeit small, reductions in suicidal ideation (g = -.13, p < .001) and a lower likelihood of engaging in suicidal behaviour (OR = .714, p < .05). The reduction in suicidal ideation was moderated by age such that adolescents showed nearly twice as large a reduction in suicidal ideation from pre- to post-exposure as adults did. Thus, evidence to date suggests that asking research participants about suicide does not increase risk, and may be associated with small benefits. Ethics review boards should calibrate their consideration of the risks associated with participation based on the available evidence and relative to the cost of depriving potential participants of any benefits that participation may offer.

Keywords: suicide research; risk-benefit assessment; institutional review boards; vulnerable research participants; ethical framework.

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The Benefits and Risks of Asking Research Participants about Suicide: A Meta-analysis of the Impact of Exposure to Suicide-Related Content

The assumption that assessing suicidality may 'prime' individuals and make them more likely to engage in suicidal thoughts or behaviours could limit research into suicide. Some health professionals believe that being exposed to suicide-related content may increase an individual's risk of suicide (Bryan, Dhillon-Davis, & Dhillon-Davis, 2009; Pearson, Stanley, King, & Fisher, 2001). For example, 36% of general medical practitioners believed that exposure to questions or information about suicidal behaviour could increase the likelihood of suicidal thoughts or acts (Bajaj et al. 2008), and 23.1% of primary-care physicians would not ask patients about suicide for fear that talking about it may induce suicidality (Stoppe, Sandholzer, Huppertz, Duwe, & Staedt, 1999). Analyses of video-recorded naturally occurring mental health assessments revealed that between 54% and 76% of patients were *not* routinely asked about self-harm or suicide (McCabe, Sterno, Priebe, Barnes, & Byng, 2017; O'Reilly, Kiyimba, & Karim, 2016). There is a similar reluctance from researchers to broach the topic of suicide or include high risk individuals in their studies for fear that assessing suicide may make someone more likely to engage in suicidal thoughts or behaviours (Biddle at al. 2013; Bryan et al., 2009; Lakeman & Fitzgerald, 2009a; Pearson et al., 2001; Rudd et al., 2006).

A second obstacle to research on suicide is the challenge of gaining approval from ethics committees, who may be overly conservative and restrictive in evaluating any potential harm that asking about suicide may have on participants. In one survey, 65% of ethics committee members feared that suicidal thoughts or behaviours may intensify after participants had been exposed to suicide-related assessment protocols (Lakeman & Fitzgerald, 2009b). There are particular concerns from both ethics committees and researchers about including "high risk" suicidal

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individuals in research, especially research that involves exposure to, and conversations about, suicide-related content. Evidently, both researchers and ethics committees share legitimate concerns that conducting suicide research might increase an individual's risk of suicide, and therefore research studies must have protocols in place for the assessment and management of such risks.

According to the Australian *National Statement on Ethical Conduct in Human Research* (2007; 'National Statement'), researchers are responsible for designing research in a way that minimises the risks of harm or discomfort to participants, and clarifies the potential benefits (The National Health and Medical Research Council, 2007). Further, in determining the likelihood and magnitude of said risks and benefits, researchers and ethical review bodies should "base their assessments on the available evidence" (The National Health and Medical Research Council, 2007, p. 15). Similarly, the *Belmont Report* (1979), an ethical framework to guide human research released by the US Congress's National Commission for the Protection of Human Subjects, states that researchers should seek to "maximize possible benefits and minimizes possible harms for participants" (National Commission for the Protection of Human Subjects of Biomedical and Behavioral Research, p. 5). In addition, the report asserts that there should be a "systematic, non-arbitrary analysis of the risks and benefits" associated with the research (National Commission for the Protection of Human Subjects of Biomedical and Behavioral Research, p. 9).

However, apprehensions about conducting studies in the area of suicide create a Catch-22 (Dazzi, Gribble, Wessely, & Fear, 2014). On the one hand, ethics committees require evidence that the proposed study will not cause participants undue distress or prompt suicidal ideation, yet

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there is limited available research to help evaluate these concerns (Dazzi et al., 2014). What then is the evidence regarding the benefits and risks of participating in suicide-related research?

A qualitative review of 13 published studies involving a range of community and at-risk samples found no significant increases in suicidal ideation among participants following exposure to suicide-related content (Dazzi et al., 2014). A large study of 14,372 college students (42.8% female) investigated participants' experiences of involvement in an online survey on suicide (Whitlock, Pietrusza, & Purington, 2013). In the overall sample, 13.2% had attempted suicide or seriously considered doing so, and about one in three reported experiencing moderate or high psychological distress, with the majority experiencing low distress. Only a small percentage (2.7%) of participants reported "negative" experiences, while nearly 30% of participants viewed their participation as a "positive experience" (Whitlock et al., 2013). The remaining participants reported either "no impact", felt "unsure" about the impact of the survey, or rated their experience as "hard but thought provoking". Further, although participants with a history of suicidal thoughts or behaviours or elevated psychological distress reported higher levels of discomfort with the survey, these individuals were also three times more likely to indicate the survey inspired them to self-reflect and think more deeply about their lives. In response to open-ended follow up questions only 3.7% of participants responded with comments that were suggestive of negative implications as a result of participation. Moreover, none of these comments suggested that any of the respondents were at higher risk of engaging in suicidal behaviour. Instead, the only behavioural impact of participation mentioned was the intent to seek professional help (Whitlock et al., 2013).

In sum, these findings suggest that the risks of participating in suicide-related research may apply to a very small minority of participants. This is balanced by a significantly larger

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subgroup reporting benefits such as initiating and receiving help because of their research involvement, despite also reporting some discomfort. Therefore, any ethical risk-benefit determination also requires consideration of the "ethics of doing nothing" (Omerov, Steineck, Dyregrov, Runeson, & Nyberg, 2014).

One recent meta-analysis examined the iatrogenic risks of assessing suicidality (DeCou & Schumann, 2017). A key strength of this study is that studies were stratified according to the timing of their follow-up assessments, with the authors concluding that assessing suicidality did not result in any significant negative effects on immediate, short-term, or long-term follow-up assessments. Importantly, there were no significant iatrogenic effects of assessing suicidality even among high-risk or vulnerable groups such as those with a history of suicidal behaviour. One limitation of the meta-analysis by DeCou and Schumann (2017) was that it only evaluated the effect of assessing suicidality on levels of suicidal ideation and psychological distress, but did not examine the impact on suicidal behaviour. According to the ideation-to-action framework, the processes underlying suicidal ideation and behaviour are distinct (Klonsky & May, 2014) and thus, suicidal behaviour needs to be considered.

The aim of the current study was to conduct a meta-analysis to examine whether asking about suicide or exposure to suicide-related content in research studies led to changes in three relevant outcome variables: levels of distress, levels of suicidal ideation, and likelihood of attempting suicide following research participation. Specifically, the current study sought to add to the existing knowledge by examining whether exposure to suicide-related content influenced likelihood of engaging in suicidal behaviour following participation in research exploring suicide. We also included several additional relevant studies investigating the impact of assessing suicidality which were not included in the DeCou & Schumann (2017) meta-analysis.

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Studies included in the current meta-analysis examined the above three outcomes using two different designs. One group of studies used within-participant designs to assess change from pre- to post- assessment. The other group of studies used between-group designs comparing participants who were exposed to suicide-related content with participants who were in a control condition, and therefore not exposed to suicide-related content.

Method

Literature search

Several search methods were used to identify eligible studies published or available between 2000 and 2017. The electronic databases PsycINFO, MEDLINE, and ERIC were searched to identify studies that included at least one phrase in each of the following groups of search terms: (a) *suicid**, (b) *review, effect, harm, impact* (c) *assess*, question*, program, contact*, and (d) *iatrogenic, risk assess**. The reference section of each article was searched for any further articles meeting the inclusion criteria mentioned below. Two authors (CB, AP) independently reviewed the titles and abstracts of 261 studies to determine if they were eligible for inclusion, 227 studies did not meet our inclusion criteria.

Inclusion and exclusion criteria

Studies were included if they: (a) were original, empirical articles (not theoretical, systematic reviews, or meta-analyses); (b) were written in English; (c) directly or indirectly assessed the impact that suicide-related questions, information or discussions about suicide had on participants' levels of suicidal ideation, distress, emotional state, or likelihood of attempting suicide; (d) provided a quantitative measure of the relevant dependent variable; and (e) provided sufficient statistical information in order to calculate effect sizes. See Figure 1 for a description

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of the study selection process. Eleven authors were contacted for additional information; five authors responded, including four who provided additional data. The above procedures captured a total of 17 published studies and one unpublished dissertation that were appropriate for inclusion. Overall, 20 unique samples are represented in the following meta-analyses.

Description of studies

Individual study sample sizes ranged from 63 to 4133 (M = 659.60, SD = 1165.10) and yielded a total sample size of N = 13,192. Seven studies did not provide data on gender (Aseltine, James, Schilling, & Glanovsky, 2007; Bender, 2012; Crawford et al., 2011; de Beurs, Ghoncheh, Geraedts & Kerkhof, 2017; Eynan et al., 2011; Robinson et al., 2011; Vaiva et al., 2006), therefore the available data from the included studies comprised of 4,904 females and 2,966 males. The samples included in the final meta-analyses differed on several factors including age and sample type. See Table 1 for more detailed information on each study.

Analytic Rationale

Effect sizes were converted to Hedges' g as it corrects for small sample sizes (Lipsey & Wilson, 2001). Hedges' g can be interpreted using Cohen's (1969) recommendations for d, with g = .20, .50, and .80 representing small, medium, and large effects, respectively. For those studies where Hedges' g effect sizes could not be calculated, odds ratios were used. Comprehensive Meta-Analysis Version 3 (Borenstein, Hedges, Higgins, & Rothstein, 2005) was used to calculate individual effect sizes and to generate funnel plots, and Microsoft Excel was used to generate forest plots. A random effects model was chosen as it accounts for differences in effect sizes that arise because of sampling demographic differences and testing variables both

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between and within studies (Rosenthal, 1995). Three dependent variables were recorded: levels of distress, levels of suicidal ideation, and number of suicide attempts.

Means and effect sizes were coded such that higher levels of suicidal ideation and distress, and higher numbers of suicide attempts indicated less favourable outcomes. That is, positive *g* values indicate higher levels of distress and suicidal ideation, whereas negative *g* values indicate lower levels of distress and suicidal ideation. The heterogeneity between the selected studies was examined with Cochrane's Q, Tau^2, and I^2 statistics and visually through funnel plots. Publication bias was examined visually using funnel plots and Egger's test of asymmetry which indicated that publication bias was unlikely to have influenced any of the meta-analytic findings reported here. One study (Biddle et al., 2013) did not provide a *p* value, however as the confidence intervals provided for the mean 'change' distress scores from pre- to post-assessment did not include zero, we conservatively assumed a *p* value of .05.

Study Categorisation

The extracted studies used two designs with three classes of outcomes (see Table 2). The first subgroup of studies employed within-participant designs. That is, participants were assessed at two time points on the variables of interest (pre- and post-exposure to suicide content). The second subgroup of studies employed between-groups designs, by comparing participants in the experimental condition (i.e., participants were exposed to suicide-related content) with participants in the control condition (i.e., participants were not exposed to content related to suicide).

Meta-Analysis Results

Distress: Pre-Post Within-Group Comparison

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A total of eight published studies comprising 10 unique samples and 5,562 participants were included in this meta-analysis (Biddle et al., 2013; Bryan et al., 2009; Cha et al., 2016; Deeley & Love, 2010; Gould et al., 2005; Harris & Goh, 2017; Reynolds et al., 2006; Rivlin, Marzano, Hawton & Fazel, 2012). Hedges' *g* effect sizes and confidence intervals are presented in a forest plot (Figure 2). The Q-test was significant (113.02, $p < .001$), and the I^2 statistic was 92.04, indicating that a large amount of variability was present between studies. The test of the null hypothesis was nonsignificant (Hedges' $g = -.09$, $p = .165$, 95% CI [-.21, .04]), indicating that exposure to suicide-related content did not result in significant changes in levels of distress from pre- to post- assessment.

Given that there was significant heterogeneity present between the studies, a moderator analysis investigated possible between-study differences that could account for this heterogeneity (Higgins & Green, 2011). Four moderators were investigated: (1) sample type; clinical (clinical populations or individuals with a history of suicidal behaviour) or non-clinical (community samples); (2) format of exposure to suicide-related content; interview context (e.g., in-person one-on-one interview) or non-interview context (e.g., written self-report questionnaire including suicide questions); (3) sample size; small (N = 1-100); medium (N = 101-200); large (N = 201 or more); and (4) age (high school student sample or adult sample). Only format of exposure to suicide-related content had a significant moderating effect on levels of distress from pre- to post-assessment (see Table 3), such that exposing participants to suicide-related content in a one-on-one interview context led to small, significant *reductions* in distress over time. In contrast, participants exposed to suicide-related content in a non-interview context by responding to written self-report questionnaires did not show significant changes in distress.

Distress: Experimental versus control between-group comparison - Immediate effects

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Five published studies and one unpublished[1] study made up of 3,430 unique participants were included in the meta-analysis (Bender, 2012; de Beurs et al., 2017; Gould et al., 2005; Harris & Goh, 2017; Robinson et al., 2011; Rudd et al., 2006). The Q-test was significant (14.21, $p < .05$), and the I^2 statistic was 64.81, indicating large variability between studies. However, since the number of studies included in the meta-analysis was small (< 8), and the studies were unbalanced in terms of sample size, the power of *Q* and the precision of the *I* statistic was likely to be low (Von Hippel, 2015). Nonetheless, we used a random-effects model to account for the presence of heterogeneity between effect sizes (Riley, Higgins, & Deeks, 2011). Exposing participants to suicide-related content did not lead to significantly higher levels of immediate distress, compared to those not exposed to content on suicide, Hedges' $g = -.01$, $p = .894$, 95% CI [-.16, .14] (see Figure 3).

Two of the six studies included in the above analysis also examined the effect of exposure to suicide-related content on delayed distress (i.e., two days later).

Distress: Experimental versus control between-group comparison - Delayed Effects

One published (Gould et al., 2005) and one unpublished study (Bender, 2012) comprising 2,319 unique participants were included in the meta-analysis. The Q test was nonsignificant, and the I^2 statistic was 0.00, suggesting that effects are unlikely to be attributed to differences between studies. Participants who were exposed to suicide-related content did not report significantly higher levels of distress two days later, compared to participants who were not exposed to this content, Hedges' $g = .04$, $p = .293$, 95% CI [-.04, .13] (see Figure 4).

[1] The unpublished study included in this meta-analysis was conducted by Bender (2012). The author did not report the sample size for either the experimental or control group, but instead reported an overall sample size of 130. As participants were randomly assigned to each group, we assumed that each group consisted of 65 unique individuals.

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In summary, exposure to suicide-related content did not lead to significant changes in individuals' levels of distress from pre- to post-session exposure, and participants who were exposed to suicide-related content did not differ from participants not exposed to such content in levels of distress immediately after exposure or two days later. Furthermore, the format of exposure to suicide-related content had a significant moderating effect on changes in distress. That is, participants exposed to suicide content in a one-on-one interview context reported significant reductions in distress over time, while those exposed to suicide content in a non-interview context reported no change in distress.

Suicidal Ideation: Pre-post within-group comparison

Four published studies (Cedereke, Monti & Öjehagen, 2002; Cha et al., 2016; Eynan et al., 2014; Reynolds et al., 2006) involving 3,699 unique participants were included in the meta-analysis. The Q test found nonsignificant heterogeneity for these studies, and the I^2 statistic was 0.00. In contrast to the non-significant changes in distress following suicide-related content, there were small significant *reductions* in levels of suicidal ideation over time from pre- to post-assessment, Hedges' g = -.13, p < .001, 95% CI [-.16, -.10] (see Figure 5). This reduction effect was moderated by age (adolescent or adult sample) such that adolescents showed nearly twice as large reductions in suicidal ideation from pre- to post-exposure as adults did (see Table 4).

Suicidal Ideation: Experimental versus control between-group comparison

A total of six published (Aseltine et al., 2007; Cedereke et al., 2002; Crawford et al., 2011; Gould et al., 2005; Law et al., 2015; Rudd et al., 2006) and one unpublished study (Bender, 2012) comprising 7,398 unique participants were included in the meta-analysis. The Q-test was nonsignificant and the I^2 statistic was 28.61. Participants exposed to suicide-related

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content were no more likely to report higher levels of suicidal ideation than participants not exposed to this content, OR = .973, p = .749, 95% CI [.83, 1.15] (see Figure 6).

Suicide Attempts: Experimental versus control between-group comparison

Four published studies (Aseltine et al., 2007; Cedereke et al., 2002; Crawford et al., 2011; Vaiva et al., 2006[2]) comprising 5,261 unique participants were included in the meta-analysis. . The Q-test found nonsignificant heterogeneity for these studies, and the I^2 statistic was 0.00. Consistent with the reduction in suicidal ideation found in the pre-post within-group comparison, participants who were exposed to suicide-related content were significantly *less* likely to report a suicide attempt than individuals who were not exposed to suicide related content following research participation, OR = .714, $p < .05$, 95% CI [.56, .91] (see Figure 7).

Discussion

The aim of the meta-analysis was to examine whether exposure to suicide-related content in research studies led to; (1) changes in levels of distress; (2) changes in levels of suicidal ideation; and (3) changes in likelihood of attempting suicide following research participation. Results showed exposure to suicide-related content led to significant, albeit small, *reductions* in levels of suicidal ideation from pre- to post-exposure. Moreover, participants in the experimental, suicide-related exposure conditions were significantly *less* likely to report a suicide attempt following research participation, compared to participants in the control, non-

[2] The Vaiva et al. (2006) study comprised two "intervention" groups; one intervention group received a telephone contact one month following a deliberate suicide attempt (self-poisoning), whilst the other intervention group received this contact after three months. Therefore, we collapsed the two intervention groups into one "experimental" group and compared this group with the no intervention "control" group as the only difference between the two interventions groups was the timing of the single telephone contact.

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suicide-related exposure conditions. Results also indicated that participants exposed to suicide content in a one-on-one interview context reported significant small *reductions* in distress from pre- to post-exposure, while those exposed to suicide content in a non-interview context reported no significant changes in distress. Taken together, the meta-analytic results suggest that participation in suicide-related research is not associated with an increase in risk and may have some small benefits to participants.

The only significant effects that emerged, albeit small, suggest that participants experienced some benefits from partaking in suicide-related research not only in terms of reduced suicidal ideation, but also in terms of reduced suicidal behaviour. This is important because there is now converging evidence that many established risk factors for suicide confer risk for suicide ideation only, and not for the progression to suicide attempts (Klonsky, Saffer, & Bryan, 2017). Therefore, showing that there is no change in ideation, as in previous reviews (e.g., DeCou & Schumann, 2017), is comforting but not sufficient, because the risks of exposure to suicide-related content in research studies could differ for different points along the ideation-to-action pathway. Hence, it is critical for ethical decision making to also evaluate the impact of exposure to suicide-related content on the likelihood of suicidal *behaviour*. Reassuringly, the current meta-analytic findings suggest that, compared to exposure to non-suicide related content, exposure to suicide-related content was associated with fewer subsequent reported suicide attempts. In an ethical framework where one must weigh the risks of harm or discomfort against the potential for benefits, the available evidence tips the scale in a clear direction; participation in suicide-related research confers small benefits along both the ideation and action components of the ideation-to-action pathway, and there is no evidence of risk associated with participation.

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With respect to distress, participants exposed to suicide-related content in a non-interview context reported no change in distress, but those exposed to this content in a one-on-one interview context reported significant reductions in distress. One possible explanation for reductions in distress being found only reported in the interview context may lie in the interpersonal nature of interviews. That is, a one-on-one research interview could have provided participants with the opportunity to talk about their issues in an open, confidential, and nonjudgmental environment (Taylor et al., 2010). This is supported by findings related to individuals' subjective experiences of participating in suicide research, with participants likening the research interview to a therapeutic encounter, remarking that the interview process was "cathartic", and stating that the interview had offered them the opportunity to talk through their experiences in depth, something they had not had the chance to do in the past (Biddle et al., 2013; Rivlin et al., 2012). Thus, although limited to the one-on-one interview context, the reductions in reported distress following exposure to suicide-related content further add to the benefits column of the risk-benefit analysis of participation in suicide-related research.

According to the guidelines on ethical decision making in human research, researchers must minimise the risks and clarify the benefits of research for participants (e.g., The National Health and Medical Research Council, 2007). Moreover, if research can offer direct benefits to participants, the guidelines explicitly allow for the consideration that participants may be ready to assume a higher risk than they otherwise would (The National Health and Medical Research Council, 2007). That is, in exercising beneficence researchers must take into account both the potential risks and benefits of research to participants, while respecting the participants' autonomy to provide informed consent. The process of resolving the profound tension between the obligation to minimise potential harm and to give maximum scope to participants' freedom to

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accept risk in light of direct benefits to them must be guided by the available evidence. Previously, reviews of the available evidence concluded that there was no evidence for any iatrogenic effects of exposure to suicide-related content in research studies (Dazzi et al., 2014; DeCou & Schumann, 2017). However, overly cautious ethical decision makers might dismiss this conclusion because a more conservative interpretation is that the absence of evidence for an effect is not the same as evidence for the absence of the effect. However, this objection becomes untenable if the available evidence shows the *presence* of significant effects, especially if these effects are benefits to participants such as reductions in suicidal ideation and behaviour. Although these significant reductions were only small in the current meta-analyses, arguably even small benefits to mitigating the risk of suicide for an individual are desirable.

As the available evidence points to direct benefits of participation in research involving exposure to suicide-related content, this has implications for achieving the optimal balance between concerns for protection and concerns for justice and participant autonomy. Injustice arises when potential participants are denied access to suicide-related studies that could lead to reductions in suicide risk or improve lives, including those of vulnerable individuals. The present meta-analysis included studies with high-risk clinical samples, and where moderation analyses were possible (i.e., for the outcome of distress), the findings of benefits were not moderated by the clinical or non-clinical nature of the samples. Thus, these benefits are likely to be applicable also to individuals typically considered high risk. The implementation of additional safeguards for research presumed to increase vulnerability to harm should be based on the best available evidence – not stereotypes or untested assumptions (DuBois et al., 2012). The assumption that exposure to suicide-related content might increase risk has not been substantiated. Instead, the only effects substantiated are small benefits.

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There are several other examples where long-held assumptions about presumed vulnerabilities of potential research participants, when tested, were found to be unsubstantiated. For example, in research involving drug users a common ethical concern is that providing higher magnitude cash incentives might precipitate new drug use or unduly coerce drug users to provide consent to participate (Festinger et al. 2005). Because of this presumed risk that drug users might use this cash to go out and purchase drugs after their research participation, research is only approved if incentives are of low magnitude and non-cash. However, when putting this restrictive ethical assumption to the test, evidence showed that neither the mode (cash vs. gift card) nor magnitude ($10 to $160) of follow-up payments increased rates of new drug use or perceptions of coercion (Festinger, Marlowe, Dugosh, Croft, & Arabia, 2008). Importantly, as with the current findings of significant benefits of participation in suicide-related research, Festinger and colleagues (2008) did not simply fail to reject the null hypothesis concerning new drug use and perceived coercion, but found significant effects for direct benefits to participants. That is, higher payments and payments in cash were associated with better follow-up attendance and improved participant satisfaction.

Similarly, in research involving suicide-bereaved parents, ethical review boards may not approve this research based on the assumption that the contact might be distressing for some participants, but the evidence shows that benefits to participants clearly outweigh the risks (Omerov et al., 2014). Specifically, 95% of suicide bereaved parents compared to 92% of non-bereaved parents found the study valuable, and a large number of the suicide-bereaved parents perceived benefits of their participation including gratitude for the opportunity to relate experiences, hope their contribution improves care provision, and experience of being helped.

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Less than 1% of the parents expressed distress related to the contact, and even among this small minority, this later turned for some into gratitude for the help received (Omerov et al., 2014).

In sum, when the best available evidence shows that presumed risks of research participation are unsubstantiated, but instead participation is associated with benefits, the need for safeguards should not only be relaxed, but not doing so fails to uphold the ethical principle of justice, where potential research participants might be deprived of the opportunity to receive the benefits of participating in the research.

The current meta-analysis has a number of strengths. Firstly, we were able to identify studies which examined outcome variables along different points of the "ideation-to-action" framework (Klonsky & May, 2014), including suicidal ideation and suicide attempts. Thus, this is the first quantitative analysis of the effects that participating in suicide-related research has on participants' likelihood of attempting suicide, in addition to examining any effects on changes to suicidal ideation and distress experienced following exposure to suicide-related content. Secondly, given the large overall sample (N = 13,192) and no evidence of publication bias, the findings are likely to be representative of the research in this area. In addition, data were collected from participants across the lifespan (13-92 years) from a number of diverse samples including high school and college students, active military service men, individuals in primary care settings, as well as individuals with a history of suicidal behaviour.

Limitations

The findings should be interpreted with some limitations in mind. All studies included in the meta-analyses were approved by the appropriate ethics committees and had risk management protocols in place to manage any potential adverse events during participation. It may be that

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study designs which ethics committees foresaw as having the potential to lead to detrimental effects were not approved, and therefore this sample of studies may be selective.

A possible explanation for the participants who reported reductions in levels of distress or suicidal ideation over time in studies that employed a pre-post design is regression to the mean. However, this cannot be an explanation for the differences observed in the between-group designs where participants were randomly assigned to conditions.

Inspection of the forest plot of the odds ratios in Figure 6 reveals some studies showing positive effect sizes (albeit non-significant) of increased suicidal ideation that appear larger than most of the (also non-significant) negative effect sizes of reduced suicidal ideation. All of the three studies which showed the non-significant increase in risk involved participants with significant mental health issues (i.e., presented to the emergency department following a suicide attempt; or demonstrated signs of depression at a primary care service; or attended an outpatient psychiatric clinic), whereas the other four studies in this analysis which showed no risk used high school or university student samples. These non-significant trends might suggest that future research further investigate any possible moderating role of clinical versus non-clinical samples, although in the present study where moderation analyses were possible, no moderating effects of clinical versus non-clinical samples were found.

Future directions

In most studies included in the meta-analyses, participants responded to suicide questions in the context of other questions related to psychological problems such as depression and social support. It is unclear whether exposure to suicide content itself led to changes in distress, suicidal ideation, and attempts. One way to investigate the unique impact of this exposure is to examine

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differential drop-out behaviour during survey completion following suicide-related and non-suicide-related questions. For example, for online surveys where there is no immediate direct experimenter contact and support, and where participation may be anonymous, ethical review boards often require an "escape button" on each page of the survey where participants can opt to discontinue the survey at any time and be directed to a help page listing contact information for available resources for assistance. The assumption is that if any specific content causes distress, a participant can actively end their participation and access information about help resources immediately. Such specific drop-out decisions could be viewed as a behavioural indicator of an individual's distress. Therefore, if participants are found to be more likely to drop-out of a study following suicide questions compared to non-suicide questions, it would suggest that responding to the suicide content resulted in greater discomfort, and hence greater study drop-out than responding to non-suicide related content. However, if there are no differences in drop-out rates between suicide and non-suicide related questions, it could be concluded that responding to suicide-related questions is no more likely to lead to study drop-out, as a behavioural indicator of distress, compared to other types of questions. Such behavioural proxies of participant distress could complement extant studies relying exclusively on self-report measures.

Given that previous studies have not always been explicitly designed to measure tangible benefits associated with participation in suicide research, it is conceivable that previous studies may have underestimated these benefits. This should be considered in the design of future studies to further examine what tangible benefits may be associated with participation in suicide research.

Conclusion

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The findings of the current meta-analysis indicate that exposure to suicide-related content during research studies is associated with reductions in suicidal ideation and a lower likelihood of attempting suicide after participation. Ethical decision making about research should be based on a risk-benefit analysis of the best available evidence and be guided by the principle to offer as many protections as necessary but as few as possible (DuBois e al., 2012). From the current findings it is evident that participation in suicide research may offer some benefits to participants and by not taking into account these benefits when requiring unnecessary additional safeguards based on unsubstantiated assumptions, we risk depriving participants of the benefits that participation might offer, and hinder important research being conducted. Therefore, the findings can assist ethical review boards reassessing how they evaluate and make decisions about suicide-related research, by reconceptualising their views of the potential risks, and calibrating these risks relative to the potential benefits of participation in an evidence-based manner.

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References

Note: *References marked with * indicate studies included in the meta-analyses.*

*Aseltine, R. H., James, A., Schilling, E. A., & Glanovsky, J. (2007). Evaluating the SOS suicide prevention program: A replication and extension. *BMC Public Health, 7*, 1-7. http://dx.doi.org/10.1186/1471-2458-7-161

Bajaj, P., Borreani, E., Ghosh, P., Methuen, C., Patel, M., Joseph, M. (2008). Screening for suicidal thoughts in primary care: The views of patients and general practitioners. *Mental Health and Family Medicine, 5*, 229-235.

*Bender, T. W. (2012). *Screening for suicide in an adult population: An analysis of iatrogenic risk* (Doctoral dissertation). Retrieved from ProQuest. (3539527).

*Biddle, L., Cooper, J., Owen-Smith, A., Klineberg, E., Bennewith, O., Hawton, K., . . . Gunnell, D. (2013). Qualitative interviewing with vulnerable populations: Individuals' experiences of participating in suicide and self-harm based research. *Journal of Affective Disorders, 145*, 356-362. http://dx.doi.org/10.1016/j.jad.2012.08.024

Borenstein, M., Hedges, L., Higgins, J., & Rothstein, H. (2005). *Comprehensive meta-analysis version 3*. Englewood, NJ; Biostat

*Bryan, C. J., Dhillon-Davis, L. E., & Dhillon-Davis, K. K. (2009). Emotional impact of a video-based suicide prevention program on suicidal viewers and suicide survivors. *Suicide and Life-Threatening Behavior, 39*, 623-632. http://dx.doi.org/10.1521/suli.2009.39.6.623

*Cedereke, M., Monti, K., & Öjehagen, A. (2002). Telephone contact with patients in the year after a suicide attempt: Does it affect treatment attendance and outcome? A randomised controlled study. *European Psychiatry, 17*, 82-91. http://dx.doi.org/10.1016/S0924-9338(02)00632-6

ACCEPTED MANUSCRIPT

*Cha, C. B., Glenn, J. J., Deming, C. A., D'Angelo, E. J., Hooley, J. M., Teachman, B. A., & Nock, M. K. (2016). Examining potential iatrogenic effects of viewing suicide and self-injury stimuli. *Psychological Assessment*, *28*, 1510-1515. http://dx.doi.org/10.1037/pas0000280

Cohen, J. (1969). *Statistical power analysis for the behavioral science.* New York: Academic Press.

*Crawford, M. J., Thana, L., Methuen, C., Ghosh, P., Stanley, S. V., Ross, J., . . . Bajaj, P. (2011). Impact of screening for risk of suicide: Randomised controlled trial. *The British Journal of Psychiatry, 198*, 379-384. http://dx.doi.org/10.1192/bjp.bp.110.083592

Dazzi, T., Gribble, R., Wessely, S., & Fear, N. T. (2014). Does asking about suicide and related behaviours induce suicidal ideation? What is the evidence? *Psychological Medicine, 44*, 3361-3363. http://dx.doi.org/10.1017/S0033291714001299

*de Beurs, D. P., Ghoncheh, R., Geraedts, A. S. & Kerkhof, A. J. F. M. (2017). Psychological distress because of asking about suicidal thoughts: A randomized controlled trial among students. *Archives of Suicide Research, 20*, 153-159. http://dx.doi.org/10.1080/13811118.2015.1004475

DeCou, C. R., & Schumann, M. E. (2017). On the iatrogenic risk of assessing suicidality: A meta-analysis. *Suicide and Life-Threatening Behavior*. http://dx.doi.org/10.111/sltb.12368

*Deeley, S. T. & Love, A. W. (2010). Does asking adolescents about suicidal ideation induce negative mood state? *Violence and Victims, 25*, 677-688. http://dx.doi.org/10.1891/0886-6708.25.5.677

DuBois, J. M., Beskow, L., Campbell, J., Dugosh, K., Festinger, D., Hartz, S., ... & Lidz, C.

ACCEPTED MANUSCRIPT

(2012). Restoring balance: A consensus statement on the protection of vulnerable research participants. *American Journal of Public Health*, *102*, 2220-2225. http://dx.doi.org/10.2105/AJPH.2012.300757

*Eynan, R., Bergmans, Y., Antony, J., Cutcliffe, J. R., Harder, H. G., Ambreen, M., . . . Links, P. S. (2014). The effects of suicide ideation assessments on urges to self-harm and suicide. *Crisis*, *35*, 123-131. http://dx.doi.org/10.1027/0227-5910/a000233

Festinger, D. S., Marlowe, D. B., Croft, J. R., Dugosh, K. L., Mastro, N. K., Lee, P. A., ... & Patapis, N. S. (2005). Do research payments precipitate drug use or coerce participation? *Drug & Alcohol Dependence*, *78*, 275-281. https://doi.org/10.1016/j.drugalcdep.2004.11.011

Festinger, D. S., Marlowe, D. B., Dugosh, K. L., Croft, J. R., & Arabia, P. L. (2008). Higher magnitude cash payments improve research follow-up rates without increasing drug use or perceived coercion. *Drug & Alcohol Dependence*, *96*, 128-135. https://doi.org/10.1016/j.drugalcdep.2008.02.007

*Gould, M. S., Marrocco, F. A., Kleinman, M., Thomas, J. G., Mostkoff, K., Cote, J., & Davies, M. (2005). Evaluating iatrogenic risk of youth suicide screening programs: A randomized controlled trial. *Jama*, *293*, 1635-1643. http://dx.doi.org/10.1001/jama.293.13.1635

*Harris, K. M. & Goh, Melissa, T. (2017). Is suicide assessment harmful to participants? Findings from a randomized controlled trial. *International Journal of Mental Health Nursing*, *26*, 181-190. http://dx.doi.org/10.1111/inm.12223

Klonsky, E. D., & May, A. M. (2014). Differentiating suicide attempters from suicide ideators: A critical frontier for suicidology research. *Suicide and Life-Threatening Behavior*, *44*, 1-5. http://dx.doi.org/10.1111/sltb.12068

ACCEPTED MANUSCRIPT

Klonsky, E. D., Saffer, B. Y., & Bryan, C. J. (2017). Ideation-to-Action Theories of Suicide: A Conceptual and Empirical Update. *Current Opinion in Psychology*. 22, 38–43. http://dx.doi.org/10.1016/j.copsyc.2017.07.020

Lakeman, R., & Fitzgerald, M. (2009a). Ethical suicide research: A survey of researchers. *International Journal of Mental Health Nursing, 18*, 10-17. http://dx.doi.org/10.1111/j.1447-0349.2008.00569.x

Lakeman, R., & Fitzgerald, M. (2009b). The ethics of suicide research: The views of ethics committee members. *Crisis, 30*, 13-19. http://dx.doi.org/10.1027/0227-5910.30.1.13

*Law, M. K., Furr, R. M., Arnold, E. M., Mneimne, M., Jaquett, C., & Fleeson, W. (2015). Does assessing suicidality frequently and repeatedly cause harm? A randomized control study. *Psychological Assessment, 27*, 1-11. http://dx.doi.org/10.1037/pas0000118

Lipsey, M. W., & Wilson, D. B. (2001). *Practical meta-analysis*. Thousand Oaks, CA: Sage Publications, Inc.

McCabe, R., Sterno, I., Priebe, S., Barnes, R., & Byng, R. (2017). How do healthcare professionals interview patients to assess suicide risk? *BMC Psychiatry*, *17*, 122. http://dx.doi.org/10.1186/s12888-017-1212-7

National Commission for the Protection of Human Subjects of Biomedical and Behavioral Research (1979). *The Belmont Report: Ethical Principles and Guidelines for the Protection of Human Subjects of Research-the National Commission for the Protection of Human Subjects of Biomedical and Behavioral Research*. US Government Printing Office. (2017, June 14). Retrieved from: https://www.hhs.gov/ohrp/regulations-and-policy/belmont-report/index.html

Omerov, P., Steineck, G., Dyregrov, K., Runeson, B., & Nyberg, U. (2014). The ethics of doing

ACCEPTED MANUSCRIPT

nothing. Suicide-bereavement and research: Ethical and methodological considerations. *Psychological Medicine*, *44*, 3409-3420. http://dx.doi.org/10.1017/S0033291713001670

O'Reilly, M., Kiyimba, N., & Karim, K. (2016). "This is a question we have to ask everyone": Asking young people about self-harm and suicide. *Journal of Psychiatric and Mental Health Nursing*, *23*, 479-488. http://dx.doi.org/10.1111/jpm.12323

Pearson, J. L., Stanley, B., King, C. A., & Fisher, C. B. (2001). Intervention research with persons at high risk for suicidality: Safety and ethical considerations. *Journal of Clinical Psychiatry*. *62*, 17-26.

*Reynolds, S. K., Lindenboim, N., Comtois, K. A., Murray, A., & Linehan, M. M. (2006). Risky assessments: Participant suicidality and distress associated with research assessments in a treatment study of suicidal behavior. *Suicide and Life-Threatening Behavior, 36*, 19-34. http://dx.doi.org/10.1521/suli.2006.36.1.19

Riley, R. D., Higgins, J. P. T., & Deeks, J. J. (2011). Interpretation of random effects meta-analyses. The *BMJ*, *342*.

*Robinson, J., Yuen, H. P., Martin, C., Hughes, A., Baksheev, G. N., Dodd, S., ... & Yung, A. R. (2011). Does screening high school students for psychological distress, deliberate self-harm, or suicidal ideation cause distress – And is it acceptable? *Crisis 32*, 254-263. http://dx.doi.org/10.1027/0227-5910/a000087

Rosenthal, R. (1995). Writing meta-analytic reviews. *Psychological Bulletin, 118*, 183-192. http://dx.doi.org/10.1037/0033-2909.118.2.183

*Rivlin, A., Marzano, L., Hawton, K., & Fazel, S. (2012). Impact on prisoners of participating in research interviews related to near-lethal suicide attempts. *Journal of Affective*

ACCEPTED MANUSCRIPT

Disorders, 136, 54-62. http://dx.doi.org/10.1016/j.jad.2011.09.009

*Rudd, M. D., Mandrusiak, M., Joiner, T. E., Berman, A. L., Van Orden, K. A., & Hollar, D. (2006). The emotional impact and ease of recall of warning signs for suicide: A controlled study. *Suicide and Life-Threatening Behavior, 36*, 288-295. http://dx.doi.org/10.1521/suli.2006.36.3.288

Stoppe, G., Sandholzer, H., Huppertz, C., Duwe, H., & Staedt, J. (1999). Family physicians and the risk of suicide in the depressed elderly. *Journal of Affective Disorders, 54*, 193-198. http://dx.doi.org/10.1016/S0165-0327(98)00149-9

Taylor, P. J., Awenat, Y., Gooding, P., Johnson, J., Pratt, D., Wood, A., & Tarrier, N. (2010). The subjective experience of participation in schizophrenia research: A practical and ethical issue. *The Journal of Nervous and Mental Disease, 198*, 343-348. http://dx.doi.org/10.1097/NMD.0b013e3181da8545

The National Health and Medical Research Council (Australia) (2007). National Statement on Ethical Conduct in Human Research 2007 (Updated May 2015). Retrieved from: https://www.nhmrc.gov.au/_files_nhmrc/publications/attachments/e72_national_statement_may_2015_150514_a.pdf

*Vaiva, G., Ducrocq, F., Meyer, P., Mathieu, D., Philippe, A., Libersa, C., & Goudemand, M. (2006). Effect of telephone contact on further suicide attempts in patients discharged from an emergency department: Randomised controlled study. *The BMJ, 332*, 1241-1245. http://dx.doi.org/10.1136/bmj.332.7552.1241

Von Hippel, P. T. (2015). The heterogeneity statistic I^2 can be biased in small meta-analyses. *BMC Medical Research Methodology*, *15*, 1-8. http://doi.org/10.1186/s12874-015-0024-z

ACCEPTED MANUSCRIPT

Whitlock, J., Pietrusza, C., & Purington, A. (2013). Young adult respondent experiences of disclosing self-injury, suicide-related behavior, and psychological distress in a web-based survey. *Archives of Suicide Research, 17*, 20-32. http://dx.doi.org/10.1080/13811118.2013.748405

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Table 1.
Summary information on extracted studies including sample type, study design, and outcome measures.

Study	Sample	Aim of study	Outcomes	Outcome measure(s)
Aseltine et al. (2007)	4133 high school students	Examine impact of a school-based suicide prevention program on suicidal behaviour, knowledge and attitudes towards depression and suicide, and help-seeking.	Suicidal ideation	"During the past 3 months, did you ever seriously consider attempting suicide (yes or no)?"
			Suicide attempts	"During the past 3 months, did you actually attempt suicide (yes or no)?"
Bender (2012)	98 female and 49 male undergraduate students	Explore whether asking about suicidal ideation or suicidal behaviour in a school based screening program led to increases in distress or suicidal ideation.	Distress	Profile of Mood States (POMS) - Immediate - Persistent
			Suicidal ideation	The Suicide Implicit Association Task (SI-AT)
Biddle et al. (2013)	40 females and 23 males recently discharged from psychiatric hospital following recent self-harm or suicide attempt	Investigate the experiences of individuals who participated in in-depth interviews on sensitive issues relating to suicide and self-harm. Note: Data were collected from four unpublished studies that assessed the impact that interviews on suicide/self-harm had on participants' emotional state.	Distress	Visual Analogue Scale (VAS); "How happy or sad you are feeling right now?"
Bryan et al. (2009)	286 males actively enlisted in the U.S. army	Explore the impact of viewing video media as a part of a suicide prevention program on potentially vulnerable individuals (individuals were suicidal or endorsed knowing someone who had died by suicide).	Distress	The Positive and Negative Affective Schedule (PANAS) - Negative affect

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Cedereke et al. (2002)	143 females and 73 males who had been hospitalised following a suicide attempt	Investigate whether two telephone contacts in addition to treatment delivered as usual compared to no intervention between 1-12 months after a suicide attempt influenced repetition of suicidal behaviour.	Suicide attempts	Participants were asked if they had attempted to take their own life in previous 12 months.
Cha et al., (2016)	Sample 1: 2217 female and 1087 male web-based respondents. Sample 2: 63 female and 37 male undergraduate students. Sample 3: 61 female and 28 male adolescent inpatients	Investigate potential iatrogenic effects of viewing self-injurious thoughts and behaviours- related stimuli on participants. Note: This study was comprised of three unique unpublished studies that assessed the impact of viewing self-injurious thoughts and behaviours- related stimuli on participants' distress and suicidal ideation.	Distress Suicidal ideation	Mood: "How would you rate your mood right now?" Desire to die: "How much do you want to die right now?"
Crawford et al., (2011)	306 females and 137 males attending primary care services with signs of depression	Investigate whether screening individuals who attended primary care services and had signs of depression for suicidal ideation led to increases in feelings that life was not worth living.	Suicidal ideation Suicide attempts	"In the last two weeks, have you felt that your life was not worth living/ wished you were dead?" "In the last two weeks have you attempted to take your own life?"
de Beurs et al. (2016)	301 university students	Investigate the effect of questions about suicidal ideation on psychological wellbeing among healthy participants.	Distress	The Positive and Negative Affective Schedule (PANAS) - Negative affect
Deeley & Love (2010)	98 female and 31 male university students	Examine the potential impact of negative mood induction through participation in suicidal ideation questionnaire research.	Distress	Mood Monitor: Single mood state rating 1 (very negative) to 6 (very positive)
Eynan et al. (2014)	57 female and 63 male psychiatric inpatients who had been recently discharged	Examine post-assessment changes in self-harm and suicide urges of participants.	Suicidal ideation Suicide attempts	'*Urge to suicide*': "Please rate your urge to suicide on a scale of 0-7 (none to severe)" Self-reported suicide attempts

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Gould et al. (2005)	1081 female and 1261 male high school students	Investigate whether asking about suicidal ideation or behaviour during a screening program caused distress or increased suicidal ideation in high school students, and among high-risk students endorsing depressive symptoms, substance use problems, or previous suicide attempts.	Distress Suicidal ideation	Profile of Mood States (POMS) - Baseline - Immediate - Persistent Suicidal Ideation Questionnaire
Harris & Goh (2016)	151 female and 108 male individuals from a community sample	Investigate the emotional impact of suicide assessment on participants.	Distress	The Positive and Negative Affective Schedule (PANAS) - Negative affect
Law et al. (2015)	167 female and 81 male individuals (30% met criteria for Borderline Personality Disorder)	Examine whether frequent and repeated suicide assessment led to harmful consequences such as increased suicidal ideation, frequency of suicide attempts or self-harm.	Suicidal ideation Suicide attempts	"I thought about committing suicide in the last 60 minutes [or today]." "I tried to kill myself in the last 60 minutes [or today]."
Reynolds et al. (2006)	63 females with a current diagnosis of borderline personality disorder and a history of previous suicidal behaviour in last 5 years	Explore changes in suicidal ideation and distress following an assessment of suicidality with a high-risk sample, and examine the patterns of changes over the course of repeated assessments over a two year period.	Suicidal ideation Suicide attempts	"What is your urge to kill yourself now/harm yourself now?" Suicide Attempt Self-Injury Interview (SASII)
Robinson et al. (2011)	308 high school students	Assess whether screening high school students for psychological distress, self-harm or suicidal ideation caused participants distress.	Distress	Profile of Mood States (POMS) - Depression subscale only
Rivlin et al. (2012)	116 female and 119 male prisoners	Investigate the effects of taking part in detailed interviews about suicidal behaviour and contributory factors.	Distress	Visual Analogue Scale (VAS); "How happy or sad you are feeling right now?"
Rudd et al. (2006)	75 female and 15 male undergraduate students	Compare the emotional impact of exposure to warning signs for suicide with exposure to warning signs for other medical	Distress	PANAS (Negative Affect schedule only)

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		conditions (e.g., diabetes), on measures of suicidal ideation and affect.	Suicidal ideation	Beck Scale for Suicide Ideation (BSS)
Vaiva et al. (2006)	605 patients discharged from emergency department after attempted suicide by deliberate self-poisoning	Examine the effects over one year of contacting patients by telephone one month- or three months after discharge from an emergency department following deliberate self-poisoning, compared with treatment as usual.	Suicide attempts	Self-reported suicide attempts

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Table 2.
Summary of extracted studies included in meta-analyses by study design and outcome variable

Study design	Distress	Suicidal ideation	Suicide attempts
Single group- Pre/Post data	Biddle et al. (2013) Bryan et al. (2009) Cha et al. (2016) Deeley & Love (2010) Gould et al. (2005) Harris & Goh (2017) Reynolds et al. (2006) Rivlin et al. (2012)	Cedereke et al. (2002) Cha et al. (2016) Eynan et al. (2014) Reynolds et al. (2006)	
Two groups- Post data	Bender (2012) de Beurs et al. (2017) Gould et al. (2005) Harris & Goh (2017) Robinson et al. (2011) Rudd et al. (2006)	Aseltine et al. (2007) Bender (2012) Cedereke et al. (2002) Crawford et al. (2011) Gould et al. (2005) Law et al. (2015) Rudd et al. (2006)	Aseltine et al. (2007) Cedereke et al. (2002) Crawford et al. (2011) Vaiva et al. (2006)

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Table 3.
Mean effect sizes (g) and homogeneity statistics for change in distress levels from pre- to post-exposure to suicide content

	Effect Size Statistics						Homogeneity Statistics			
	N	*g*	95% CI		Z	*p*	Q (df)	*p*	Tau^2	I^2
			Lower	Upper						
Overall effect	10	-.183	-.268	-.099	-4.244	.000	113.02 (9)	.000	.032	92.037
Format of exposure										
Interview	3	-.262	-.366	-.157	-4.913	.000	1.739 (2)	.419	.000	.000
Non-interview	7	-.033	-.178	.112	-.441	.659	95.839 (6)	.000	.033	93.739

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Table 4.
Mean effect sizes (g) and homogeneity statistics for change in suicidal ideation from pre- to post-exposure to suicide content

	Effect Size Statistics						Homogeneity Statistics			
	N	*g*	95% CI		Z	*p*	Q (df)	*p*	Tau^2	I^2
			Lower	Upper						
Overall effect	6	-.128	-.160	-.095	-7.732	.000	4.491(5)	.423	.000	.000
Age										
Adolescent sample	1	-.221	-.429	-.012	-2.074	.038	0(0)	1.000	.000	.000
Adult sample	5	-.125	-.158	-.093	-7.501	.000	4.155(4)	.385	.000	3.730

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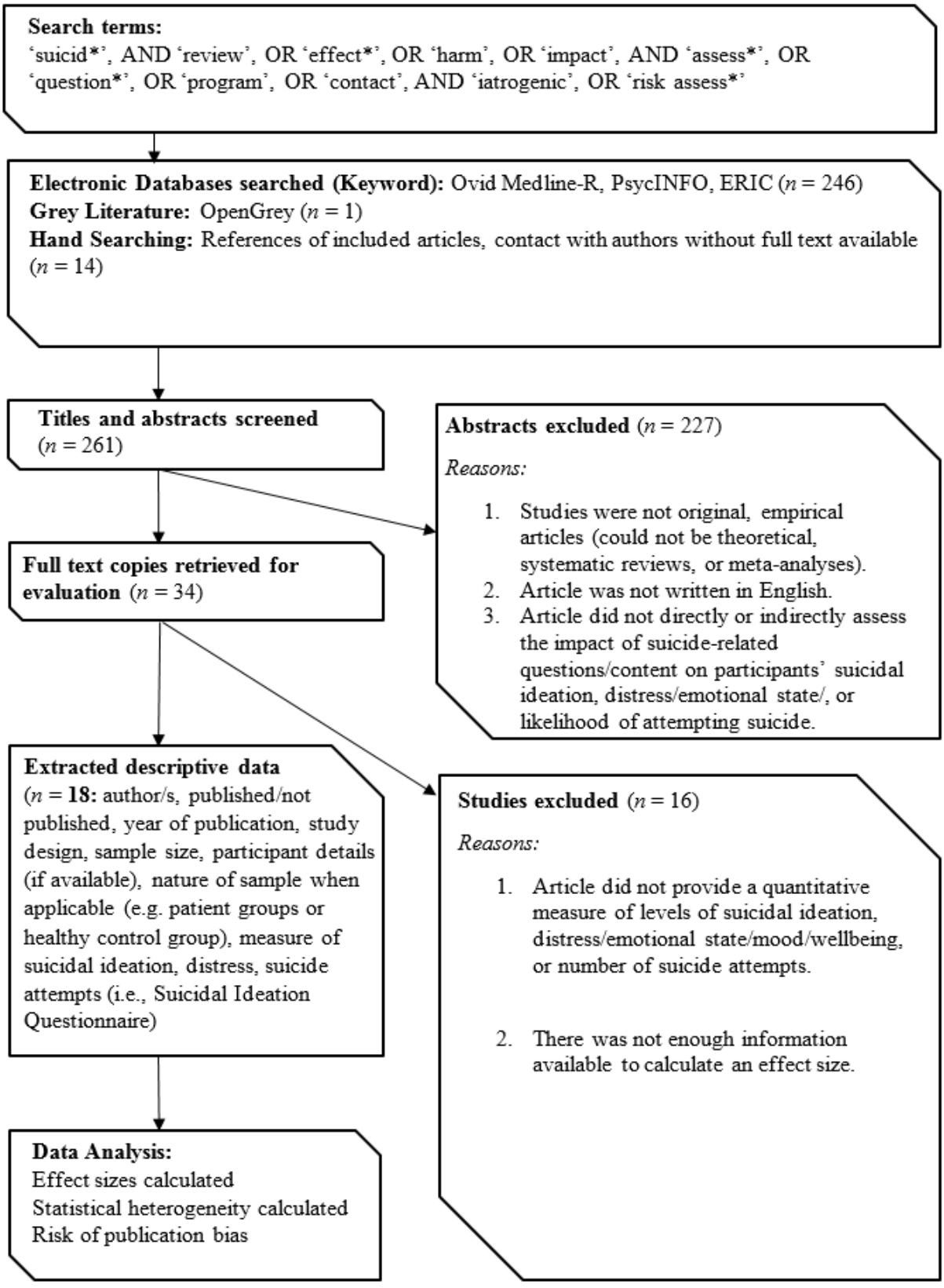

Figure 1. Flow chart of search, retrieval and inclusion process.

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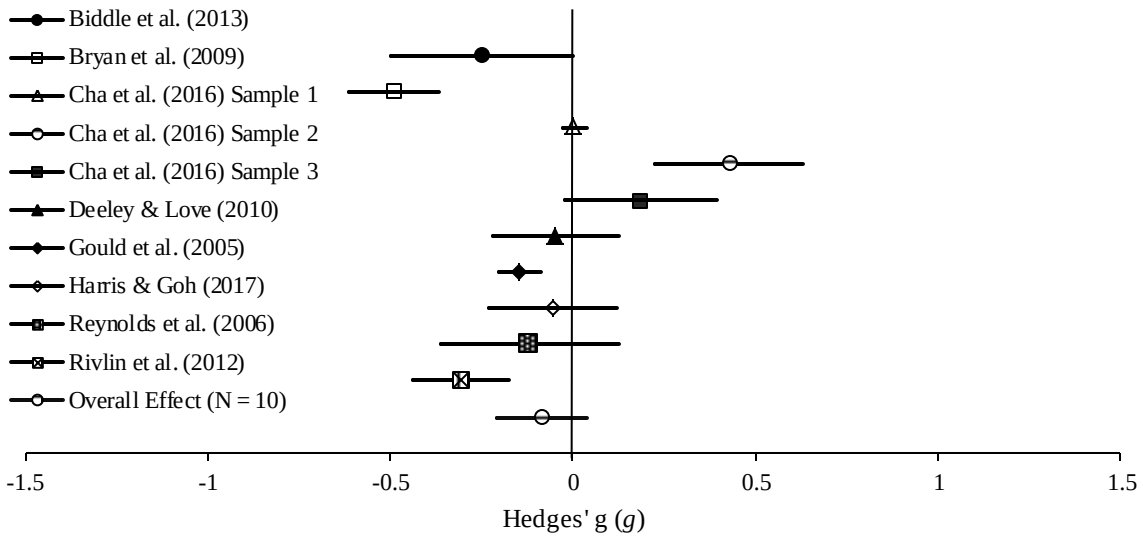

Figure 2. Forest plot examining participants' pre and post-session levels of distress following exposure to suicide-related content.

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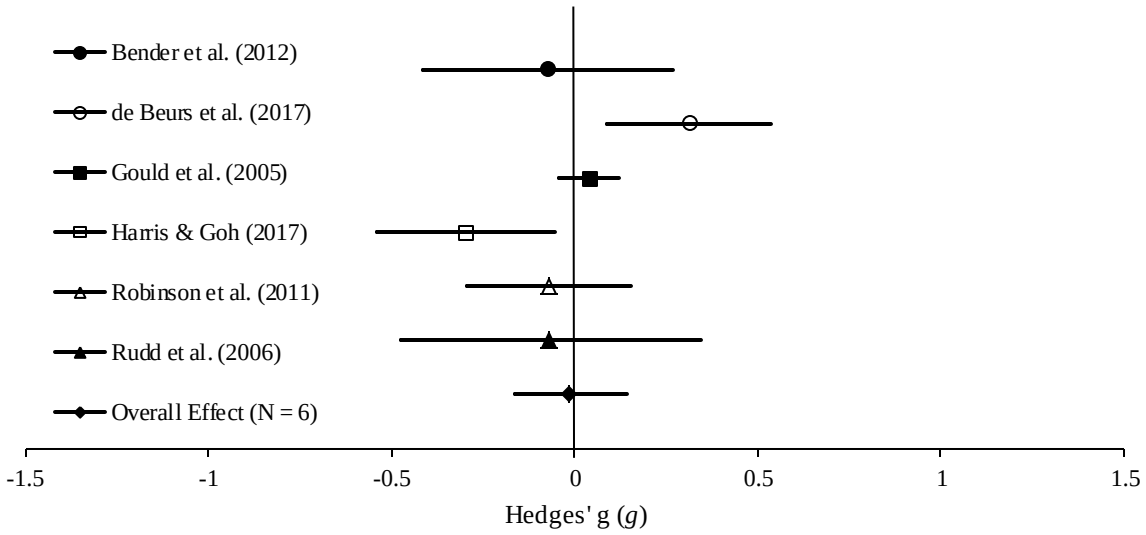

Figure 3. Forest plot comparing experimental and control groups on levels of immediate distress following exposure to suicide-related content.

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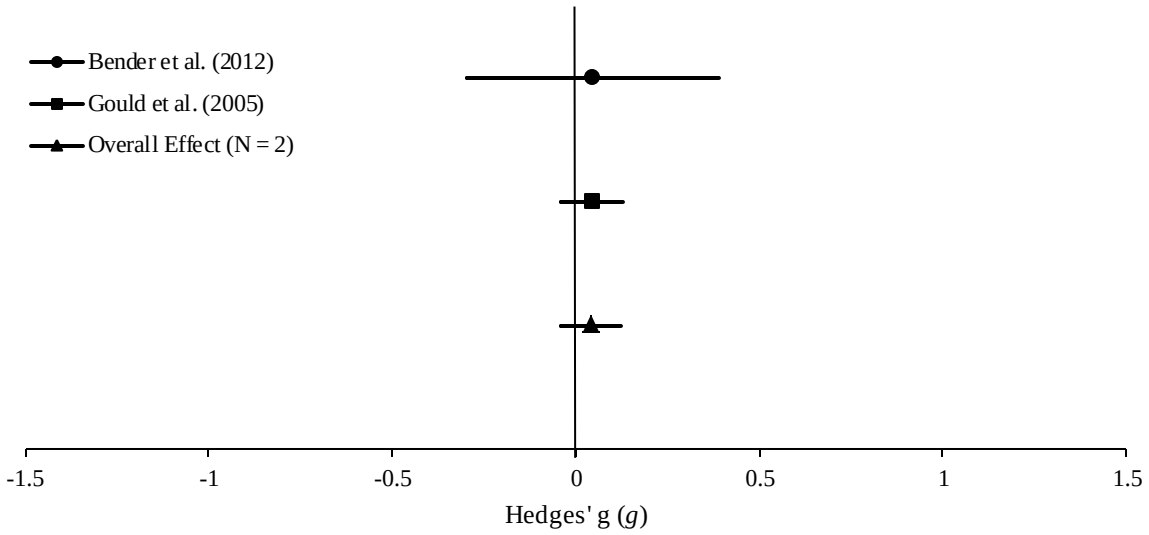

Figure 4. Forest plot comparing experimental and control groups on levels of delayed distress following exposure to suicide-related content.

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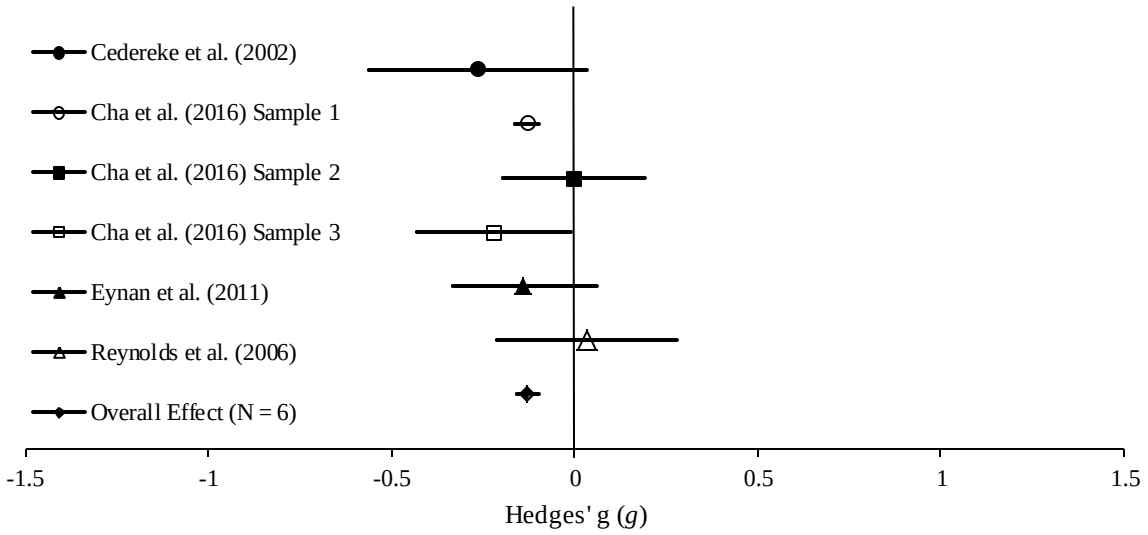

Figure 5. Forest plot examining participants' pre- and post-session levels of suicidal ideation following exposure to suicide-related content.

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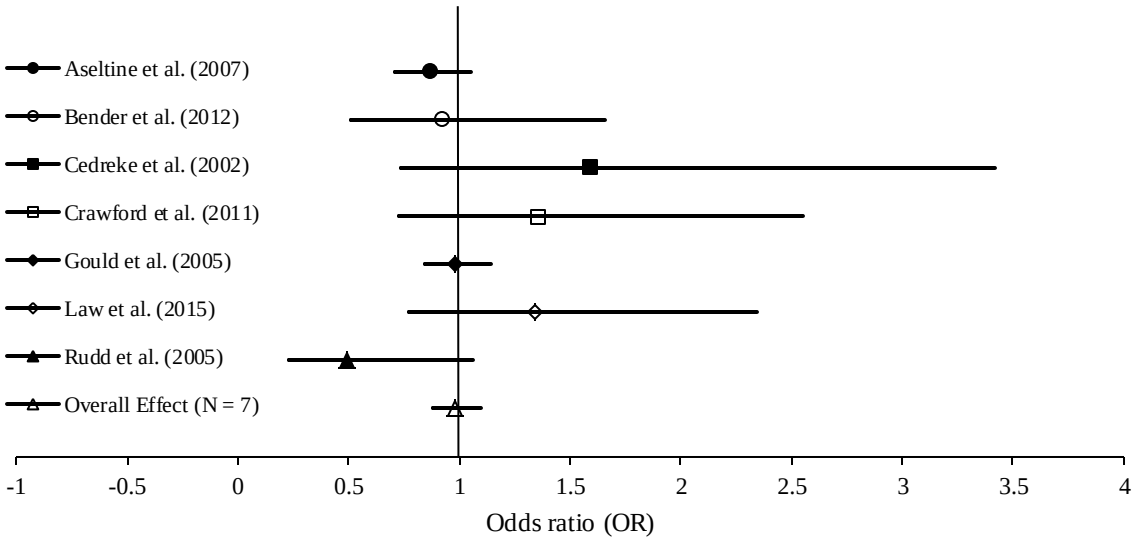

Figure 6. Forest plot comparing experimental and control groups on levels of suicidal ideation following exposure to suicide-related content.

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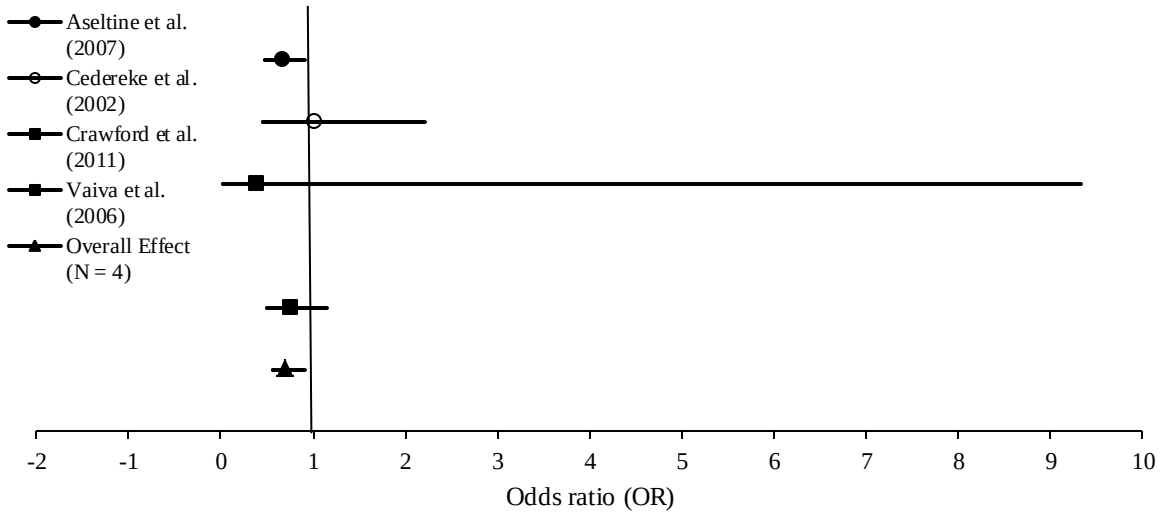

Figure 7. Forest plot comparing experimental and control groups on likelihood of attempting suicide following exposure to suicide-related content.

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Caroline A. Blades is in her fourth year of a combined Masters / PhD in Clinical Psychology at the University of Western Australia. She has a Bachelor's degree in Psychology, graduating with first class honours in 2014. Caroline's research aims to provide a stronger evidence base for evaluating the risks and benefits of asking about suicide in research studies.

Werner G. K. Stritzke received a PhD in clinical psychology from Florida State University. He is currently a Senior Lecturer and Director of Clinical Psychology Training Programs at the School of Psychological Science, University of Western Australia.

Andrew C. Page is Professor in the School of Psychological Science, University of Western Australia. He is a past National President of the Australian Association for Cognitive and Behaviour Therapy and inaugural winner of the Tracy Goodall Early Career Award in recognition of innovation in research and treatment. He is on the editorial board for *Psychotherapy Research*; the journal of the Society for Psychotherapy Research.

Julia D. Brown is in her fourth year of a combined Masters / PhD in Clinical Psychology at the University of Western Australia. She has a Graduate Diploma in Psychology, graduating with first class honours in 2013. Julia's research tests current models of suicide using longitudinal data and experimental studies. Her key areas of clinical interest are in combatting suicide-specific ruminations and building resilience and hope, especially in young people who have experienced trauma.

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CB, WS, AP and JB were all involved in forming the concept for this study design. CB completed the analysis and wrote the manuscript, in partial fulfilment of her PhD. AP and WS assisted with interpretation of the data and provided comments on drafts of the manuscript. CB, WS, AP and JB all gave final approval of the version to be published and agreed to be held accountable for all aspects of this work.

Conflict of Interest
All authors declare that they have no conflicts of interest.

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Highlights:

- First meta-analysis to examine impact of exposure to suicide content on behaviour.
- Participation in suicide research offers significant benefits to participants.
- Available evidence should inform cost-benefit analysis in ethical decision making.
- Ethics committees should calibrate consideration of risks relative to benefits.

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