ORIGINAL ARTICLE

The role of monocausal versus multicausal explanations of suicide in suicide reporting: A randomized controlled trial

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Abstract

Background: Media guidelines for reporting on suicide recommend that journalists should avoid monocausal explanations of suicide, but it is unclear if media items with monocausal explanations elicit different effects as compared to multicausal portrayals.

Method: Using a web-based randomized controlled trial ($n = 969$), we tested five versions of a news article about the suicide of a teenage girl with varying portrayals of reasons for the suicide: (1) bullying as the sole (external) factor (i.e., monocausal), (2) several external social factors, (3) a combination of internal and external factors, (4) a combination of internal and external factors along with a focus on suicide prevention, or (5) no reason for the suicide (control group). We measured perceptions about the cause of suicide, attitudes toward suicide and suicide prevention, and identification with the suicidal protagonist with questionnaires.

Results: Readers of articles that portrayed suicide as being caused by one specific reason or exclusively social factors tended to adopt these misconceptions. Identification with the suicidal protagonist did not vary between interventions groups, but was lower in the control group.

Conclusion: Highlighting the multifactorial etiology of suicide in news articles may help to avoid the misconception that suicide is a monocausal issue.

KEYWORDS

beliefs about suicide, media, media guidelines, news, suicide, Werther effect

INTRODUCTION

Evidence of several studies suggest that sensationalist media reports of suicide potentially trigger imitative suicides, also referred to as the "Werther effect" (Niederkrotenthaler et al., 2020; Niederkrotenthaler & Stack, 2017; Phillips, 1974; WHO, 2017). Mental health and suicide prevention organizations in many countries as well as the WHO have thus developed and implemented media recommendations for reporting on suicide in order to prevent the Werther effect and facilitate responsible suicide reporting that may help to safely educate the public about suicide (Bohanna & Wang, 2012; Etzersdorfer & Sonneck, 1998; Niederkrotenthaler & Sonneck, 2007;

Pirkis et al., 2006; WHO, 2017). These guidelines, for example, recommend avoiding potentially harmful characteristics such as sensationalist language and headlines, explicit descriptions of suicide methods, or portrayals that normalize, glorify, or romanticize suicide (Pirkis et al., 2006). There is some evidence consistent with the assumption of an overall effectiveness of the media recommendations and their important contribution to the prevention of imitative suicides (Arendt et al., 2023; Niederkrotenthaler & Sonneck, 2007; Niederkrotenthaler & Stack, 2017; Scherr et al., 2016). However, studies exploring the positive effects of specific recommendations of media guidelines are scarce, and, so far, the results are heterogeneous. Indeed, in a critical review of media guidelines and suicide, Stack (2020) suggests that there is insufficient evidence to link reductions in suicide rates to adherence to specific recommendations (e.g., inclusion of sources of help) or the overall amount of a media item's fidelity with media guidelines. More research on specific aspects of the media recommendations is thus needed.

A recent study investigated the impact of adhering to the recommendation of using neutral language in suicide reporting (Niederkrotenthaler & Sonneck, 2007; WHO, 2017). In fact, Arendt et al. (2018) found that readers' word choice was influenced by suicide referents in news articles, and reading the German suicide referent *Freitod* (= "free-death") increased readers' attitudinal support for suicide among individuals suffering from incurable diseases.

Of utmost importance for the current study, news media tend to provide terse and superficial explanations for suicidal behavior such as financial problems, relationship issues, or bullying (Neuringer, 1987). The media guidelines in many countries (American Foundation for Suicide Prevention [AFSP], 2020; Everymind, 2020; Nationales Suizidpräventionsprogramm, 2022; Niederkrotenthaler & Sonneck, 2007; Samaritans, 2020; Tomandl et al., 2021), however, specifically recommend avoiding monocausal and thus over-simplistic explanations for suicidal behavior. Similarly, a resource for media professionals developed by the World Health Organization (WHO, 2017) recommends avoiding misinforming the public about suicide, normalizing suicide, or providing simplistic explanations for a suicide. The reasoning behind this recommendation is the notion that suicide is never the result of a single factor or event, but portraying suicide linked to one single cause may increase identification with the person who died by suicide among readers facing a similar problem, which may increase the risk of imitational suicides (Colhoun, 2016; Tomandl et al., 2021). Attributing suicidal behavior to one specific reason may artificially create or increase perceived similarity of a personal situation,

which is a well-known antecedent of identification with media characters (Cohen, 2001).

With regard to the explanatory factors provided in news reports, studies from Austria suggest that the media tend to overemphasize external social factors such as relationship problems or violence as motives of suicidal behavior, whereas mental health issues are often underrepresented (Eisenwort et al., 2012, 2014; Niederkrotenthaler, Till, Herberth, et al., 2009). Furthermore, exclusively social factors with external attribution (i.e., mistreatment by peers, conflicts with school staff, sexual violence, etc.) were portrayed as the reasons for the protagonist's suicide in the publicly highly disputed Netflix series *13 Reasons Why*. It has been argued that this oversimplified portrayal of common stressful life events in adolescence as the reason for the protagonist's suicide may have contributed to the increase in youth suicides observed in some countries following the series' release (Niederkrotenthaler et al., 2019; Reidenberg et al., 2020).

Suicide prevention experts often highlight that suicide is the result of different internal and external factors (WHO, 2017). This may include internal biological (e.g., genetic predispositions) and psychological (e.g., mental illness) factors as well as external social (e.g., stressful life events) and cultural factors (e.g., acceptability of suicide in society) that are assumed to contribute in tandem to suicidal ideation and behavior (Shneidman, 1987). Educating the public about suicide is an important aspect of suicide prevention and helps to debunk common public suicide myths and reduce stigmatizing attitudes toward suicidal individuals (Niederkrotenthaler et al., 2014; Till et al., 2018). Content analyses of suicide news reports in different cultures have, however, shown that the recommendation of avoiding monocausal portrayals of suicide is among those that journalists are less likely to adhere to when reporting on suicide, with 30%–50% of analyzed articles containing monocausal explanations for suicide (Menon et al., 2021; Niederkrotenthaler et al., 2010; Sinyor et al., 2018). So far, however, there are no studies available that have explored the impact of media stories about suicide that varied in their portrayal of motives or reasons for suicidal behavior.

THE PRESENT STUDY

In the current study, we investigated the impact of a news article about a teenage girl who died by suicide with varying portrayals of causality. We have selected a teenager as the protagonist of story, because news reports of suicides of adolescents are more common in

German-speaking countries as compared to other age groups (Niederkrotenthaler, Till, Herberth, et al., 2009) and to avoid any potential confounding influences of current discussions about assisted suicide. Whereas no information about the reasons of the suicide was provided in the control group, one version of the materials provided in the intervention groups portrayed the suicide as a monocausal event (i.e., suicide due to bullying), one version mentioned several external factors as reasons for the suicide (i.e., bullying, family conflicts, failure to render assistance), one version portrayed the suicide as a result of a multifactorial development (i.e., a combination of internal and external factors: bullying, depression, death of a family member), and one version not only portrayed the suicide as multifactorial, but additionally focused on other aspects of suicide prevention (e.g., what everyone can do to prevent suicide).

We hypothesized that reading a suicide news report that portrays suicide as a monocausal event will increase the common misconception that suicide (in general) is caused by one single factor (Hypothesis 1). Furthermore, we hypothesized mentioning solely external reasons in a suicide news report will increase the common misconception that suicide (in general) is caused by external factors (Hypothesis 2). We also predicted that there will be differences between the experimental conditions in terms of stigmatizing attitudes toward suicidal individuals and attitudes toward suicide prevention (Hypothesis 3a), with these attitudes being most beneficial when the article portrays suicide as a result of a combination of internal and external factors and focuses on suicide prevention (Hypothesis 3b). Finally, based on the notion that attributing suicidal behavior to one specific reason may increase perceived similarity of a personal situation, we hypothesized that identification with the protagonist will be higher when suicide is portrayed as a monocausal event (Hypothesis 4a) and lower when several factors that contributed to the suicide are mentioned (Hypothesis 4b).

METHODS

Participants

This study was a double-blinded randomized controlled trial (RCT) that was conducted online March 9–22, 2023, and followed strict intent-to-treat principles (Gupta, 2004). We sent emails with invitations to participate in an online study on the impact of suicide news reporting to 6000 German-speaking individuals of the general population aged 18 years or older who had registered on SoSci Survey, a noncommercial online access panel (Leiner, 2014).

Researchers and participants were both blinded to group assignment until the end of data collection.

Power analysis

We used G*Power version 3.1.9.7 (Faul et al., 2007) to conduct a sample size calculation. The results revealed that an analysis of covariance (ANCOVA) in a design with five experimental conditions and four covariates (controlling for basic socio-demographic characteristics) will require a minimum of $N = 712$ participants in order to detect a treatment effect of $f = 0.13$ found in a previous study that tested the impact of suicide news reports with varying language characteristics on suicide-related attitudes (Arendt et al., 2018).

Materials

All participants were exposed to one of five news articles that reported on the (fictional) suicide of a 17-year old girl, Tina, and comprised two pages of text (with one small picture) with a length of approximately 500 words. All articles were written by three of the study authors (BT, FA, and TN) based on materials used in previous studies (Arendt et al., 2018) and modeled after similar articles published in German-language newspapers. All articles of the current study and their translations are provided in the supplementary files (see Figure S1 and Table S1).

Participants of Intervention Group #1 (Monocausality-group) read a news article that explicitly mentioned and focused on bullying in school as the sole reason for Tina's suicide. The headline was "Tina chose suicide because of bullying", and there was a blurred portrait photo of Tina at the end of the article. This same photo was also shown in all other groups except for Intervention Group #4.

In Intervention Group #2 (Multiple external factors-group), the article reported a combination of multiple external social factors as the reason for Tina's suicide. In particular, the article mentioned that Tina was bullied in school, had a strained relationship with her parents (i.e., the parents were overwhelmed with their own problems; there were temper tantrums and violence in the family; Tina's dad was an alcoholic; Tina was neglected by her parents), and was turned away by the (incompetent) school psychologist when Tina asked her help. The headline was "Neither parents nor psychologist helped bullied victim: Tina chose suicide".

In Intervention Group #3 (Multicausality-group), a combination of external and internal (i.e., social and psychological) factors were reported as the reasons for Tina's suicide. In particular, the article mentioned that Tina

has been battling with endogenous depression for several years and was repeatedly bullied in school in the last 6 months. Moreover, the article mentioned that Tina had a close relationship to her older sister, who always supported her, but, unfortunately, passed away recently due to leukemia. The article emphasized that the combination of these unfortunate events and circumstances has contributed substantially to Tina's suicide. The headline was "Depression, bullying, and grief for her sister: Tina chose suicide".

The article featured in Intervention Group #4 (Suicide prevention-group) also reported that the combination of battling with endogenous depression, experiencing bullying in school, and losing her sister to cancer was the reason for Tina's suicide, but focused considerably less on Tina's suicide and the police investigation of her death. Instead, the second half of the article featured an interview with a suicide prevention expert, who explained symptoms of depression and how depression can be treated, provided insights on how families and friends can support individuals in crisis, advised to seek professional help if experiencing a suicidal crisis, and encouraged to talk about suicidal thoughts. The article concluded with contact details of a national crisis intervention helpline. The headline was "Tragic death of 17-year-old, expert refers to help in crises", and the article featured a photo of a helpline counselor on the phone with a client.

The article of the control group did not provide any reasons or motives for Tina's suicide, but instead featured a more detailed description of the police investigations. The headline was "Body of Tina R. found in Perlacher Forst: Police assume suicide".

Procedure

Once informed consent was obtained on the first page of the online survey, we used the German version (Krampen, 1994) of the Beck Hopelessness Scale by Beck and Steer (1988) with a dichotomous response format (*true/false*) as a screening procedure. Based on the common cutoff score used in previous studies (Beck et al., 1990; McMillan et al., 2007; Perry & Gilbody, 2009), all participants with hopelessness scores of nine or above were considered individuals with high suicide risk and were automatically excluded from participation in the study ($n = 285$) in order to avoid any unnecessary distress in vulnerable individuals arising from the intervention material. They were automatically redirected to a page with contact information of help organizations. Hopelessness is considered a robust and reliable predictor for suicidal behavior (Franklin et al., 2016; McMillan et al., 2007). All remaining participants were then randomly assigned

to one of the five experimental conditions. We used automated urn randomization for group allocation, aiming for an even allocation ratio. After reading the respective article, data on participants' outcome variables were collected. Subsequently, we assessed blinding success with one item. The participants were debriefed and received contact information of organizations offering help to individuals in suicidal crises on the last page of the survey.

Primary outcome measures

We used two different measures to assess participants' perceptions about causes of suicide. First, we provided a self-report measure consisting of four items exploring respondents' beliefs in suicide being caused by one single factor (i.e., "When people take their own lives, they always have a single reason for doing so"; "Suicides can always be explained by a single cause"; "Suicidality develops due to the occurrence of different risk factors: social factors, cultural factors, genetic factors, etc."; "When people take their own lives, it is for different reasons") rated on a 5-point scale. We calculated mean scores across all four items of the scale (score range: 1–5; $M = 1.77$; $SD = 0.61$; $\alpha = 0.63$). Higher scores indicate greater belief in suicide being caused by one single factor.

Second, we provided a self-report measure consisting of four items exploring respondents' beliefs in suicide being caused by external factors (e.g., "Most of the time, other people are to blame when a suicidal crisis occurs"; "Suicides are usually due to external factors, e.g., conflicts with other people"; "The social environment—friends, family, spouses, etc. is pivotal for whether a suicide occurs during a crisis"; "If you have a congenial social environment, you can usually overcome a suicidal crisis") rated on a 5-point scale. We calculated mean scores across all four items of the scale (score range: 1–5; $M = 2.71$; $SD = 0.70$; $\alpha = 0.65$). Higher scores indicate greater belief in suicide being caused by external factors. A one-factor structure appeared to fit the data best for both scales, respectively based on the Kaiser-Guttman criterion and the screen test of an explanatory factor analysis as outlined by Hayton et al. (2004) (data available upon request).

Secondary outcome measures

Stigmatizing attitudes toward suicidal individuals

The Stigma subscale of the Short Stigma of Suicide Scale by Batterham et al. (2013) is a self-report measure consisting of eight adjectives such as "cowardly"

or "shallow". The respondents rate on a scale from 1 (*strongly disagree*) to 5 (*strongly agree*) how accurately these adjectives describe a suicidal person. We calculated mean scores across all eight items of the scale (score range: 1–5; $M = 1.41$; $SD = 0.56$; $\alpha = 0.88$), with higher scores indicating greater stigmatizing attitudes toward suicidal individuals.

Attitudes toward suicide prevention

Respondents rated 11 statements about the importance of suicide prevention in society (e.g., "Suicide prevention is an important socio-political endeavor") developed by Arendt et al. (2018) from 1 (*strongly disagree*) to 5 (*strongly agree*). We calculated mean scores across all 11 items of the scale (score range: 1–5; $M = 4.04$; $SD = 0.74$; $\alpha = 0.88$), with higher scores indicating greater approval of suicide prevention.

Identification with the protagonist

Identification with the person who died by suicide in the news story, Tina, was measured using eight items adapted from Cohen's (2001) identification scale rated from 1 (*disagree*) to 5 (*agree*). We calculated mean scores across all eight items of the scale (score range: 1–5; $M = 2.34$; $SD = 0.91$; $\alpha = 0.89$). Higher scores indicate greater identification with the protagonist.

Additional measures

Blinding success

Consistent with previous research, participants were asked to indicate what group they thought they had been allocated to (*intervention group*, *control group*, or *do not know*) in order to assess blinding success of the manipulation (Niederkrotenthaler & Till, 2020a, 2020b; Till et al., 2019, 2021, in press).

Data analysis

The effects of the interventions on the outcome variables were examined with a multivariate analysis of covariance (MANCOVA) and subsequent univariate ANCOVAs. Belief in suicide being caused by one single factor, belief in suicide being caused by external factors, stigmatizing attitudes toward suicidal individuals, attitudes toward suicide prevention, and identification

with the protagonist were outcome variables, and the experimental condition (i.e., news article) was used as a fixed factor. We controlled the analysis for gender (with two dummy variables: #1 *female* = 1, *male & other genders* = 0; #2 *other genders* = 1, *female & males* = 0), age, and educational level. This is consistent with previous studies assessing the impact of suicide-related news articles (Niederkrotenthaler & Till, 2020a, 2020b; Till et al., 2021) and accounts for participants tending to experience greater identification with protagonists with similar socio-demographics (Hoffner & Buchanan, 2005; Naderer et al., 2021). We assessed statistical significance of the multivariate effects with the Pillai's trace test statistic, and we tested individual group differences with Bonferroni-corrected contrast tests. Differences in socio-demographics between survey completers and dropouts were analyzed with Fisher's exact tests and unpaired two-sample t-tests. We used IBM SPSS version 28 for all statistical analyses.

Ethics statement

The Research Ethics Board of the Medical University of Vienna approved this study (study protocol 1881/2022, December 29, 2022), and we registered the study with the German Clinical Trial Registry as DRKS00030656 (registration date: 2023-01-12). Informed consent was obtained online from all participants.

RESULTS

Figure 1 displays the study flowchart. Of the $n = 1302$ individuals who accessed the survey, $n = 3$ (0.2%) individuals did not provide informed consent, and $n = 1$ (0.1%) individual reported to be younger than 18 years old. All remaining individuals $n = 1299$ (99.8%) were enrolled in the study. Of these, a total of $n = 969$ (74.6%) individuals completed the survey until randomization and were therefore randomly allocated to one of the five study conditions (Monocausality-group: $n = 193$; Multiple external factors-group: $n = 194$; Multicausality-group: $n = 192$; Suicide prevention-group: $n = 195$; control group: $n = 195$). All $n = 969$ randomized individuals were included in the statistical analysis. Of these, $n = 945$ participants (97.5%) completed the entire survey.

Descriptive statistics

Of the 969 participants, $n = 623$ (64.3%) identified as women, $n = 338$ (34.9%) identified as men, $n = 6$ (0.6%)

FIGURE 1 Study Flowchart.
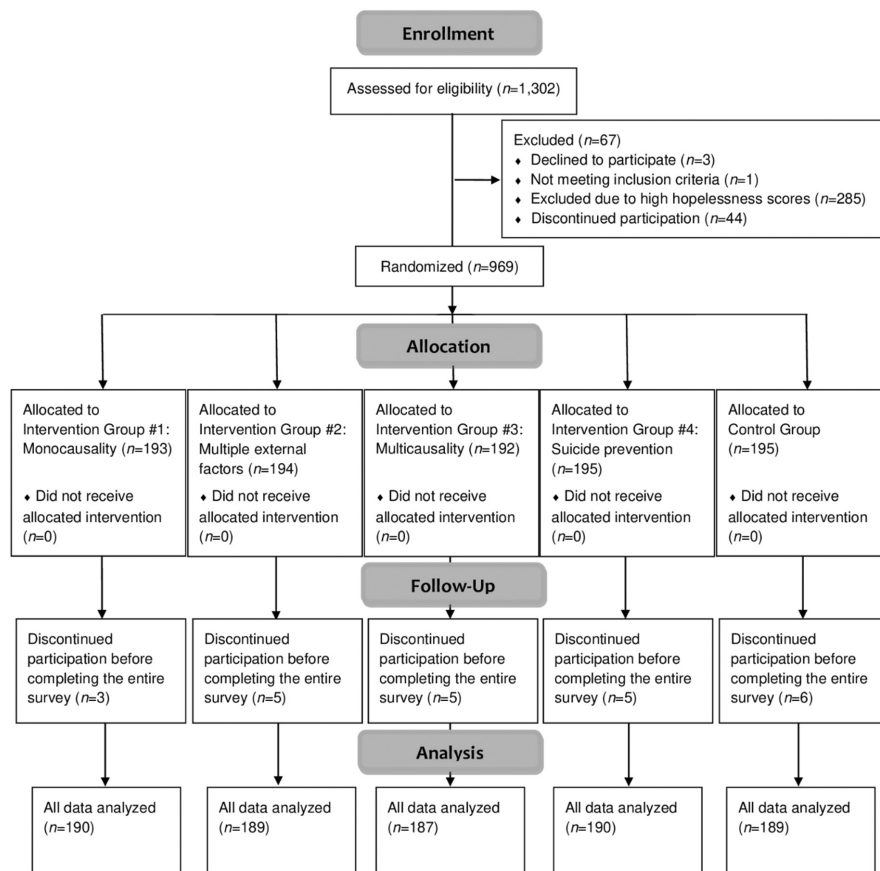
indicated other genders, and $n = 2$ (0.2%) opted to not disclose their gender. The participants' mean age was 51.6 years ($SD = 15.2$), ranging from 19 to 88 years. In terms of highest completed education, $n = 138$ (14.2%) participants had an education level below high school, $n = 231$ (23.8%) reported having a high school diploma, and 600 (61.9%) had completed college or university. See Table 1 for an overview of participants' socio-demographic characteristics in each experimental condition. There were no differences between the five conditions in terms of gender, ager, and education level.

Comparisons with dropouts

There were no differences between survey completers and participants who were randomized, but did not complete the entire survey, with regard to gender, $p = 0.128$, age $t(967) = −0.65$, $p = 0.514$, education, $p = 1.000$, or group allocation, $p = 0.916$. However, individuals who dropped out before randomization had a higher probability of indicating other genders, $p = 0.022$, or reporting an education level below high school, $p = 0.006$, than those who were randomized. There were no differences with regard to age between randomized participants and dropouts before randomization, $t(1287) = −1.18$, $p = 0.237$.

Blinding success

Of the $n = 945$ participants who provided data on blinding success, $n = 152$ participants (16.1%) correctly guessed their group allocation, $n = 239$ participants provided an incorrect answer (25.3%), and $n = 554$ participants (58.6%) responded with "do not know". With a substantial majority (83.9%) of participants providing an incorrect answer or being uncertain about their group allocation, blinding was considered successful (Kolahi et al., 2009). We conducted a sensitivity analysis to check whether the findings were different if participants who correctly guessed their group allocation were excluded from the analysis. The identified patterns were similar to the findings of the full sample presented below (data available upon request).

Effects on outcome variables

See Table 2 for an overview of all outcomes in each experimental condition along with mean differences from comparisons of means between the control and each intervention group with Bonferroni corrected contrast tests. There was a small multivariate effect of the experimental condition, $F(20, 3740) = 11.99$, $p < 0.001$, $\eta_p^2 = 0.006$.

TABLE 1 Descriptive Statistics for All Experimental Conditions ($n = 969$).

Variable	Control group (n = 195)	Monocausality-group (n = 193)	Multiple external factors-group (n = 194)	Multicausality-group (n = 192)	Suicide prevention-group (n = 195)	p
Gender						
Females n (%)	112 (57.4)	127 (65.8)	128 (66.0)	129 (67.2)	127 (65.1)	0.25[a]
Males n (%)	81 (41.5)	64 (33.2)	65 (33.5)	61 (31.8)	67 (34.4)	0.31[a]
Other n (%)	2 (1.0)	2 (1.0)	1 (0.5)	1 (0.5)	1 (0.5)	0.79[a]
Age M (SD)	52.5 (15.4)	52.3 (14.8)	50.4 (14.2)	51.6 (14.9)	51.4 (16.4)	0.66[b]
Education						
College/University n (%)	127 (65.1)	121 (62.7)	117 (60.3)	125 (65.1)	110 (56.4)	0.35[a]
High school (%)	45 (23.1)	46 (23.8)	42 (21.6)	46 (24.0)	52 (26.7)	0.84[a]
Below high school n (%)	23 (11.8)	26 (13.5)	35 (18.0)	21 (10.9)	33 (16.9)	0.19[a]

Note: Frequencies (*n*) and percentages (%) or means (*M*) and standard deviations (*SD*) are provided for each group, along with *p* values from ANOVAs or Fisher's exact tests assessing group differences.

[a]Fisher's exact test result.

[b]ANOVA result, $F = 0.60$, $df_1 = 4$, $df_2 = 964$.

When examining the individual univariate effects, the experimental condition had a small effect on both primary outcomes, the belief in suicide being caused by one single factor, $F(4, 936) = 3.06$, $p = 0.016$, $\eta_p^2 = 0.013$, and the belief in suicide being caused by external factors, $F(4, 936) = 5.18$, $p < 0.001$, $\eta_p^2 = 0.022$. Bonferroni corrected contrast tests indicated that the belief in suicide being caused by one single factor was significantly higher in the Monocausality-group than in the Multiple external factors-group, $p = 0.033$, $d = 0.09$ (0.004, 0.18), and the Suicide prevention-group, $p = 0.029$, $d = 0.10$ (0.01, 0.19). There were, however, no significant differences compared to the control group. The belief in suicide being caused by external factors was higher in the Multiple external factors-group than in the Multicausality-group, $p = 0.003$, $d = 0.12$ (0.03, 0.21), and the control group $p = 0.014$, $d = 0.10$ (0.01, 0.19). The belief in suicide being caused by external factors was also higher in the Monocausality-group than in the Multicausality-group, $p = 0.022$, $d = 0.10$ (0.01, 0.19).

The experimental condition had a large effect on identification with the protagonist, $F(4, 936) = 59.07$, $p < 0.001$, $\eta_p^2 = 0.202$. Bonferroni corrected contrast tests indicated that identification was higher in each intervention group than in the control group (Monocausality-group: $p < 0.001$, $d = 0.37$ [0.28, 0.46]; Multiple external factors-group: $p < 0.001$, $d = 0.38$ [0.29, 0.47]; Multicausality-group: $p < 0.001$, $d = 0.43$ [0.34, 0.52]; Suicide prevention-group: $p < 0.001$, $d = 0.35$ [0.26, 0.44]). There were, however, no significant differences between the individual intervention groups. In other words, identification was not higher in the Monocausality-group than in the Multicausality-group or the Suicide prevention-group. Finally, there were no significant univariate effects of the experimental condition on stigmatizing attitudes toward suicidal individuals, $F(4, 936) = 1.47$, $p = 0.211$, $\eta_p^2 = 0.006$, and attitudes toward suicide prevention, $F(4, 936) = 0.46$, $p = 0.766$, $\eta_p^2 = 0.002$.

DISCUSSION

This study aimed to examine the impact of media stories about suicide that provided different explanations for the reported suicide. First, we hypothesized that portraying suicide as monocausal event will increase the belief that suicide is caused by one single factor (Hypothesis 1). Whereas there were no differences between participants of the Monocausality-group and the control group, the belief that suicide is caused by only one single factor was higher in the Monocausality-group than in two of the three other intervention groups. It may be the case that focusing on one particular reason for a suicide in a news

TABLE 2 Mean Scores of All Outcome Measures in Each Experimental Condition.

	Control group	Monocausality-group		Multiple external factors-group		Multicausality-group		Suicide prevention-group	
	Mean score (95% CI)	Mean score (95% CI)	Mean difference (95% CI)[a]	Mean score (95% CI)	Mean difference (95% CI)[a]	Mean score (95% CI)	Mean difference (95% CI)[a]	Mean score (95% CI)	Mean difference (95% CI)[a]
Belief in suicide being caused by one single factor (α=0.63, n=951)									
	1.76 (1.68–1.84)	1.89 (1.79–1.99)	0.14 (−0.03–0.31)	1.73 (1.64–1.81)	−0.04 (−0.21–0.13)	1.73 (1.64–1.82)	−0.02 (−0.19–0.16)	1.72 (1.64–1.80)	−0.04 (−0.22–0.13)
Belief in suicide being caused by external factors (α=0.65, n=951)									
	2.63 (2.53–2.73)	2.79 (2.69–2.89)	0.18 (−0.01–0.38)	2.83 (2.73–2.93)	**0.22 (0.03–0.41)**	2.57 (2.47–2.66)	−0.03 (−0.22–0.17)	2.75 (2.66–2.85)	0.14 (−0.06–0.33)
Stigmatizing attitudes toward suicidal individuals (α=0.88, n=948)									
	1.42 (1.34–1.50)	1.39 (1.31–1.48)	−0.01 (−0.17–0.15)	1.39 (1.31–1.47)	−0.02 (−0.18–0.14)	1.34 (1.27–1.42)	−0.05 (−0.21–0.11)	1.49 (1.41–1.58)	0.08 (−0.08–0.24)
Attitudes toward suicide prevention (α=0.88, n=947)									
	3.99 (3.87–4.10)	4.04 (3.94–4.14)	0.04 (−0.17–0.25)	4.05 (3.95–4.16)	0.06 (−0.15–0.27)	4.11 (4.01–4.20)	0.10 (−0.12–0.31)	4.03 (3.92–4.15)	0.03 (−0.18–0.24)
Identification with the protagonist (α=0.89, n=956)									
	1.54 (1.45–1.64)	2.50 (2.39–2.62)	**0.97 (0.73–1.20)**	2.53 (2.41–2.66)	**0.99 (0.75–1.23)**	2.67 (2.55–2.80)	**1.14 (0.90–1.37)**	2.46 (2.34–2.57)	**0.90 (0.67–1.14)**

[a]Comparison of means with the control group with Bonferroni corrected contrast tests; mean differences with significant p values (<0.05) are in bold.

reports does not necessarily increase the belief that suicide is caused by a specific life circumstance, because this misconception is already established and very common in the general population (Neuringer, 1987). However, adding other potential causes of suicide to the story reduced, at least to some extent, the perception that all or most suicides are caused by only one single factor.

Furthermore, we predicted that mentioning solely external reasons in a suicide news report will increase the belief that suicide is caused by external factors (Hypothesis 2). Consistent with this hypothesis, the belief in suicide being caused by external factors was higher in the Multiple external factors-group than in the Multicausality-group and the control group. It seems that, when solely or predominantly social factors with external attribution were mentioned in the news article, readers tended to generalize this attribution to other suicides. This finding supports the notion that the media play an important role in shaping individual explanatory judgments about social and health issues (Gollust et al., 2009, 2019), including suicide.

We also predicted that there will be differences between the experimental conditions in terms of stigmatizing attitudes toward suicidal individuals and attitudes toward suicide prevention (Hypothesis 3a), with these attitudes being most beneficial in the Suicide prevention-group (Hypothesis 3b). In the current study, we did not find any differences between experimental conditions with regard to stigmatizing attitudes toward suicidal individuals and attitudes toward suicide prevention. Based on this finding, Hypothesis 3a and Hypothesis 3b were rejected. A possible explanation may be that even in the Suicide prevention-group, the amount of information related to suicide prevention and the stigma of suicide may have been too small compared to other topics, such as the police investigation and the potential motives of the suicide, in order to influence stigmatizing attitudes toward suicidal individuals and attitudes toward suicide prevention.

Finally, we hypothesized that identification with the protagonist will be higher when suicide is portrayed as monocausal event (Hypothesis 4a) and lower when several factors that contributed to the suicide are mentioned (Hypothesis 4b). In the current study, identification with the protagonist was higher in all intervention groups than in the control group. In other words, monocausal and multifactorial portrayals of suicide triggered higher identification with the protagonist as compared to the control group, but there were no differences in terms of identification between monocausal and multifactorial portrayals. Thus, based on this finding, Hypothesis 4a was partly supported, whereas Hypothesis 4b was rejected.

Media guidelines for safe suicide reporting often recommend avoiding simplistic reasons for suicide, i.e., not attributing suicide to one specific reason or

event (American Foundation for Suicide Prevention [AFSP], 2020; Niederkrotenthaler & Sonneck, 2007; Tomandl et al., 2021; WHO, 2017), based on the assumption that such a portrayal of suicide might increase identification with the suicidal individual (Colhoun, 2016; Tomandl et al., 2021). This assumption was not confirmed by the findings of the current study, as identification with the protagonist was no different when being exposed to a monocausal portrayal of suicide as compared to a multifactorial portrayal. It is, however, important to note that identification was lower in the control group, i.e., when no reason or cause for the suicide was provided in the article, than in all intervention groups.

It seems that highlighting any specific cause for suicidal behavior increases identification, regardless if the article provides one specific or several reasons for the suicide. It may be the case that the association of any motive with suicide makes suicidal behavior more understandable and relatable to readers. Crisis events such as those used in the intervention materials of the current study (i.e., family conflicts, mental illness, death of a friend or family member, or bullying at school or workplace) are common sources of distress (León-Pérez et al., 2021; Robinson & Wright, 2013) and are therefore events that many people can easily relate to, which is considered a core aspect of identification (van Krieken et al., 2017). Importantly, identification with media characters who die by suicide has been found to increase negative effects of suicide portrayals in the media such as increases in suicidal ideation or behavior (Niederkrotenthaler, Till, Kapusta, et al., 2009; Till et al., 2015).

This poses a potential dilemma for suicide prevention efforts in news media: On the one hand, highlighting that suicide is the result of a multifactorial etiology might help to educate the public about suicide. The myth that suicide is caused by one specific stressor in life is a common public misconception of suicide (Neuringer, 1987). Increasing suicide-related knowledge in the general population and debunking suicide myths is an important goal of public educative efforts (Dumesnil & Verger, 2009; Katz-Sheiban & Eshet, 2008). On the other hand, identification with the person who died by suicide was only lower if no reasons or motives for suicide was provided in the article, although the amount of identification experienced by readers was not different between mono- and multicausal portrayals of suicide.

A potential solution for journalists may be to put a particular emphasis on the fact that suicide is the result of a multifactorial development by explicitly addressing this myth, instead of touching on this subject superficially by just mentioning or speculating about some possible reasons or motives briefly in the article. It is important to note that even those news articles that provided

multicausal portrayals of suicide in the current study just mentioned several factors that may have contributed to the suicide, but did not specifically state that suicide is the result of a multifactorial development. Explicitly addressing this myth may have the beneficial effect of educating the public about suicide without making suicide too relatable to readers. Hopefully, future research will be able to reveal conditional effects, showing that under specific conditions (e.g., a specific type of reporting) a responsible suicide news article discussing the (scientifically correct) multifactorial development process elicits beneficial effects (i.e., debunking of public suicide myths) and does *not* elicit any undesired effects such as those on identification.

It is important to point out that, according to common effect size interpretations (Cohen, 1988), the effect sizes of detected group differences between individual experimental conditions in our study were small. However, considering the high frequency of suicide reports in news media, their substantial reach, and the high number of individuals being potentially exposed to a suicide news report on a daily basis, even small group differences may have important implications on a public health level (Anvari et al., 2023).

Limitations

A limitation of the current study was that individuals with hopelessness scores above the common cutoff score (Beck et al., 1990; McMillan et al., 2007; Perry & Gilbody, 2009) were not included. Thus, it remains unclear to what extent the current findings can be generalized to vulnerable individuals and clinical populations. Replications of the current study with clinical samples or samples of individuals with some suicide risk are warranted. Particularly, identification with the suicidal protagonist may be impacted differently in these populations. Also, the impact of a media story about the suicide of a teenager on identification might be different in adolescents or young adults than in other age groups. Future studies could vary the age of the protagonist in the story or include participant age as a moderating variable to systematically examine the role of this variable. Another limitation was that the primary outcome measures had relatively low reliability (i.e., < 0.70) and should therefore be interpreted with some caution. Furthermore, all outcomes were collected only immediately after the intervention, which did not allow us to assess before-after changes in outcomes or any long-term effects. Another limitation may be that the current findings cannot be generalized to other countries. While the news reports used in the current study were modeled after similar articles published in German-language newspapers, they may have not been authentic with regard to what is common in reporting in other countries due to such factors as different levels of sensationalism or placement and content of photos (Hanusch, 2013). Finally, the current study used a convenience sample that was not representative of the population in German-speaking countries. Replications of the current study with data from a survey using a sample representative of the population or a particular group within the general population (e.g., young people) would be desirable in future studies. Another important addition to this line of research would be to include outcomes directly related to suicide (e.g., suicidal ideation) and/or behavioral outcomes, for example, to assess whether monocausal explanations of suicides in the news media affect suicide rates. It might be possible that highlighting monocausal explanations of suicide in news reports increases the probability that vulnerable individuals with similar experiences may imitate the suicidal behavior portrayed in the article due to increased identification or perceived similarity.

CONCLUSION

In the current study, the impact of a suicide news report varied with how the protagonist's suicidal behavior was explained to readers. We provided tentative evidence showing that portraying suicide as the result of a multifactorial development in news reports can reduce the common misconception that all or most suicides are caused by only one single factor. However, just briefly mentioning and speculating about any potential reasons or causes for suicide seems to come with the risk of increasing identification with the person who died by suicide, which may increase the probability of undesired effects such as imitational behavior. Highlighting the multifactorial etiology of suicide in news articles, as outlined in the current media guidelines of the WHO (2017), may help avoiding the misconception that suicide is a monocausal issue without eliciting any undesired effects and appears to be an important component of media recommendations of suicide reporting.

CONFLICT OF INTEREST STATEMENT
The authors report there are no competing interests to declare.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available from the corresponding author upon reasonable request.

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SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

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