Social Science & Medicine 370 (2025) 117852

Contents lists available at ScienceDirect

Social Science & Medicine

journal homepage: www.elsevier.com/locate/socscimed

Social media influencers and the Papageno effect: Experimental evidence for the suicide-preventive impact of social media posts on hope, healing, and recovery

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ARTICLE INFO

Keywords:
Social media
Influencer
Suicide
Papageno effect
Suicide prevention

ABSTRACT

The media can elicit detrimental and beneficial effects on suicide-related outcomes. Although the bulk of the available evidence focuses on detrimental imitative effects, more recent studies have also investigated the media's preventive potential, especially when focusing on stories of hope, healing, and recovery. Previous studies on this suicide-protective impact, termed the Papageno effect, have often focused on legacy media, such as newspapers, broadcast television, and films. Acknowledging the increasingly important role played by modern digital media environments, the present study investigated the possible suicide-preventive impact of social media posts. Utilizing an experimental design ($N = 354$) with pre- and post-measurements of suicidal thoughts, the findings revealed that exposure to social media posts on hope, healing, and recovery by an influencer with lived experience of a suicide attempt elicited a significant reduction in suicidal thoughts in a convenience sample of the general population. The reduction was stronger in individuals with comparatively higher scores for suicidal thoughts at baseline. Social media posts on hope, healing, and recovery also increased the intention to seek help when experiencing suicidal thoughts. The evidence is consistent with the idea that social media influencers can contribute to reducing suicidal thoughts and promoting help-seeking intentions. Given that social media plays an increasingly important role, especially for youth, we discuss the important implications of our findings for suicide prevention in the digital age.

Suicide is a severe public health threat, and the prevention of suicide is a global imperative (Wasserman, 2016; World Health Organization, 2024). Among a myriad of risk and protective factors, the media has been identified as a significant contributing force (Pirkis et al., 2024a, 2024b; Stack, 2005). Importantly, the media can be considered a double-edged sword, contributing to detrimental and beneficial effects on suicide-related outcomes. Regarding detrimental effects, there is meta-analytic evidence supporting the idea that media portrayals of suicide can increase suicide rates. Based on societal-level observational studies that compared at least one time point before and one time point after media reports on suicide, Niederkrotenthaler and colleagues (2020) found that the risk of suicide tended to increase by 13% in the period after the media reported the death of a celebrity by suicide. For a long time, research on this detrimental suicide-facilitative media impact, termed the "Werther effect" (Phillips, 1974), dominated the research landscape—based on concepts that originated in the observation of suicidal development by Ringel (1976) and Shneidman (1995), as well as social learning theory by Bandura (1977).

Although the bulk of available empirical evidence on the media's role in suicide prevention focuses on detrimental imitation effects, more recent studies have also investigated the media's preventive potential, especially the role of media depictions of *stories of hope, healing, and recovery from suicidal crises*. As we outline in detail below, there is growing evidence that such media portrayals can positively contribute to suicide prevention by reducing suicidal ideation and behavior, a phenomenon termed the "Papageno effect" (Niederkrotenthaler et al., 2010). This suicide-preventive effect seems to occur particularly when the story is presented in a personal narrative of an individual with lived

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https://doi.org/10.1016/j.socscimed.2025.117852
Received 16 October 2024; Received in revised form 5 February 2025; Accepted 12 February 2025
Available online 14 February 2025

experience of suicidal ideation (Niederkrotenthaler and Till, 2020a). The present research focuses on an important question in this regard that has not yet been the focus of scholarly attention—whether there is a suicide-preventive effect from social media posts on hope, healing, and recovery provided by an influencer with lived experience of suicidal ideation.

To explore this research question, we conducted an experiment in which we asked participants to view posts of a fictitious social media influencer. We created the posts based on an actually existing *Instagram* account run by Kevin Hines, a suicide attempt survivor who is a best-selling author, global public speaker, and award-winning documentary filmmaker. On his website and his social media accounts, Kevin Hines shares his story of hope, healing, and recovery (see https://kevinhinesstory.com). Whereas such a suicide-preventive effect has been found after exposure to stories of hope, healing, and recovery delivered in newspaper articles (Arendt et al., 2016; Niederkrotenthaler et al., 2021a,b; Niederkrotenthaler and Till, 2020b; Till et al., 2019), fictional movies (Till et al., 2015), documentaries (King et al., 2018), public service announcements (Braun et al., 2023), educative websites (Till et al., 2017), and *YouTube* videos (Kirchner et al., 2022; Niederkrotenthaler and Till, 2020b), it is unclear whether social media posts, which are much shorter and less in-depth inputs, also elicit beneficial effects. If they do, this may represent an important supplementary strategy for suicide prevention in the digital age—among many established others (see Mann et al., 2005). In fact, this strategy can be easily scaled up to reach thousands or sometimes even millions of (vulnerable) users globally, 24/7, and at virtually no financial cost due to the digital dissemination process. The relevance of an investigation of the impact of such social media posts related to hope, healing, and recovery is emphasized by the fact that suicide is the third leading cause of death among 15–29-year-olds (World Health Organization, 2024)—a segment of the population for which social media plays an especially important role. It has become increasingly hard to reach this segment via legacy media, such as (printed) newspapers or broadcast television (see Wicks et al., 2024). Knowledge of the beneficial effects of social media within modern digital media environments is key to improving our understanding of suicide prevention in the digital age. Social media influencers—a modern form of "Internet/social media celebrities"—are very popular among youth (see below) and may play an especially important role in this regard.

1. Suicide-preventive effects of the media

Scholars have already acknowledged that the media has strong suicide-preventive potential. Unfortunately, much less is known empirically about the suicide-protective media impact compared to what we know about detrimental suicide-facilitative imitative effects. In 2010, an observational study provided empirical evidence consistent with the idea of a suicide-protective effect of a specific kind of media portrayal of suicide. Niederkrotenthaler and colleagues (2010) presented evidence showing a small negative association between some media reports providing narratives of hope, healing, and recovery from suicidal crises and subsequent suicides. The discovery of this phenomenon, termed the Papageno effect, has stimulated a new area of research. Since then, numerous studies, including laboratory experiments and randomized controlled trials, have tested the hypothesis that, broadly stated, media stories of hope, healing, and recovery can positively contribute to a reduction in suicides and suicidal thoughts, as well as an increase in help-seeking and help-seeking intentions.

Indeed, after this seminal study, subsequent experimental studies were conducted to test the possible protective effects of media stories featuring individuals mastering their suicidal crises. The literature on the Papageno effect focuses on different media, including a *film* with mastery of a suicidal crisis (Till et al., 2015), *newspaper* articles featuring a person who experienced and coped with a suicidal crisis by getting help (Arendt et al., 2016; Niederkrotenthaler and Till, 2020a), suicide-prevention *websites* targeting adolescents and young adults (Till et al., 2017), a *broadcast television documentary* exploring the relationship between masculinity and suicidality (King et al., 2018), suicide educative *texts* featuring experts with and without personal experience of suicidal ideation (Till et al., 2019), *public service announcements* as part of broader suicide-prevention campaigns (Ftanou et al., 2020), a Harry Potter-based mental health literacy curriculum based on the *novel* using various characters who exemplify resilience and coping (Klim-Conforti et al., 2021), short *suicide-prevention videos* featuring young people's personal narratives of hope, healing, and recovery (Braun et al., 2021; Niederkrotenthaler and Till, 2020a), or *video narratives* of lesbian, gay, bisexual, transgender, queer persons, or persons with other sexual- or gender-minority identities overcoming coming-out-related difficulties (Kirchner et al., 2022). Although the bulk of empirical evidence utilizes non-clinical samples, there is also research with psychiatric patients (Niederkrotenthaler et al., 2021a,b).

Of interest, an individual participant meta-analysis (Niederkrotenthaler et al., 2022) of available original research provided supporting evidence for the idea that exposure to stories of hope, healing, and recovery from suicidal crises can elicit a beneficial effect on suicidal thoughts in individuals with some vulnerability to suicide at baseline. The preventive effect appears to occur especially (or possibly only) in those with relatively higher scores for suicide risk at baseline.

It is important to note that the experimental work included in this meta-analysis had to use surrogate markers, such as standardized scales for suicide risk assessment, given that the ultimate outcome, suicide death, cannot be assessed in a controlled experimental setting. This is a limitation, as we do not know whether changes in individual-level outcomes (e.g., suicidal ideation measured via a standardized scale) would translate into actual changes in behavior.

There is also an observational study that provides supporting evidence by analyzing actual suicide numbers. Niederkrotenthaler and colleagues (2021) investigated the potential suicide-protective impact of *music*. More specifically, they analyzed the effect of the song "1-800-273-8255" by hip-hop artist Logic. This song prominently features the former number of the US National Suicide Prevention Lifeline. The lyrics are focused on an individual preparing for his suicide. However, he decides to take a different path and calls the Lifeline, which ultimately leads to him mastering his crisis. The official music video, which currently has approximately 450 million views on *YouTube*, tells the story of a teenager who experiences discrimination and bullying in school and in other social settings because he is gay, but he overcomes his crisis with the help of Lifeline. The song was in the top three in the US charts for several weeks and was also performed at the *MTV Video Music* Awards, an event with enormous media attention. As Niederkrotenthaler and colleagues (2021) noted, Logic's song "likely represents the broadest and most sustained suicide prevention messaging directly connected to a story of hope and recovery in any location to date and is thus a serendipitous event for research" (p. 2). Of interest, a time-series analysis indicated that Logic's song was related to a substantial increase in the number of calls to Lifeline. In addition, the analysis indicated a decrease in the suicide rate during the periods with the most social media attention on the song.

Taken together, there is experimental *and* observational evidence supporting the idea of a substantial preventive impact of the media, largely attributed to its ability to tell stories of hope and recovery. Although research has already accumulated evidence consistent with the idea of a suicide-protective Papageno effect across different media, the present research is focused on an area where related evidence is scarce.

2. The role of social media influencers

The general relevance of social media for suicide prevention has long been acknowledged (e.g., Luxton et al., 2012). It has been assumed that, while social media may negatively affect some individuals by spreading

suicidal thoughts and behaviors, it may also play a beneficial role by assisting individuals at risk for suicide, for example, by providing information about support services or by facilitating social support through communication between peers in the same situation (see Fu et al., 2013). Indeed, there is evidence in the Werther effect research tradition consistent with the idea of the detrimental effects of exposure to self-harm and suicide on social media platforms, such as *Instagram,* on a broad range of outcomes related to suicide risk (Arendt et al., 2019). However, what is more important for the present research is the absence of systematic research on the possible Papageno effect of *social media posts that provide stories of hope, healing, and recovery*.

Narratives of hope, healing, and recovery from suicidal crises are widely available on social media, particularly stories provided by social media influencers. These influencers can play a fundamental role in this regard. For example, Kevin Hines is a suicide attempt survivor who is now a suicide-prevention speaker and who gives talks about how to prevent suicides, including by telling his own story. Hines provides mental health guidance, aiming to help people find hope. Importantly for the present study, he is also a significant content creator on *Instagram* (@kevinhinesstory) with more than 80,000 followers. Illustrative examples of some of his salient claims provided in his posts allow for a first impression: "Ending your life is never a solution," "My purpose: Sharing my story of surviving death," "You can always survive the pain. We must look to the people," "You can save someone's life," or "Always be there tomorrow."

If there is a beneficial preventive effect of social media influencers' posts featuring stories of hope, healing, and recovery, how does this effect work? Social cognitive theory (Bandura, 1977, 2001), especially ideas related to observational learning from role models, has often been used to explain the Papageno (and Werther) effect(s). Applied to the present study's context, social media influencers with lived experience of a suicide attempt who coped with and overcame their suicidal crisis may act as preventive role models by telling their stories of successful mastery of a crisis and how their lives have improved. Users may learn how to cope via observation of the role model's behaviors, thereby increasing their ability to master their own crises. Observing social media influencers with lived experience may also increase users' motivation to engage in or maintain the coping process, which can sometimes be tough for individuals in crisis. Ultimately, this may lead to a reduction in suicidal thoughts in vulnerable users.

It is still unknown whether the beneficial effects found for stories of hope, healing, and recovery in legacy media (Niederkrotenthaler et al., 2022) translate to social media. Posts on social media are usually considerably shorter than the narratives provided by legacy media, which may inhibit or decrease in-depth engagement with the messages provided in these posts. However, social media influencers can typically build on a high level of perceived trust attributed to them by their followers (see Kim and Kim, 2021), rendering effects more likely. Of interest, a recent observational study showed that tweets spreading information about suicide prevention were associated with increased help-seeking behavior and decreased numbers of suicides in the United States (Niederkrotenthaler et al., 2023).

Based on the available empirical evidence and on theorizing on the Papageno effect, we hypothesized that exposure to social media posts providing hope, healing, and recovery by an influencer with lived experience of suicidal ideation would elicit a reduction in suicidal thoughts (Hypothesis 1). This is the primary research hypothesis. In addition, and in line with findings from previous legacy media studies, we predicted that a potential suicide-preventive effect would be moderated by baseline suicidality (Hypothesis 2).

The present research focused on suicidal thoughts as the primary outcome. However, the secondary aim of the present research was to test for possible effects on help-seeking intentions. Consistent with social cognitive theory, we assumed that there was a "direct pathway" regarding how the Papageno effect may work, conceptualized as the *direct effect* of exposure to social media posts *on suicidal thoughts* by informing, enabling, motivating, and guiding users (see Bandura, 2001). This effect path is consistent with the idea offered above, culminating in the first two hypotheses. However, we also assumed that there would be a second effect path regarding how the Papageno effect may work, a "socially mediated pathway," through which the media may link users to "social networks and community settings that provide natural incentives and continued personalized guidance," as Bandura (2001, p. 265) noted. Our secondary outcome, help-seeking intentions, is closely related to this second effect path. It is important to highlight in this regard that suicide prevention emphasizes the importance of seeking help when feeling suicidal. In fact, a documentary called *Man Up*, which featured rural Australian men speaking about their gender roles, responsibilities, mental health challenges, and help-seeking, including stories of hope, healing, and recovery, was associated with an increase in help-seeking intentions (King et al., 2018). Therefore, social media posts may link vulnerable users with their available social environments (e.g., friends, family, mental health professionals, doctors) that can provide help to them. This help, in turn, may reduce suicidal thoughts and thus help the individual to master the crisis. Note that, unlike many suicide stories in legacy media (e.g., newspaper articles), typical social media posts do not regularly refer to the contact information of external help resources. However, the importance of seeking help is at least implicitly transported by narratives of hope, healing, and recovery, and may thus also be recognized and internalized by (vulnerable) users. Therefore, we questioned whether posts of hope, healing, and recovery could also stimulate an increase in help-seeking intentions (Research Question 1) and, again, whether this effect would be moderated by baseline suicidality (Research Question 2).

3. Method

We conducted a web-based study in Austria. We utilized an experimental design with two groups and a before–after measurement of suicidal thoughts and intentions to seek help. Participants randomly allocated to the intervention group were exposed to ten social media posts on hope, healing, and recovery provided by an influencer. The profile of well-known suicide survivor Kevin Hines (see above) was used as an inspiration and guided the creation of ten social media posts by our fictitious influencer, "Kevin Heinrich." Please note that Kevin Hines was not part of this research project. We used his social media profile for the stimulus construction to increase the external validity of our study. Some of Hines's messages of hope, healing, and recovery when faced with a suicidal crisis were translated into German. Following Till et al.'s (2017) study on the preventive impact of suicide-prevention websites, participants randomly allocated to the control group were asked to watch ten posts on Austrian boy scouts, that is, content that is unrelated to suicide. These posts were matched to the intervention posts in terms of length and visual appearance. The primary outcome was suicidal thoughts. We also measured help-seeking intentions, defined as the intention to seek out professional help when in a suicidal crisis, as a secondary outcome. Both outcomes were measured before and after exposure to the social media posts.

3.1. Sample

Power analysis with G*Power (Faul et al., 2009) indicated a minimum required sample size of $N = 208$ for the expected medium-sized within–between interaction effect from an analysis of variance (input parameters: partial $\eta^2 = 0.06$, $\alpha = .05$, power $[1 - \beta] = 0.95$) for the two groups' (between-subjects factor) pre–post (within-subjects factor) design. Convenience sampling techniques, including personal invitations and posts on social media platforms, were used to invite individuals from the general population with a minimum age of 18 years to participate in the study. We only used "completes," that is, participants who provided data to all questions (i.e., participants who filled out the whole survey), including the pre- *and* post-measurement of suicidal

thoughts and help-seeking intentions. The statistical analysis of data from participants who completed data collection was an *a priori* defined criterion in the current study. Of $N = 1025$ individuals who clicked on the first invitation page of the online study, $N = 354$ individuals completed the study, representing the sample we used for data analysis.

The participants ranged in age from 18 to 65 years ($M = 30.27$, $SD = 9.63$). There were more male (64.4%) than female participants (34.2%); five participants chose the "other" option (1.4%). Formal education tended to be high, as indicated by the fact that approximately half of the sample had a university degree (50.8%), about one-third had a high school diploma (36.7%), and the minority had no high school diploma (12.4%).

A randomization check indicated that there were neither age-related differences between both experimental groups, $t(352) = 0.019$, $p = .985$, nor differences related to gender, $\chi^2(2) = 2.54$, $p = .280$, or formal education, $\chi^2(2) = 2.48$, $p = .290$.

3.2. Experimental manipulation

Both experimental groups viewed ten social media posts. The ten posts for the intervention group ($n = 180$) were heavily inspired by the *Instagram* profile of suicide attempt survivor Kevin Hines. However, original posts needed to be adapted for a German-speaking Austrian context in which data collection occurred. Our posts were in German language and published on the *Instagram* profile of fictitious influencer Kevin Heinrich. Similar to Hines's original posts, we also used pictures accompanied by a salient message. For example, posts included the messages "My goal is to try to instill hope in at least one individual, so that one individual says, 'Maybe I can stay here, maybe there are tools to fight this'," "If you're reading this: You are loved unconditionally. You are supported by so many. Good things are coming your way soon. Hang in there; this is a sign the world needs you," or "Kindness can keep people alive. Never forget that you're worth being here tomorrow." Some pictures of Heinrich/Hines included clothes that also provided a suicide-preventive message on them (e.g., "be here tomorrow" on his t-shirt). We did not include an explicit call to seek help. Right next to the respective salient text and visual, the posts provided more in-depth argumentation within an *Instagram* comment section. The intervention posts thus explicitly transported life-affirming messages, aiming to provide hope and mental health tips to individuals in personal crises—consistent with Hines's original posts. Thus, the influencer presented in the current study can be considered a role model who overcame his own suicidal crisis and now talks about his experiences, aiming to prevent the suicidal behaviors of other social media users.

The ten posts in the control group ($n = 174$) look very similar in length, appearance, and style, but were about the Austrian boy scouts, which is consistent with the control group used in a study by Till et al. (2017). The content of these posts focused on concepts relevant to boy scouts, such as nature, adventure, woods, camping, and teamwork. Importantly, the content was completely unrelated to suicide and mental health. Examples of the social media posts used in the present experiment are provided in the Appendix.

3.3. Suicidal Thoughts

The primary outcome, suicidal thoughts, was measured with the Survival and Coping Beliefs subscale of the Reasons for Living Inventory (Linehan et al., 1983). Participants were asked to rate reasons for *not* dying by suicide (e.g., "I believe I can find a purpose in life, a reason to live") on a 6-point scale ranging from 1 (*not at all important*) to 6 (*extremely important*). Items were reverse-coded, with higher scores indicating more severe suicidal thoughts. We measured suicidal thoughts before ($M = 1.96$, $SD = 1.00$, $\alpha = .98$) and after exposure to the social media posts ($M = 1.59$, $SD = 0.82$, $\alpha = .98$).

3.4. Intention to seek help

To assess the secondary outcome, help-seeking intentions, we used the General Help-Seeking Questionnaire (Wilson et al., 2005). Participants were asked what they would do in a specific situation: "If you were experiencing suicidal thoughts, how likely is it that you would seek help from the following people?" Participants rated different options ("parents," "intimate partner," "friend," "mental health professional," "phone helpline," "doctor/GP," "religious leader such as a priest," "other person") on a 7-point scale ranging from 1 (*extremely unlikely*) to 7 (*extremely likely*). The "I would not seek help from anyone" item was reverse-coded. Note that we did not use the "youth worker" item recommended in the General Help-Seeking Questionnaire, given that only adults participated in the present study. Thus, our measure had nine items. Consistent with the primary outcome, we measured the secondary outcome before ($M = 5.10$, $SD = 1.44$, $\alpha = .92$) and after ($M = 5.55$, $SD = 1.37$, $\alpha = .91$) exposure to the social media posts.

3.5. Procedure

We conducted a web-based experimental study. We used personal invitations within the social network of one of the authors (AG), relying on snowball sampling techniques. In addition, we used social media (WhatsApp, Instagram) and SurveyCycle (= online platform to find participants for web-based research). After providing informed consent, participants filled out questions related to suicidal thoughts and help-seeking intentions. Next, the participants were asked to read social media posts carefully and attentively. After stimulus exposure, suicidal thoughts and help-seeking intentions were measured again. Next, the participants were asked questions related to socio-demographic variables and were finally debriefed. Within the debriefing, we provided resources on how to find professional help, including contact information for a telephone counseling service and a crisis intervention center. This entire procedure was conducted online.

3.6. Statistical analysis

We relied on a mixed analysis of variance with the between-subjects factor experimental group and the within-subjects factor time of measurement to test for the Papageno effect—a decrease in suicidal thoughts and an increase in help-seeking intentions. A significant interaction term indicates whether the strength of the before–after change in the respective outcome differed significantly between the intervention group and the control group.

To test whether suicidal thoughts measured at baseline moderated the predicted effects, we relied on a moderated multiple regression analysis, including the Johnson–Neyman technique, by using the PROCESS tool (Hayes, 2013). This technique identifies regions in the range of suicidal thoughts measured at baseline where the effect of exposure to posts on hope, healing, and recovery on suicidal thoughts measured after exposure is statistically significant or not (while controlling for autoregressive effects). The Johnson–Neyman technique can be used to reveal a moderator value for suicidal thoughts (measured at baseline) that defines the so-called Johnson–Neyman significance region (Hayes and Matthes, 2009). The Johnson–Neyman significance region defines the range in suicidal thoughts measured before exposure, where a significant Papageno effect could be observed. Note that this technique does not need to (arbitrarily) select representative values (e.g., median) of suicidal thoughts measured at baseline. This is important, as there are frequently no nonarbitrary guidelines for picking the points at which to probe the interaction.

3.7. Ethics statement

The IRB-COM of the Department of Communication, University of Vienna, approved the study (Number ID: 1161, dated April 30, 2024).

4. Results

4.1. Suicidal Thoughts

Hypothesis 1. predicted that exposure to social media posts featuring narratives of hope, healing, and recovery provided by an influencer with lived experience would elicit a reduction in suicidal thoughts. The analysis indicated that there was a significant reduction in suicidal thoughts in the intervention group, $\Delta M = -0.71$, 95% CI [−0.85, −0.56], SD = 0.07, Cohen's $d_z = -0.73$, $t(179) = -9.83$, $p < .001$. In fact, participants in the intervention group showed a significantly lower level of suicidal thoughts after exposure (M = 1.33, SD = 0.61) compared to before exposure (M = 2.03, SD = 1.05). Conversely, we did not observe a significant reduction in suicidality in the control group, $\Delta M = -0.03$, 95% CI [−0.10, −0.04], SD = 0.04, Cohen's $d_z = -0.06$, $t(173) = -0.83$, $p = .407$, as participants in the control group showed almost the same level of suicidality after exposure (M = 1.86, SD = 0.92) as before exposure (M = 1.89, SD = 0.93). To formally test for moderation, that is, to assess whether the strength of the before–after change differed significantly between the intervention group and the control group, we ran a mixed analysis of variance with the between-subjects factor experimental group and the within-subjects factor time of measurement. As predicted, we obtained a significant within–between interaction effect, $F(1, 352) = 68.11$, $p < .001$, $\eta^2 = 0.162$, indicating that the reduction in suicidal thoughts was significantly stronger in the intervention group compared to the control group. Fig. 1 provides a visualization of this finding, supporting the hypothesis. This evidence is consistent with the idea of a suicide-preventive Papageno effect.

Hypothesis 2. predicted that the strength of this suicide-preventive effect would be moderated by suicidal thoughts measured at baseline insofar as those participants with higher baseline scores were predicted to show a stronger reduction in suicidal thoughts. We ran a moderated multiple regression model in which we predicted suicidal thoughts measured after exposure by (1) suicidal thoughts measured before exposure (to control for autocorrelation), (2) experimental group (0 = control group, 1 = intervention group), and (3) their multiplicative interaction term, that is, suicidal thoughts measured before exposure × experimental group. Whether the impact of the social media posts on hope, healing, and recovery depended on scores of suicidal thoughts at baseline would be indicated by a significant interaction term. Indeed, the strength of the Papageno effect depended on suicidal thoughts measured at baseline, B = −0.59, SE = 0.06, t = −10.66, p < .001.

The analysis revealed a moderator value for suicidal thoughts (baseline) of 1.16, defining the Johnson–Neyman significance region. This indicates that posts on hope, healing, and recovery elicited a significant reduction in suicidal thoughts in participants with suicidal thought scores higher than 1.16 at baseline. Given that suicidal thoughts were measured on a scale ranging from 1 to 6, this indicates that there was a beneficial Papageno effect in participants with some degree of vulnerability. Stated differently, even in those with relatively low suicidal thought scores at baseline, the social media posts were helpful. Only in those with no sign at all of any increased levels of suicidal thoughts did the posts not elicit a significant reduction in suicidal thoughts, which corresponds to approximately one-third of the sample. Fig. 2 provides a visualization of this finding based on the Johnson–Neyman technique. Taken together, the findings support the hypothesis that suicidal thoughts at baseline act as a significant moderator of Papageno effects. This is consistent with Hypothesis 2.

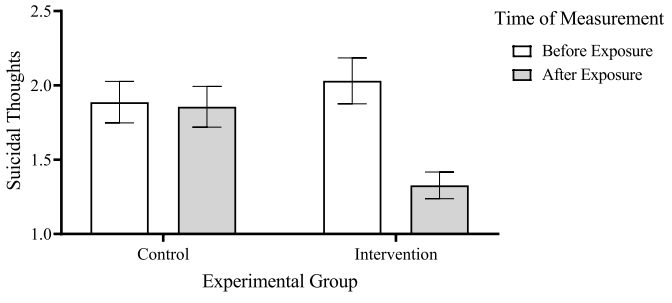

Fig. 1. Effects of exposure to social media posts on suicidal thoughts.
Note. The figure shows the means of suicidal thoughts for each experimental group, measured before and after exposure to the social media posts. Whereas there was a significant reduction in suicidal thoughts in the intervention group elicited by exposure to posts on hope, healing, and recovery provided by a social media influencer with lived experience, exposure to control posts (Austrian boy scouts) did not elicit a change in suicidal thoughts. Error bars indicate confidence intervals (95%).

4.2. Help-seeking intentions

Research Question 1. asked whether posts on hope, healing, and recovery would elicit an increase in help-seeking intentions. To answer this question, we utilized the same analytical strategy reported above for the primary outcome, suicidal thoughts. We observed a significant increase in help-seeking intentions in the intervention group, $\Delta M = 0.85$, 95% CI [0.67, 1.02], $SD = 1.17$, *Cohen's* $d_z = 0.72$, $t(179) = 9.70$, $p < .001$. In fact, participants in the intervention group showed a significantly higher intention to seek help if they were to feel suicidal after exposure ($M = 5.92$, $SD = 1.24$) than before exposure ($M = 5.07$, $SD = 1.49$). Conversely, we did not observe a significant change in help-seeking intentions in the control group, $\Delta M = 0.03$, 95% CI [−0.05, 0.11], $SD = 0.51$, *Cohen's* $d_z = 0.06$, $t(173) = 0.81$, $p = .419$, as participants in the control group showed almost the same level of help-seeking intentions after exposure ($M = 5.17$, $SD = 1.38$) as before exposure ($M = 5.14$, $SD = 1.38$). To formally test for moderation, an analysis of variance, as described above, provided a significant within–between interaction effect, $F(1, 352) = 71.37$, $p < .001$, $\eta^2 = 0.169$, indicating that the pre–post change in help-seeking intentions was significantly different in both groups.

We re-ran this analysis for each individual help source option, as it is possible that effects can only be observed for specific help sources (e.g., professional help sources vs. parents). Interestingly, the effect, as indicated by a significant interaction term, could be observed for all different help sources when tested individually (all *p*-values were below 0.001); that is, for parents, intimate partners, friends, mental health

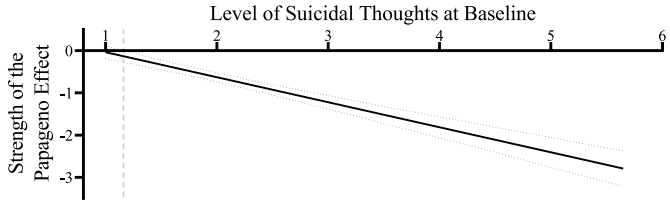

Fig. 2. Conditional effects of exposure to social media posts on suicidal thoughts for various levels of suicidal thoughts at baseline (Johnson–Neyman technique).
Note. The figure shows the results of a Johnson–Neyman analysis, that is, the estimation of conditional effects of exposure to posts about hope, healing, and recovery on the reduction of suicidal thoughts for various levels of suicidal thought at baseline. The strength of the suicide-preventive effect is expressed as unstandardized regression coefficients indicating the impact of the intervention (i.e., posts on hope, healing, and recovery vs. control posts) on suicidal thoughts measured *after* exposure (while simultaneously controlling for suicidal thoughts measured *before* exposure). The solid black line indicates the estimated conditional effects for the range of actually observed scores of suicidal thoughts at baseline, along with its lower and upper limits (95% CI), visualized by the dotted curves. The vertical dotted gray line represents the moderator value that defines the Johnson–Neyman significance region (see body of the text).

professionals, phone helplines, doctors/GPs, religious leaders, and other persons.

Research Question 2. examined whether the beneficial effect on help-seeking intentions depended on baseline suicidality. We ran a moderated multiple regression model, in which we predicted help-seeking intentions measured *after* exposure by (1) help-seeking intentions measured *before* exposure (to control for autocorrelation), (2) suicidal thoughts measured *before* exposure, (3) experimental group (0 = control group, 1 = intervention group), and (4) a multiplicative interaction term, that is, suicidal thoughts measured *before* exposure × experimental group. Whether the impact of the social media posts on help-seeking intentions depended on scores for suicidal thoughts at baseline would be indicated by a significant interaction term. Indeed, the analysis showed a significant interaction, $B = 0.56$, $SE = 0.08$, $t = 6.88$, $p < .001$. The Johnson–Neyman technique did *not* reveal a moderator value, as the beneficial effect on help-seeking intentions was observable on *all* levels of baseline suicidal thoughts.

4.3. Additional analysis

Given that the social media influencer in our stimulus materials was male, we investigated whether the effects on suicidal thoughts and help-seeking intentions depended on participants' gender. Due to possibly less pronounced identification processes based on social similarity in terms of gender, beneficial effects of our *male* social media influencer may be weaker for *female* participants. Please note that five participants chose the "other" gender option and thus could not be included in this additional analysis due to their low frequency. Consistent with the analysis reported above, we focused on the within–between interaction effect. This interaction effect indicates whether there was a significant reduction in suicidal thoughts or a significant increase in help-seeking intentions (see above).

Suicidal Thoughts. A first analysis of variance using the data provided by women showed a significant within–between interaction effect, $F(1, 119) = 43.83$, $p < .001$, $\eta^2 = 0.269$. This indicates that exposure to social media posts on hope, healing, and recovery significantly reduced women's suicidal thoughts. A second analysis of variance using data provided by men indicated a significant reduction in suicidal thoughts as well, $F(1, 226) = 30.08$, $p < .001$, $\eta^2 = 0.117$. Of note, this effect appears to be weaker compared to the effect obtained for women. Running an additional analysis of variance with gender as an additional factor for a formal test of moderation (by using data provided by women *and* men), we obtained supporting evidence for the idea that gender moderated the strength of the within–between interaction effect, $F(1, 345) = 3.82$, $p < .051$, $\eta^2 = 0.001$.

Help-seeking Intentions. Analysis provided significant within–between interaction effects for women, $F(1, 119) = 45.82$, $p < .001$, $\eta^2 = 0.278$, and men, $F(1, 226) = 33.63$, $p < .001$, $\eta^2 = 0.130$. Again, the effect appeared to be somewhat stronger in women. Indeed, gender moderated the strength of the within–between interaction effect, $F(1, 345) = 8.67$, $p = .003$, $\eta^2 = 0.025$.

Taken together, this additional analysis did not provide supporting evidence for the idea that beneficial effects of a male social media influencer may be weaker for female social media users. Conversely, the beneficial effects appeared to be even somewhat stronger in women.

5. Discussion

One strategy of media-related suicide prevention is to improve the quality of the media coverage on suicide by reducing (or possibly eliminating) characteristics in media items that may elicit harmful Werther effects. Indeed, there is supporting evidence demonstrating the effectiveness of this first strategy (see, e.g., Arendt et al., 2023; Etzersdorfer and Sonneck, 1998; Niederkrotenthaler and Sonneck, 2007). More recent studies have investigated the media's preventive potential in a more direct way. There is supporting evidence that media portrayals that feature narratives of hope, healing, and recovery from suicidal crises can positively contribute to suicide prevention (Papageno effect; Niederkrotenthaler et al., 2010).

The present study found that exposure to social media posts on hope, healing, and recovery provided by a social media influencer with lived experience of a suicide attempt elicited a significant reduction in suicidal thoughts. Furthermore, the current findings also indicated an increase in help-seeking intentions; that is, the participants seemed to feel more confident that they would seek help if they were to experience a suicidal crisis themselves. In a nutshell, participants who viewed posts that provided narratives of hope, healing, and recovery on social media showed *lower* levels of *suicidal thoughts* and *higher help-seeking intentions* compared to participants of the control group who viewed suicide-unrelated social media posts. This is consistent with the idea of the Papageno effect (Niederkrotenthaler et al., 2010). We found this suicide protective effect for both, men and women. In fact, despite the social media influencer of the intervention being male, the beneficial effects appeared to be even somewhat stronger in women.

Importantly, the moderation analysis indicated that the strength of the preventive effects depended on the participants' vulnerability, as indicated by their scores for suicidal thoughts at baseline. In fact, we observed a *contingent moderation* pattern for the beneficial impact on suicidal thoughts (i.e., there was no effect in those with no signs of suicidal thoughts at baseline, but a stronger decrease in suicidal thoughts in those with comparatively higher scores for suicidal thoughts at baseline) and a *contributory moderation* pattern for the beneficial impact on help-seeking intentions (i.e., there were stronger beneficial effects on help-seeking intentions for those with higher scores for suicidal thoughts at baseline, but there were some beneficial effects even in those with no signs of suicidal thoughts at baseline). The finding that vulnerability moderated any preventive effects is consistent with previous research on media-related suicide prevention (Till et al., 2015, 2017).

Taken together, the evidence from the present study is consistent with the idea that social media influencers are able to contribute to saving the lives of vulnerable users. This finding has important implications for the practice of suicide prevention within the context of modern digital media environments. Given that social media plays an important role, especially for youth, a thorough understanding of the role of preventive messages on social media is essential. Although backed up by previous empirical research on other types of media, such as films, newspapers, and broadcast television (Niederkrotenthaler et al., 2022), actual supporting empirical evidence from the social media domain is still lacking. The findings of the present study support already existing social media endeavors by influencers with lived experience—social media posts featuring narratives of hope, healing, and recovery from a suicidal crisis appear to work and have beneficial effects on users' suicide risk.

Our findings may also motivate other users to tell their own stories and thereby possibly *help others*. Suicide-prevention research shows that the decision to tell one's own story is a difficult decision to make (Kirchner and Niederkrotenthaler, 2024): There are many people with lived experience, including social media influencers but also other individuals, who want to share their stories of survival. Knowing that telling one's own story on social media may possibly help others may motivate them to do so. The findings of the present study may encourage them that safe sharing of stories in social media posts is indeed possible. In fact, the intention to help others had been identified as the main motivation to share their own story of hope, healing, and recovery (Kirchner and Niederkrotenthaler, 2024).

This social media-related storytelling approach can become part of national suicide prevention strategies and programs, which typically include recommendations on safe media reporting but not considerations about sharing posts of hope, healing, and recovery on social media. Importantly, it is up to future research to empirically investigate

whether (and how) informing social media users with lived experience of suicidal thoughts about the results of our study can motivate them to speak out. We acknowledge that different strategies of how to inform about our findings, for example, via science news coverage or personal contact may lead to a more or less pronounced willingness to speak out.

Furthermore, as Kirchner and Niederkrotenthaler (2024) emphasized, sharing stories of hope, healing, and recovery may also have a beneficial impact *on the storytellers themselves*. However, they also emphasized that storytelling needs preparation, support, guidance, and training before going public and all other stages of the storytelling process. National suicide prevention strategies and programs may thus strengthen their offered support and service in this regard, particularly for unexperienced storytellers.

An increase in the quantitative availability of social media posts on hope, healing, and recovery told by numerous people, particularly a steady flow of such stories on social media over time (Niederkrotenthaler et al., 2023), may be beneficial for suicide prevention. Therefore, the aim of decreasing suicidal thoughts *and* increasing help-seeking (see Niederkrotenthaler et al., 2014) via social media represents an important strategy for suicide prevention in the digital age. Such a strategy has the potential to reach thousands of (vulnerable) users globally, 24/7—at virtually no financial cost due to the digital dissemination process.

We acknowledge that unanswered questions remain. Although we presented evidence for the beneficial effect of a social media influencer with lived experience, we do not know whether influencers *without* lived experience (including professional mental health organizations, such as crisis intervention centers) elicit similar effects. In a previous laboratory experiment, readers of a news article featuring an interview with a suicide expert who provided information on suicide prevention experienced a reduction in suicidal thoughts compared to the control group, regardless of whether or not the featured expert disclosed his or her lived experience of suicidal ideation and provided a personal story on mastering a suicidal crisis (Till et al., 2019). In other studies, however, exposure to educative news articles on suicide prevention without a personal narrative on overcoming a suicidal crisis did not reduce suicidal thoughts (Niederkrotenthaler and Till, 2020b; Till et al., 2021). There are also questions related to a match between the user's and the influencer's gender, age, nationality, or other socio-demographic variables. Does the strength of the beneficial effect differ depending on characteristics that may influence identification, such as the socio-demographic similarity between the user and the influencer? In addition, the strength of the effect may differ depending on how the messages are framed differently. For example, there may be a different effect depending on whether influencers emphasize that overcoming their suicidal crisis was very difficult or very easy, or depending on which particular aspects of the story they focus on (i.e., if they focus on problems they had vs. how their life has improved; Till et al., 2024). It has face validity to assume that the strength of any preventive effects also depends on how the story of mastering is told. Furthermore, we do not know whether social media posts of hope, healing, and recovery elicit the same beneficial effects in other contexts (e.g., in a non-Western/high income context).

Answers to these questions are not yet available. This will be up to future research to uncover. Future studies may utilize a similar experimental approach as we did and manipulate additional factors such as how the story is portrayed. Some versions of narratives of hope, healing, and recovery with specific characteristics may elicit stronger beneficial effects than other versions. Similarly, future (experimental) work may also manipulate the match between the user's and the influencer's gender, age, nationality, or other socio-demographic variables. For example, future studies may want to explore whether socio-demographic similarity increases identification with the social media influence, subsequently strengthening any beneficial effects.

5.1. Limitations

This study has several limitations. First, as with all studies utilizing an experimental design in a controlled setting, we had to use a surrogate marker for suicidal behavior. Thus, it is unclear whether the observed changes in suicidal thoughts translate into changes in actual behavior. Relatedly, we do not know how the strength of the reduction in suicidal thoughts fades over time, as we measured the outcomes only immediately after exposure. Note that in their randomized controlled trial on the effects of suicide-prevention websites, Till and colleagues (2017) found that individuals with some vulnerability at baseline showed a reduction in suicidal ideation that partially persisted one week after exposure. Thus, although we may assume that the beneficial effects of one social media use situation may fade with time, social media influencers typically *regularly* post content. This may result in cumulative effects. The effect residuals of individual media use situations may sum up over time. The repetition of media portrayals has also been identified as a relevant factor in previous media-related suicide research (Niederkrotenthaler et al., 2010, 2023).

Second, we used convenience sampling techniques and were thus unable to work with a representative sample. In addition, we relied on a non-clinical sample. Future studies testing whether the findings observed in the current study also occur in clinical samples are warranted. Third, we did not investigate how suicide-*preventive* posts of hope, healing, and recovery interact with suicide-*facilitative* social media content, such as social media posts that include user-generated content with self-harm (e.g., pictures of cutting). For example, Arendt and colleagues (2019) provided panel survey evidence showing that exposure to self-harm on *Instagram* in the first panel wave prospectively predicted self-harm and suicidality-related outcomes in the second panel wave one month later (while simultaneously controlling for baseline scores). These findings are consistent with the idea that such exposure may lead to detrimental effects. Unfortunately, we have a limited understanding of how suicide-*preventive* and suicide-*facilitative* social media content interact.

Fourth, we did not investigate the differences and similarities between social media influencers and traditional celebrities. We know from Werther effect research that especially the suicide of traditional (i.e., legacy media-based) celebrities tends to elicit strong increases in the suicide rate (Niederkrotenthaler et al., 2020). However, it is unknown whether this also translates into a Papageno context. In addition, for many (young) suicidal users, social media influencers may be even more important than traditional celebrities. Again, this is a valuable starting point for future research.

6. Conclusion

The present study shows that exposure to social media posts featuring narratives centered around hope, healing, and recovery provided by an influencer with a lived experience of suicidal ideation and a suicide attempt elicited a significant reduction in suicidal thoughts and an increase in help-seeking intentions in individuals with some vulnerability. Such stories provided by social media influencers appear to be safe and might contribute to saving the lives of vulnerable users. Given the fact that social media plays an increasingly important role, especially for youth, suicide-prevention efforts via social media influencers may be a promising strategy for suicide prevention in the digital age.

CRediT authorship contribution statement

Florian Arendt: Writing – review & editing, Writing – original draft, Methodology, Formal analysis, Data curation, Conceptualization. **Benedikt Till:** Writing – review & editing, Methodology, Conceptualization. **Armin Gutsch:** Writing – review & editing, Methodology, Data curation, Conceptualization. **Thomas Niederkrotenthaler:** Writing – review & editing, Methodology, Conceptualization.

Ethics statement

The IRB-COM of the Department of Communication, University of Vienna, approved the study (Number ID: 1161, dated April 30, 2024).

Appendix

Examples of the stimulus material used in the present experiment.

A) *Original* Instagram post by suicide attempt survivor Kevin Hines (@kevinhinesstory); *not* used in the experiment but used as an inspiration to create our stimuli:

B) Sample post by our fictitious "Kevin Heinrich" used in the *intervention group* (content matched with Hines's original post; message translated into German):

C) Sample post used in the *control group* (Austrian boy scouts):

Data availability

Data will be made available on request.

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