Investigating harmful and helpful effects of watching season 2 of *13 Reasons Why*: Results of a two-wave U.S. panel survey

Florian Arendt[a], Sebastian Scherr[b], Josh Pasek[c], Patrick E. Jamieson[d], Daniel Romer[d,*]

[a] *Department of Communication, University of Vienna, Austria*
[b] *School for Mass Communication Research, University of Leuven, Belgium*
[c] *Department of Communication Studies and Center for Political Studies, Institute for Social Research, University of Michigan, USA*
[d] *Annenberg Public Policy Center, University of Pennsylvania, USA*

Rationale: The Netflix show *13 Reasons Why* (2017) aroused widespread concern regarding potential contagious effects of its graphic depiction of an adolescent girl's suicide and the events that led to her death.
Objective: To explore the effects of the second season of the show in 2018.
Method: We recruited a sample of young adults (ages 18–29; N = 729) with access to Netflix who completed surveys shortly before and one month after the release of the show's second season. Based on theories of narrative empathy, we hypothesized that those who discontinued watching the show would be most vulnerable to its adverse effects on suicide-relevant outcomes. We further identified a higher risk subset of viewers who were more likely to have stopped watching the first season (those currently enrolled in school) in order to observe if the show had more adverse effects on this audience. Finally, we examined effects of the show on all viewers' intentions to help a suicidal person as a prosocial consequence of viewing the entire second season. We used both covariance and "genetic" matching to control for selection effects.
Results: In support of predictions, viewers who stopped watching the second season exhibited greater suicide risk and less optimism about the future than those who continued to the end. However, unexpectedly, current students who watched the entire second season reported declines in suicide ideation and self-harm relative to those who did not watch the show at all (ps < .01). Moreover, those who watched the entire second season were also more likely to express interest in helping a suicidal person, especially compared to those who stopped watching.
Conclusion: The results suggest that a fictional story with a focus on suicidal content can have both harmful and helpful effects.

1. Introduction

Suicide is a significant public health problem worldwide. According to the World Health Organization (WHO; 2018), almost 800,000 people die by suicide annually around the world, with suicide the second leading cause of death among 15–29 year olds. The WHO (2014) called suicide prevention a global imperative because of its evident prevalence. Among a myriad of other factors (Mann et al., 2005), media have been recognized as shaping both the elicitation and prevention of suicide (WHO, 2018).

Media depictions of suicide can elicit detrimental and beneficial effects on suicidal behavior: On the one hand, stories, whether fictional or in news, can elicit suicide, especially when they include explicit depictions of suicide methods—a phenomenon known as the *Werther effect* (Phillips, 1974). Such harmful effects have been revealed for news (Stack, 2005; Sisask & Varnik, 2012) and fictional entertainment (Niederkrotenthaler and Stack, 2017). On the other hand, more recent research has discovered that news reporting on suicide, for example, by publishing stories about individuals who successfully overcame a suicidal crisis, can reduce suicidal behavior—a phenomenon called the *Papageno effect* (Niederkrotenthaler et al., 2010).

One of the most heavily debated media fictional suicide depictions in recent times was the 2017 Netflix series *13 Reasons Why*. This series was centered around the suicide of a 17-year old female student whose reasons for her suicide constituted the basis for 13 different episodes in the series, culminating in the graphic portrayal of her suicide (see Supplemental Table S1). The series sparked considerable criticism from mental health organizations (e.g., IASP, 2017; Suicide Awareness Voices of Education, 2017), who contended that the series could lead to Werther effects, and many professional medical associations released

* Corresponding author. 202 S. 36th ST, Philadelphia, PA, 19104, USA.
E-mail address: dan.romer@appc.upenn.edu (D. Romer).

official statements about how best to respond to the show (see Arendt et al., 2017).

That the show may have had deleterious effects is suggested by a spike in Google searches about suicide in the days following season 1's release (Ayers et al., 2017), reports by physicians that, for example, several children created lists of *13 Reasons Why* they wanted to kill themselves (Zarin-Pass et al., 2018), and an increase in one hospital's admissions of children with suicide-related behavior (Cooper et al., 2018). Nevertheless, two studies conducted after the release of the first season found contradictory results. In a study of Brazilian adolescents, Rosa et al. (2018) found reports of worsening mood among those who were suicidal prior to seeing the show. Yet, in a study of both Brazilian and US adolescents, Zimerman et al. (2018) found greater reduction than increase in suicidal ideation among those who reported they had ideation prior to watching the show. Notably, the latter study only included those who watched the entire first season, whereas the Rosa et al. (2018) study did not distinguish between those who watched all or only some of the series. And importantly, these studies occurred after the show's release, thus relying on reports of how viewers felt prior to watching.

Studies of similar fictional media content provide strong reasons to expect imitative effects following a show like *13 Reasons Why* (Niederkrotenthaler and Stack, 2017). In particular, the show bears striking similarity to a German 1980s television series, *Tod eines Schülers* (*Death of a Student*). It featured a 19-year old high school protagonist who died by railway suicide and focused, similar to *13 Reasons Why,* on parents, friends, and teachers as the main contributing factors for his death. Schmidtke and Häfner (1988) found a statistically significant increase in railway suicides among men aged 15–29 in West Germany after the series was aired. The same effect, although somewhat weaker, was found when the series re-aired one year later.

1.1. The second season of 13 Reasons Why

Given the popularity of *13 Reasons Why* and its continuation into a second season, we took the opportunity to study its impact on viewers using a prospective design. Although the producers argued that the first season armed viewers with greater understanding of how to overcome some of the challenges that young people face (e.g., Sheff, 2017), such suicide depictions may have harmful effects, particularly on those who are already vulnerable to suicide (Gould, Jamieson, & Romer, 2003; Stack, 2005). When susceptible viewers observe suicide treated as a way to cope with life challenges, they may conclude that suicide is an effective solution (leading to Werther effects). Such a response would be consistent with literary and psychological theories of the empathy that stories can elicit (Keen, 2006; Mar and Oatley, 2008). At the same time, suicidal depictions can also arouse distress in vulnerable viewers, a form of empathy that is likely to lead to avoidance of the story (Keen, 2006). Hence, vulnerable viewers may actually respond by withdrawing from a story rather than continuing the aversive experience.

Aside from adverse effects, showing a character overcoming suicidal thoughts can provide potentially suicidal viewers a model of effective coping (leading to Papageno effects). It may also open a window into the thoughts and actions of those in a suicidal state, which could elicit compassion and a desire to help those who are suicidal (Arendt et al., 2018). An international study of adolescents and parents who had seen the first season found some evidence to support this conclusion (Wartella et al., 2018). The current study attempted to isolate these potential influences of watching the second season of *13 Reasons Why* using a panel of American young adults who were interviewed both before and after Netflix released the second season of the show in May 2018. We examined how preexisting characteristics of the audience shaped decisions to watch the show and interacted with the show's content to influence viewers. In addition, for the second season, the producers released a cautionary message about the show's potentially distressing content and a message at the end of each episode to encourage potentially suicidal viewers to seek help (Desaur Studios, 2018). We also explored whether those messages were noticed and influenced program outcomes.

1.2. Self-selection effects in media suicide contagion

Although the second season of *13 Reasons Why* provided an opportunity to study its effects, there are methodological challenges in overcoming the fact that individuals self-select into their engagement with the show. Those who choose to watch in the first place are likely to differ from those who do not. To overcome this selection effect requires analyses that can compare viewers with non-viewers while holding constant predispositions to watch. Similarly, not all viewers will watch the entire series. Those who find the topic of suicide distressing are likely to stop watching it (Keen, 2006) and may be at risk of adverse outcomes especially if they are already at higher risk. For others, withdrawing from the series may just be a sign that the show is uninteresting. Therefore, it was pivotal to identify predispositions that influence the decision to continue watching. Without accounting for these factors, it would be difficult to distinguish selection effects from any effects of the program per se.

2. Method

2.1. Participants

The survey firm Qualtrics recruited a panel of young people aged 18 to 29 ($N = 1262$) who reported having access to Netflix over a period of 10 days prior to the release of the second season (May 18, 2018). Qualtrics obtained the sample from a survey vendor that maintains a panel of respondents recruited from various internet gaming sites. Approximately 10% of those who were offered the opportunity to participate in the study began the survey, a typical response rate that has not been found to adversely affect disclosure rates (Pew Research Center, 2012). At the outset of the survey, they were told that the study involved a two-part anonymous survey regarding “media content that features suicide” and that they would be invited to a second survey in a month's time to “see if your experiences around this topic have changed.” They were assured that they could “skip any question you feel that you do not want to answer.” Approximately 73% of those who began the study completed the survey at the first wave. They were invited again approximately four weeks after the release of the second season to complete the follow-up survey, which remained in the field for 14 days. The institutional review board of the University of Pennsylvania approved the study.

In total, 729 (57.4%) individuals participated in both waves and provided complete data for this research. Table 1 provides the demographic characteristics of the participants at both waves of the study. The heavy participation by women (81.6%) was to be expected due in part to the over-representation of women in Qualtrics panels (about 70%). Women may also have found the female student who died by suicide of greater interest than men. Approximately one-third of the non-white sample identified as Hispanic.

2.2. Target outcomes

We focused on six outcomes assessed at both waves that measured established suicide-related concepts. An additional scale that was only assessed at the second wave was included to examine effects of the series on intentions to help a suicidal person.

Suicide risk. We used six items from the Suicide Probability Scale (Eltz et al., 2007) which has been found to predict repeated suicide attempts in an adolescent sample. Respondents were asked “How often, if ever, are the following statements true of yourself?” (Wave 1) and “Since the first survey, how often do you feel the following statements are true?” (Wave 2). They were asked to rate six items (*I think of suicide; I have thoughts about how to end my life; I feel it would be less painful to die than to keep living; Given the way things are, I feel the world is not worth*

Table 1
Demographic and viewing characteristics across both waves.

Characteristics	Wave 1 (n = 1262)		Wave 2 (n = 729)		p[a]
	n	%	n	%	
Age					
18–20	254	20.1	118	16.2	< .01
21–23	339	26.9	186	25.5	
24–26	356	28.1	211	24.0	
27–29	313	24.8	214	29.3	
Gender					
Male	238	18.9	120	16.5	.82
Female	1008	79.9	596	81.8	
Other	16	1.2	7	1.7	
Race					
White	906	71.8	526	72.2	.83
Non-White	356	28.2	203	27.8	
Education					
High school or less	512	40.5	281	38.5	.23
Some college	429	34.0	244	33.5	
Bachelor's degree	206	16.3	139	19.1	
Post Bachelor degree	104	8.2	61	8.4	
Current Student					
Yes			429	58.9	
No			299	41.0	
Viewed 1st season					
No	493	39.1	279	38.3	.90
Some	299	23.7	175	24.0	
All	470	37.2	275	37.7	
Viewed 2nd season					
No			290	39.8	
Some			225	30.9	
All			214	29.4	

[a] Tests based on chi-square goodness of fit between observed frequencies at Wave 2 and what would be expected based on Wave 1.

continuing to live in; I feel people would be better off if I were dead; In order to punish others, I think of suicide) on a 5-point scale ranging from 1 (*none of the time*) to 5 (*most of the time*).

Hopelessness. This important suicide predictor was measured using the validated brief version of Beck's Hopelessness Scale (Yip and Cheung, 2006). Participants rated four items (*My future seems dark to me; I just don't get the breaks and there is no reason to believe I will in the future; In the future, I expect to succeed in what concerns me most; I have great faith in the future*) on a seven-point scale ranging from one (*strongly disagree*) to seven (*strongly agree*).

Self-harm. We asked whether the respondent had ever (Wave 1) or in the past month (Wave 2) *engaged in self harming behavior such as cutting your wrists* (*Yes* vs. *No*), a measure of non-suicidal self-injury (Muehlenkamp et al., 2012).

Suicidal ideation. We used the item from the Youth Risk Behavior Survey (Kann et al., 2018) that measures suicidal ideation: *Have you ever* (Wave 1) or *in the past month* (Wave 2) *seriously considered attempting suicide?* The item had the response options: *never* (0), *once* (1), *twice* (2), *three or more times* (3). We collapsed the responses into a two-point scale coded as yes (1, 2, 3) vs. no (0). At the end of the survey, we asked those who reported ideation whether they were still contemplating suicide. If they were, we provided information about the telephone counseling service available at the U.S. Lifeline with encouragement to use the service.

Reasons for living. We used the "survival and coping beliefs" subscale of the Brief Reasons for Living scale (Cwik et al., 2017). This concept has been shown to be especially responsive for media influences (Till et al., 2017). Participants rated two items (*I believe I can find a purpose in life, a reason to live*; *I do not want to die*) on a seven-point scale ranging from one (*strongly disagree*) to seven (*strongly agree*).

Suicide acceptance. We used three items taken from the General Social Survey (Joe et al., 2007) that assess acceptance of suicide as a solution to various life problems: *I think it's ok to end your life if you are tired of living; if you don't see any reason for living*; or *if you are suffering from an incurable disease*, rated on a scale from *strongly disagree* (1) to *strongly agree* (7).

2.3. Additional outcomes

Intention to provide adequate help to suicidal individuals (Help scale). In contrast to the target outcomes related to individual suicidality, we also captured respondents' intentions to help suicidal individuals (Arendt et al., 2018). Using the hypothetical scenario adapted from Arendt et al. (2018) in which they met someone (matched on gender) from their past who appeared to be suicidal, we asked: "What do you think you would do in this situation?" For each of 11 different behaviors, we assessed the likelihood ranging from one (*very unlikely*) to seven (*very likely*) that he/she would engage in it. We used behaviors that can be deemed desirable from the perspective of suicide prevention (e.g., *I ask him/her about details of his/her problems and try to comfort him/her; I try to encourage him/her to seek help (*e.g.*: a telephone counselor or psychologist)*) and behaviors that can be deemed undesirable from the perspective of suicide prevention (e.g., *I don't ask him/her about possible suicidal thoughts because that would make me feel uncomfortable; I just say goodbye and go*). A scale was constructed, with higher scores indicating more helpful behaviors.

Exposure to *13 Reasons Why*. We used a multi-step process to measure the amount of exposure to the Seasons 1 and 2 of *13 Reasons Why*. In the first wave of the survey, we asked whether respondents "have heard about the Netflix original series *13 Reasons Why* that was released in May 2017. If they indicated that they had, they were asked: "Did you watch *13 Reasons Why*"? If yes, how many of the 13 episodes did you watch? If you are not sure, please provide an estimate." They could choose a value from zero to 13. Respondents who indicated that they had not heard about the series or did not watch it were categorized as non-viewers. In the second wave, they were asked whether they "have heard about Season 2 of *13 Reasons Why* that was released in May 2018." If they had, they were asked the same set of questions about the number of episodes they had watched.

Exposure to other suicide stories. Exposure to other suicide stories was assessed in the second wave using a list of 11 possibilities that respondents might have heard of a suicide since the first survey (cf. Dunlop et al., 2011). This list included various media sources (e.g., news reports, social media, and movies) in addition to personal sources. We created a summary score that tabulated the number of sources weighted by frequency of exposure (M = 7.55, SD = 5.40). Although we included streaming shows like Netflix in the list, we did not include it in our summary score.

Exposure to warning message. Netflix presented a brief warning about the second season at the beginning of the first episode of the second season. It featured the leading actors talking about how the show's potentially disturbing content may not be appropriate for all viewers. We showed respondents a screen shot of the title of the video and asked if they had ever seen it. Of those who were aware of the show's second season, 51.3% (N = 374) claimed to have seen the message. We further probed whether seeing it affected their subsequent viewing of the show.

Help Message. Netflix presented a "help message" at the end of each episode which provided contact information for professional help (including the U.S. Lifeline). We presented a screen shot of the title of the video and asked whether respondents had visited the advertised prevention website. A total of 118 (26.9%) of Season 2 viewers claimed to have visited the website.

Other indicators of audience involvement. We assessed whether the show spurred discussion with friends (*Did you talk about the second season with your friends?)* and thoughts about it (*How much did you think about the content of the second season?)* among viewers. We also assessed whether viewers sought information about a variety of topics raised by the show, such as suicide, sexual assault, and gun violence (*As a*

consequence of watching "13 Reasons Why Season 2", did you inform yourself about any of the following?).

2.4. Analyses

We tested whether those who watched the entire second season would exhibit less distress than those who only watched some of it. To assess this prediction, we created a contrast comparing having watched only some of the second season (coded as 1) with either watching all or none of it (each coded as −0.5). We also tested an orthogonal contrast to assess whether those who watched all of it (coded as 1) would still exhibit an adverse reaction compared to those who did not watch the show at all (coded as −1), with the rest coded as zero. We also sought to identify potential vulnerabilities to suicidal content as reflected in dropping out of the first season. These characteristics might just be a sign of disinterest in the content of the show. However, if they reflected distress, we would expect them to exhibit greater risk for suicide than those who watched the entire second season. We were interested to determine whether any such characteristics might accentuate the effects of watching some or all of the second season. As we show in the results, those who reported currently taking classes of any sort were more likely to have dropped out of the first season and to be more suicidal. Therefore, we examined interactions between this high-risk group and the contrasts designed to test the effects of watching some or all of the second season.

Missing Data. There were two sources of missing data. One was attrition from the first to the second wave and the other was non-response to the items regarding self-harm and suicidal ideation. To evaluate potential threats of attrition, we examined the demographic and viewing characteristics of respondents at both waves. As we report below, the two waves produced largely equivalent profiles. Non-response to the two behavioral outcomes was low across both waves (15.5% for ideation and 7.8% for self-harm) and viewing of the show at both waves was unrelated to the missingness of these reports (see Table S2). Only age, education, and exposure to other suicides were statistically associated at all with missingness of these outcomes (all r's < |0.15|). These considerations led us to conclude that our data were missing at random and to use list-wise deletion for all analyses, because as noted by Sidi and Harel (2018), imputing data is unlikely to improve power under these conditions.

Selection effects. To minimize the potential that correlates of viewing may have been associated with preexisting differences among the respondents, we held constant characteristics that appeared to distinguish viewers from non-viewers in all analyses. We also assessed whether our analyses were robust using what has been termed "genetic matching". This procedure employs a combination of propensity scores and covariate balancing to identify two groups of respondents that differ on a parameter of interest, but whose distributions of covariates are equivalent (Diamond and Sekhon, 2013). Essentially, it is a form of propensity score weighting but does a better job of producing equivalent matches across covariates and minimizes the number of cases that need to be dropped as "out of sample." Matches were produced to compare respondents who (a) watched some of the second season with those who watched none of it, (b) watched all of it with those who watched none, and (c) watched some of it with those who watched all of it. Although these analyses had less power than our total sample (see supplement), regressions using these matched samples provided a robustness check on the models that simply controlled for covariates.

3. Results

3.1. Sample participants

As seen in Table 1, although Wave 2 respondents were slightly older than at Wave 1, the demographic and viewing characteristics of the sample remained largely the same from Wave 1 to Wave 2. Student status was not assessed until the second wave. Similar to the first season, a large proportion of respondents (30.9%) started but did not complete the series, and the majority of those viewers (64%) only watched four of 13 episodes.

3.2. Evidence of engagement with the second season

Viewers of the second season talked about the series with friends to a greater extent than non-viewers (58.4% vs. 41.6%; χ^2 (2) = 210.0, $p < .001$), and those who viewed the whole series thought about it more afterwards than those who only viewed some of the season (41.1% vs. 20.1%; χ^2 (1) = 22.90, $p < .001$). In addition, viewers searched for information regarding an average of seven topics (SD = 5.21, range: 0–14) after viewing the show.

3.3. Preliminary analyses

Predictors of watching Seasons 1 and 2. In order to identify audience characteristics that were associated with having watched the show and might reflect distress in reaction to the show's content, we conducted a multinomial regression analysis to identify predictors of watching all or only some of the first season with not watching as the reference category. This analysis (Table S3) indicated that older respondents were less likely to watch the show at all, that women were more likely to watch the entire first season, but that those currently attending school (34.4% vs. 16.6%) or who were non-white (34.0% vs. 20.2%) were more likely to have stopped watching the first season. Further analyses shown below revealed that only being a current student was related to greater suicide risk. Thus, we used that characteristic as a marker of higher suicide risk for the second season.

We conducted a similar analysis to identify characteristics associated with watching all or only some of the second season (Table S4). Those who watched any of the first season were clearly more likely to report watching any of Season 2. In addition, older persons, men, and those who identified as current students were more likely to watch any of Season 2 (holding constant whether they watched season one). Hence, it was critical to control for these variables in our analyses of suicidal outcomes.

Factor structure of suicide-related outcomes. To validate the internal consistency and factor structure of the various scales we employed, we conducted a principal-axis factor analysis with oblique rotation and pairwise deletion. This analysis identified four factors with a clear structure (see Table S5). Although the suicide risk scale loaded on a single factor, the four-item hopelessness scale loaded on two separate factors, suicide acceptance and a scale composed of the two reasons for living, which we labeled as optimism. The resulting scales had high alphas (> 0.80). Although the two items comprising ideation and self-harm loaded together, we treated them as separate outcomes. An analysis of Wave 1 revealed the same structure. Descriptive statistics of the dependent variables are shown in Table 2.

Table 2
Descriptive statistics of dependent variables.

Variable	n	Minimum	Maximum	Mean	SD	α
Wave 1						
Suicide Risk	729	1.00	5.00	1.97	1.08	.94
Suicide Acceptance	729	1.00	7.00	3.02	1.42	.85
Optimism	729	1.00	7.00	5.26	1.39	.84
Self-Harm	695	0.00	1.00	0.28	0.45	
Ideation	660	0.00	1.00	0.25	0.43	
Wave 2						
Suicide Risk	728	1.00	5.00	2.11	1.16	.95
Suicide Acceptance	728	1.00	7.00	3.31	1.53	.88
Optimism	728	1.00	7.00	5.18	1.33	.84
Self-Harm	694	0.00	1.00	0.19	0.39	
Ideation	668	0.00	1.00	0.25	0.44	
Help Scale	728	1.91	7.00	4.89	1.10	.79

Table 3
Stepwise multiple regression analysis of suicide risk.

Predictor	Step 1			Step 2		
	B	*SE*	*p*	*B*	*SE*	*p*
Suicide risk Wave 1	**0.636**	**.03**	**< .001**	**0.607**	**.03**	**< .001**
Age	0.022	.01	.051	0.015	.01	.174
Female	−0.083	.09	.350	−0.065	.09	.460
Education	**−0.096**	**.04**	**.009**	**−0.086**	**.04**	**.019**
White	−0.037	.08	.631	−0.016	.08	.836
Watched some of first season	0.112	.09	.230	−0.015	.10	.882
Watched all of first season	0.035	.08	.653	0.031	.10	.762
Exposed to other suicides	0.006	.01	.352	0.002	.01	.743
Current student	**0.252**	**.08**	**.001**	**0.169**	**.08**	**.029**
Watched some vs. none or all of second season				**0.165**	**.05**	**.002**
Watched all vs. none of second season				−0.049	.05	.361
Went to help site				**0.346**	**.10**	**.001**
R^2	.411			.431		

Note. Entries in bold represent significant relations ($p < .05$).

3.4. Analysis of change in outcomes as a function of watching some or all of Season 2

We conducted these analyses in three steps. First, we entered the prior status of the dependent variable at Wave 1 along with demographic predictors, current student status, whether participants watched all or some of the first season, and how much exposure they had to other sources about suicides in media (apart from Netflix) and face-to-face interaction. In the second step, we entered the two planned contrasts along with whether respondents visited the help site that was promoted during the second season. In the final step, we entered interactions between current student status and the two contrasts.

Suicide Risk. Analysis (Table 3) of step 1 indicated that respondents with more education were less likely to exhibit increase on this outcome. However, controlling for education, current students were more likely to report increases. In the second step, having only watched some of the second season was positively related to this outcome compared to having watched all or none. This contrast was significant despite controlling for visiting the help site, which was correlated with the contrast ($r = .31, p < .001$) and greater risk. Visiting the help site was also positively related to student status ($r = .32$, $p < .001$), which is consistent with the reduction in prediction for student status at step 2. There was no improvement in prediction when interactions with student status were entered at the third step (not shown), indicating that the effect of watching only some of the series did not depend on student status. As seen in Fig. 1 below, those who only watched some of the second season had heightened levels of suicide risk, a difference that was present for both students and non-students, with a higher level for students.

The matched analysis (Table S6) confirmed the pattern in Fig. 1. Among those who watched some or none of the show, students tended to be more suicidal than non-students. Those who watched all of the second season were less suicidal than those who only watched some of it. However, the difference between those who only watched some versus none failed to reach significance.

Table 4
Stepwise multiple regression of optimism.

Predictor	Step 1			Step 2		
	B	*SE*	*p*	*B*	*SE*	*p*
Optimism Wave 1	**0.474**	**.03**	**< .001**	**.471**	**.03**	**< .001**
Age	−0.002	.02	.897	.004	.01	.781
Female	0.149	.11	.172	.161	.11	.141
Education	0.054	.05	.236	.055	.05	.228
White	−0.126	.09	.182	-.150	.10	.116
Watched some of first season	−0.035	.11	.758	.036	.13	.781
Watched all of first season	0.254	.10	.009	.173	.13	.167
Exposed to other suicides	**0.031**	**.01**	**< .001**	**.031**	**.01**	**< .001**
Current student	−0.157	.09	.092	-.139	.10	.146
Watched some vs. none or all of second season				**-.199**	**.07**	**.003**
Watched all vs. none of second season				.082	.07	.215
Went to help site				.056	.12	.644
R^2	.317			.327		

Note. Entries in bold represent significant relations ($p < .05$).

Optimism. Analysis (Table 4) in step 1 indicated that those who watched all of the first season and those who were exposed to other suicide stories exhibited greater optimism at the second wave. In step 2, the quadratic predictor was significant indicating that those who watched only some of the second season were less optimistic than others (Fig. 2). The contrast between watching all of the second season versus none of it was not significant. There were no interactions with student status at step 3 (not shown).

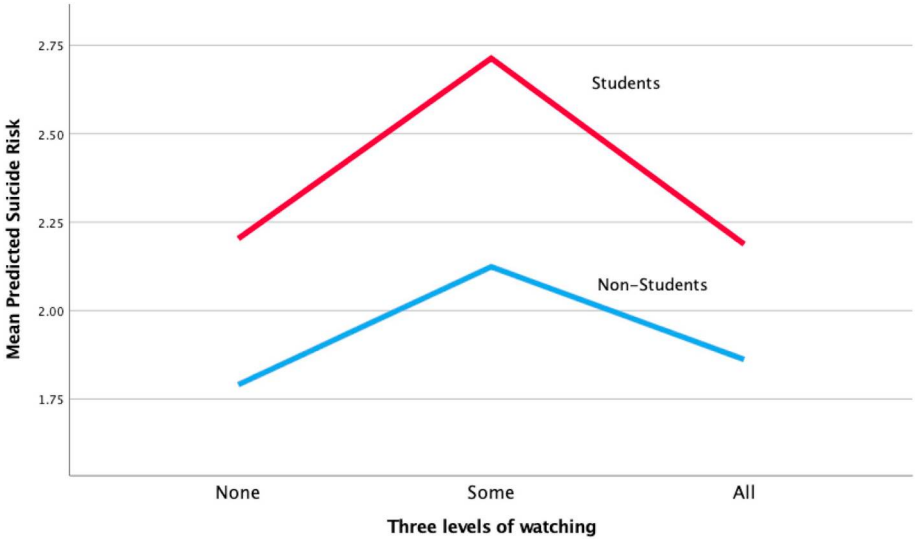

Fig. 1. Predicted suicide risk at Wave 2 controlling for Wave 1 risk.

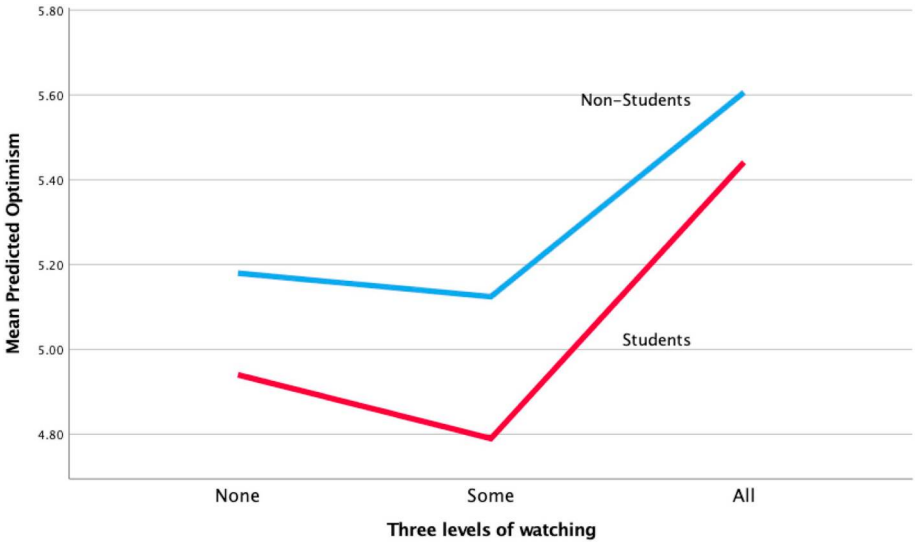

Fig. 2. Predicted optimism at the second wave by amount watched and student status.

The matched analysis (Table S7) confirmed some of the pattern in Fig. 2 indicating that those who watched the entire second season were more optimistic than those who only watched some of it.

Suicide Acceptance. Female respondents reported less suicide acceptance; whereas, current students reported more. These relations remained stable across the three steps with no evidence of any relation with watching the second season (see Table S8). The matched analysis (Table S9) confirmed that current students were more accepting than others.

Self-Harm. Better educated respondents reported less self-harm at Wave 2, whereas current students reported more (Table 5). In step 2, watching only some of Season 2 was positively related to self-harm, despite controlling for visiting the help-site which was also positively related to self-harm. Exposure to other suicide stories was positively related to visiting the help-site ($r = .24$, $p < .001$), the control of which increased its negative relation with self-harm. However, step 3 showed that those who watched the entire second season and were current students exhibited a reduction in self-harm ($B = -0.805$) that left them with lower levels than those who did not watch at all (see Fig. 3).

The matched analysis (Table S10) confirmed the finding that current students who watched the entire second season exhibited a reduction in self-harm compared to those who watched none of it.

Suicidal Ideation. A pattern similar to self-harm appeared for ideation, although exposure to other suicides was not a predictor (Table 6). Again, watching only some of the second season was positively related to ideation in step 2 even after controlling for visiting the help site. Step 3 indicated again that current students who watched the entire season reported less ideation than those who did not watch at all ($B = -0.830$). Fig. 4 illustrates this result.

The matched analysis (Table S11) comparing those who watched some versus all of Season 2 confirmed the reduction in ideation for students who watched the entire second season. A trend in the same direction for those who watched all versus none of the second season did not reach significance ($p = .112$).

Intention to help a suicidal person. Because we did not have a baseline measure of this outcome, we included the full set of wave-1 outcomes as controls. Several characteristics were related to this score in step 1 (Table 7), including a negative relation for students and a positive relation with having watched all of the first season. Viewers who reported greater suicidal ideation were also more likely to help the suicidal person. There was a significant negative relation with the

Table 5
Stepwise multiple logistic regression of self-harm.

Predictor	Step 1			Step 2			Step 3		
	B	*SE*	*p*	*B*	*SE*	*p*	*B*	*SE*	*p*
Self-harm Wave 1	**1.809**	**.04**	**< .001**	**1.780**	**.24**	**< .001**	**1.743**	**.24**	**< .001**
Age	−0.025	.04	.490	−0.046	.04	.222	−0.043	.04	.257
Female	0.267	.30	.379	0.398	.33	.219	0.362	.33	.265
Education	−0.281	.13	.027	−0.239	.13	.070	−0.217	.13	.106
White	−0.383	.24	.111	−0.308	.25	.216	−0.304	.25	.226
Watched some of first season	0.429	.30	.149	0.086	.35	.807	0.058	.36	.871
Watched all of first season	0.359	.27	.185	0.498	.36	.163	0.499	.37	.172
Exposed to other suicide	−0.041	.02	.067	**−0.056**	**.02**	**.018**	**−0.054**	**.02**	**.022**
Current student (CS)	**1.399**	**.25**	**< .001**	**1.094**	**.27**	**< .001**	**1.038**	**.27**	**< .001**
Watched some vs. none or all of second season (W1)				**0.378**	**.17**	**.030**	0.243	.27	.369
Watched all vs. none of second season (W2)				−0.324	.19	.092	0.057	.24	.808
Went to help-site				**1.174**	**.29**	**< .001**	**1.198**	**.29**	**< .001**
CS × W1							0.203	.34	.548
CS × W2							**-.805**	**.29**	**.006**
Nagelkerke R^2	.276			.325			.340		

Note. Entries in bold represent significant relations ($p < .05$).

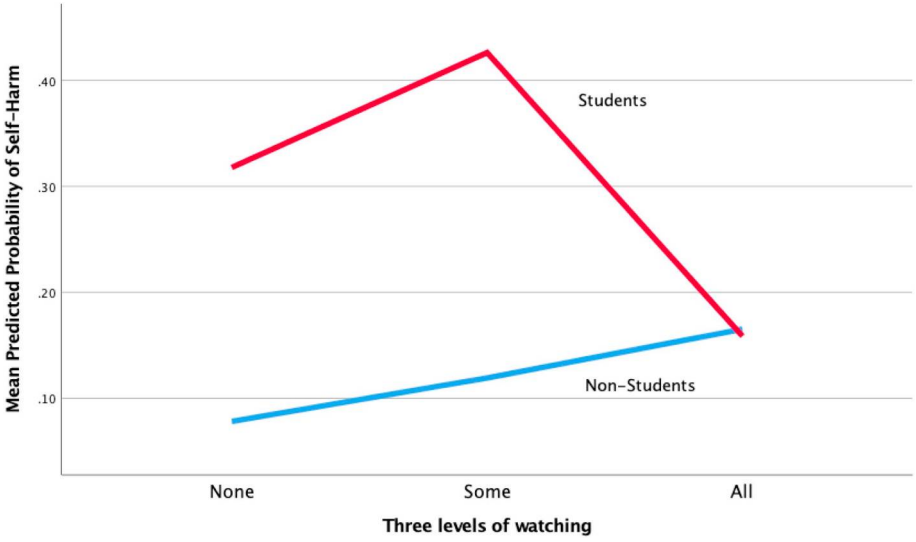

Fig. 3. Predicted self-harm controlling for Wave 1 self-harm.

contrast comparing those who only watched some versus either none or all (Fig. 5), indicating that those who stopped watching were less likely to offer help. The relation was reduced when including interactions with current student status, but neither of those interactions was significant on its own (not shown).

The matched analysis (Table S11) showed the same positive relation for those who watched the entire season compared to those who stopped; however, the negative relation for those who watched some versus none of the second season only approached significance ($p = .099$).

3.5. Robustness analyses

We conducted supplemental analyses to assess the robustness of the findings. Restricting the sample to women replicated the findings for all outcomes. Examining respondents with prior suicidal ideation as a risk group only found that they were more likely to report suicide acceptance after watching some of the second season. All other effects related to exposure remained. Finally, we examined whether those who watched all of both seasons responded differently. But again, there were no significant differences for this group.

3.6. Effects of warning posted prior to second season

We saw a relation between seeing the warning that was posted prior to the second season and watching the second season. Among those who said they were interested in watching the second season at Wave 1 and were aware of its release ($N = 395$), those who saw the warning and *claimed it had an effect* on their viewing were less likely to watch the entire second season than those who did not see the warning, 34.2% vs. 40.2%, χ^2 (1) = 7.10, $p = .008$. Overall however, those who saw the warning were more likely to watch at least some of the second season than those who did not see the warning, 94% vs. 73.8%, χ^2 (1) = 31.05, $p < .001$. Thus, the warning may well have functioned as a promotional vehicle for the second season.

4. Discussion

We surveyed young people aged 18 to 29 shortly before and again after the release of *13 Reasons Why Season 2* to identify effects of viewing this highly controversial Netflix series. We hypothesized that watching only some of the series could be an indicator of distress that led those viewers to discontinue exposure to the upsetting content. We also

Table 6
Stepwise multiple logistic regression of suicidal ideation.

Predictor	Step 1			Step 2			Step 3		
	B	*SE*	*p*	*B*	*SE*	*p*	*B*	*SE*	*p*
Suicidal ideation Wave 1	**1.219**	**.22**	**< .001**	**1.191**	**.22**	**< .001**	**1.173**	**.23**	**< .001**
Age	0.000	.03	.989	−0.016	.04	.636	−0.018	.04	.618
Female	−0.186	.26	.470	−0.093	.27	.772	−0.143	.27	.597
Education	**−0.387**	**.12**	**.001**	**−0.361**	.12	**.002**	**−0.344**	.12	**.005**
White	−0.165	.23	.464	−0.082	.23	.725	−0.091	.24	.700
Watched some of first season	0.259	.27	.332	−0.071	.32	.822	−0.127	.32	.695
Watched all of first season	0.028	.25	.910	0.049	.33	.882	0.031	.34	.926
Exposed to other suicide	0.026	.02	.189	0.016	.02	.442	0.016	.02	.434
Current student (CS)	**1.137**	**.23**	**< .001**	**0.918**	**.24**	**< .001**	**0.840**	**.24**	**< .001**
Watched some vs. none or all of second season (W1)				**0.403**	**.16**	**.011**	0.194	.24	.417
Watched all vs. none of second season (W2)				−0.200	.18	.264	0.189	.22	.382
Went to help-site				**0.925**	**.27**	**< .001**	**0.965**	**.27**	**< .001**
CS × W1							0.331	.30	.276
CS × W2							**−0.830**	**.27**	**.002**
Nagelkerke R^2	.215			.257			.278		

Note. Entries in bold represent significant relations ($p < .05$).

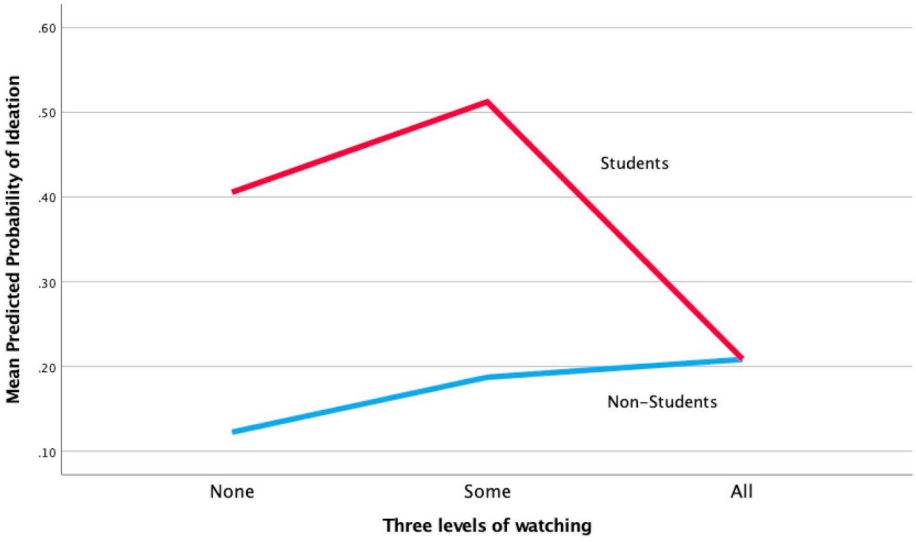

Fig. 4. Predicted suicidal ideation controlling for Wave 1 ideation.

Table 7
Stepwise multiple regression of help scale.

Predictor	Step 1			Step 2		
	B	*SE*	*p*	*B*	*SE*	*p*
Age	−0.019	.01	.136	−0.011	.01	.398
Female	**0.408**	**.11**	**< .001**	**0.394**	**.10**	**< .001**
Education	0.054	.04	.205	0.045	.04	.292
White	**0.278**	**.09**	**.002**	**0.263**	**.09**	**.004**
Watched some of first season	−0.043	.11	.697	0.082	.12	.503
Watched all of first season	**0.271**	**.09**	**.003**	**0.236**	**.12**	**.046**
Exposed to other suicide	0.004	.01	.632	0.007	.01	.350
Current student (CS)	**−0.319**	**.09**	**< .001**	**−0.246**	**.09**	**.006**
Suicide risk Wave 1	**−0.166**	**.05**	**.002**	**−0.148**	**.05**	**.005**
Suicide acceptance Wave 1	**−0.132**	**.03**	**< .001**	**−0.136**	**.03**	**< .001**
Optimism Wave 1	**0.107**	**.03**	**.001**	**0.093**	**.03**	**.003**
Self-Harm Wave 1	0.018	.10	.864	0.019	.10	.848
Ideation Wave 1	**0.406**	**.11**	**< .001**	**0.385**	**.11**	**< .001**
Watched some vs. none or all of second season				**−0.233**	**.07**	**< .001**
Watched all vs. none of second season				0.080	.06	.202
Went to help-site				**−0.216**	**.11**	**.060**
R^2	.249			.273		

Note. Entries in bold represent significant relations ($p < .05$).

identified a potentially high-risk group of viewers who were currently taking classes and were more likely to have stopped watching the first season, suggesting that the show may have been distressing to them.

For those who only watched some of the second season, we found that the experience predicted elevated suicide risk (Table 3 and Fig. 1), especially among current students. The matched analysis partially confirmed these findings in that those who watched the entire second season exhibited less suicide risk than those who only watched some of it, and that students were at higher suicide risk than non-students. There was additional evidence of harm in that those who only watched some of the second season reported less optimism on average than others (Table 4 and Fig. 2), with students again showing less favorable reactions. Although the matched analysis exhibited the same trends, it was unable to clearly confirm that those who watched some were less optimistic or at greater risk than those who did not watch at all.

Our more direct measures of behavior, self-harm, and suicidal ideation also exhibited significantly higher levels of these outcomes among those who stopped watching than the average of the other two types of viewing (Tables 5 and 6 and Figs. 3 and 4). Here, the effect was again stronger among students. Furthermore, among this higher-risk group, we observed unexpectedly that those who watched the entire season showed less suicidality than those who did not watch at all. Thus, our findings suggest that over the course of a month, the show exerted a beneficial effect on students who watched the entire show. The "full dose" effect seems to have outpaced the effect that emerged from only watching some of Season 2. This finding may also be consistent with the results of Zimerman et al. (2018), who found that those who watched the entire first season and who reported prior suicidal ideation were more likely to report improvement in their mental state than a reduction.

One explanation for the beneficial finding is that those at higher risk who persisted to the end were able to empathize with the challenges faced by the main characters and to take away a life-affirming lesson applied to their own lives. It is possible that the final episode in particular contained such messages (see Table S1). Hannah's mother showed Clay some of Hannah's secret writings indicating that Hannah felt supported by Clay, which relieved his doubts about his own role in her death. She also gave him the message that staying alive is always better than ending it, perhaps helping him overcome his own suicidal tendencies. Later in the episode, Clay stops a fellow student who had been sexually assaulted at school from using an assault rifle to shoot his classmates at a school dance. Thus, the season ends on a potentially positive note, portraying growing strength in Clay's character.

The findings regarding intentions to help a suicidal person are also consistent with this explanation. Viewers who stopped watching the show exhibited less interest in helping a suicidal friend (Table 7 and Fig. 5). If watching the entire season enhanced empathy for suicidal persons, one would expect greater intentions to help such persons. Although the show did not increase this intention above the level of those who did not watch, it was higher than among those who only watched some of it. Furthermore, the effect was evident for both students and non-students, suggesting that watching the entire series was beneficial even for higher-risk viewers.

Although the second season did provide an online resource for those experiencing distress, controlling for having visited this site did not remove the effects, either positive or negative, that we observed. This pattern suggests that, although the information appeared to reach those at higher risk (e.g., current students), the show's effects transcended

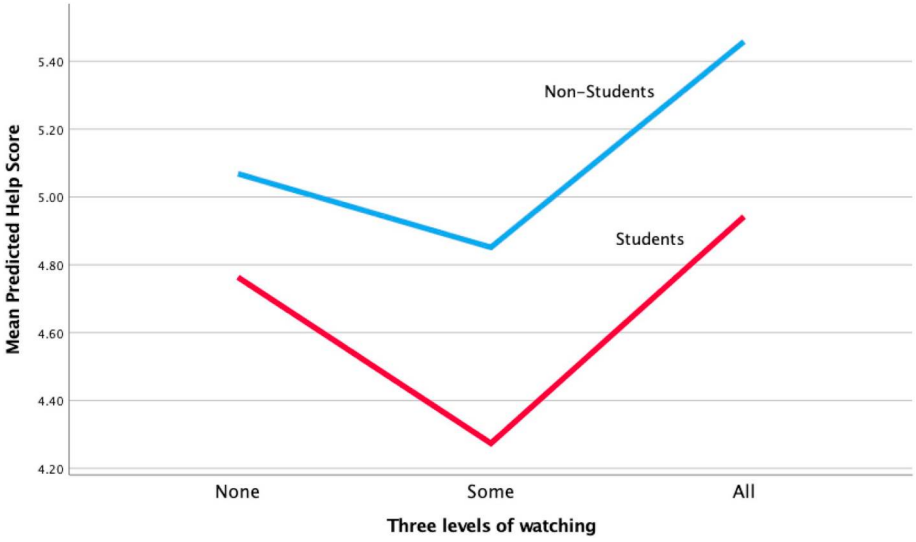

Fig. 5. Help score by level of watching Season 2 and student status controlling for prior suicide outcomes.

whatever beneficial effects such exposure might have produced. Nevertheless, despite the matching analysis, it remains a possibility that those who were able to watch the second season in its entirety differed in some way from those who stopped watching. However, this explanation would still require a reason for students responding with less self-harm than those who did not watch at all.

Our finding that withdrawing from the series was associated with elevated levels of suicide risk and lower optimism supported the hypothesis that exiting from the series was a sign of distress. This finding may also be consistent with the results of Rosa et al. (2018), who found an increase in negative mood among those who saw any amount of the first season. This study may have included many who left the show due to its distressing content and thus reported more negative outcomes. One possibility is that avoiding the show may have prevented further harm to those who found the content distressing, especially for the higher-risk group of students. Leaving may have been a coping mechanism that helped them avoid further harm. It is also no credit to the show that it did not enable this high-risk group to maintain its engagement with the show and to potentially experience some benefit from watching it to its finale in the second season.

At the same time that the show may have benefited those at higher risk who continued until the end of the second season, it had little effect on those at lower initial risk (non-students) in regard to self-harm and ideation, who only displayed nonsignificant changes in these outcomes. This pattern is consistent with the theory that media depictions of suicide will mainly affect those currently at higher risk (Gould et al., 2003); yet, it also suggests that such individuals can benefit from depictions that create empathy with those who overcome suicidal ideation, an effect that exceeded what those who did not watch experienced. Thus, the data are consistent with more recent findings suggesting that self-affirming messages delivered in the news media can have beneficial effects on suicidal persons (Niederkrotenthaler et al., 2010; Till et al., 2017).

Beneficial effects were also observed regarding empathic responses to persons in a suicidal crisis. Those who had engaged in suicidal ideation were more inclined to help a suicidal person, suggesting greater ability to empathize with them. And this relation was also observed for those who watched the entire series. These effects are consistent with other media content analyses that have found effects of media depictions displaying pro-social behavior that encourage the development of empathy for others in need (Prot et al., 2014). The findings are also consistent with Wartella et al. (2018), who also found some beneficial effects on adolescent and parent viewers who reported gaining greater understanding of the challenges faced by today's youth. Nevertheless, it is noteworthy that those who stopped watching the second season were much less inclined to help a suicidal person.

Our analyses identified students as a higher-risk group for suicide. This finding is consistent with the growing awareness of the mental health needs of young people attending college (Pedrelli et al., 2015). More research will be required to understand the unique needs of this population and its vulnerability to media influences that affect suicide.

Our analysis of the warning that Netflix put out prior to the second season suggests that it may have mainly served to increase viewing. There was more viewing of the second season among those interested in seeing it and who saw the warning than among those similarly interested but who did not see the warning. Thus, whereas it may have been well intentioned, our study offers no strong evidence that it prevented vulnerable viewers from watching the second season.

4.1. Limitations

An important limitation of our findings is that the observed effects only refer to a time frame of at most one month and are therefore short-term observations. We did not assess prior experiences surrounding sexual assault, an upsetting topic featured in both seasons. It would be valuable to determine if this influenced reactions to the show apart from the more prominent theme of suicide. We cannot speak to more long-term effects that might be reflected in heightened suicide risk and lowered optimism. Werther effects after prominent non-fictional suicide stories in the news are usually strongest within 10 days after their first appearance (Stack, 2005). Similar observations have not yet been replicated for fictional stories, and neither have they been made for positive effects of fictional media suicide depictions. Our observations thus only mark a first important step towards understanding the potentially helpful and harmful effects of fictional suicide depictions on different audiences.

In assessing the overall effects of the second season, it is important to realize that its content was fundamentally different from that of Season 1. Season 1 had many more “Werther-related” content elements compared to Season 2 (e.g., a graphic minutes-long suicide scene) (Arendt et al., 2017). Conversely, Season 2 had more “Papageno-related” content elements such as characters overcoming their suicidal crises and promotion of the prevention website, making beneficial consequences of watching more likely.

5. Conclusions

The findings are supportive of theories of story-telling (Keen, 2006; Mar and Oatley, 2008) that focus on how empathy for characters can

produce both beneficial and distressing effects. The findings also support recommendations for reporting on suicide that encourage media producers to provide positive examples of people overcoming suicidal tendencies. However, in the context of an extended series such as *13 Reasons Why*, there will also be many examples of suicidal persons who act on their impulses, thereby undercutting the benefits that might accrue from watching an entire series. Media producers of suicide-related fictional content should be aware of the potential effects of their shows, particularly on vulnerable audiences. Apparently, there is no one-size-fits-all solution to suicide prevention in fictional suicide depictions. It appears that audiences relate differently to such content depending on their backgrounds and viewing patterns.

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