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To What Extent Does the Reporting Behavior of the Media Regarding a Celebrity Suicide Influence Subsequent Suicides in South Korea?

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This study investigated the nature of media coverage of a national entertainer's suicide and its impact on subsequent suicides. After the celebrity suicide, the number of suicide-related articles reported surged around 80 times in the week after the suicide compared with the week prior. Many articles (37.1%) violated several critical items on the World Health Organization suicide reporting guidelines, like containing a detailed suicide method. Most gender and age subgroups were at significantly higher risk of suicide during the 4 weeks after the celebrity suicide. Results imply that massive and noncompliant media coverage of a celebrity suicide can cause a large-scale copycat effect.

Numerous systematic review studies support the copycat or imitation effect of media coverage of suicides (Fu & Yip, 2009; Gould, 2001; Niederkrotenthaler et al., 2012; Pirkis & Blood, 2001a,b; Sisask & Värnik, 2012; Stack, 2000, 2005); to date there have been over 100 empirical investigations on media impacts on suicide. Most research has been concerned with coverage of real suicides, although about two dozen studies concern media portrayals of fictional suicides such as those on television and the movies. A review of 419 findings from 55 studies concerning nonfictional media portrayals of suicide determined that 35.8% of the findings documented an increase in completed suicides after media coverage (Stack, 2005). Given that most evidence does not directly support the causal relationship between media portrayals and real suicides, it is important to determine which conditions and methodological strategies are most apt and least apt to uncover a copycat impact.

Specifically, several studies with meta-analyses provide some tentative generalizations (e.g., Niederkrotenthaler et al., 2012; Stack, 2000, 2005, 2009). Stack (2000), in a meta-analysis of 293 findings from 42 studies of both fictional and nonfictional news stories, found that findings based on the suicides of entertainment and political celebrities were 14.3 times more likely to report a copycat effect than findings based on other types of suicide stories.

A second meta-analysis of 55 investigations was limited to studies based on the impact of nonfictional stories and omitted investigations based on fictional suicides

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such as ones contained in movies (Stack, 2005). Studies that focused on stories that stressed negative definitions of suicide, such as rotting bodies in coverage of the Jonestown mass suicide in 1978, were 99% less apt to report a copycat effect than other investigations. Investigations based on television stories, which receive less coverage than newspaper stories, were 78% less apt to report a copycat effect. Finally, investigations focused on female suicide rates were 4.89 times more apt to report a copycat effect than studies focused on other rates (Stack, 2005). As in the earlier meta-analysis (Stack, 2000), studies based on entertainment or political celebrity suicides were more apt to report a copycat effect. These findings suggest that copycat effects are most apt to be found where the dependent variable is a female suicide rate, where the role model is a particular kind of celebrity, where the sample of stories is based on newspapers, and in the absence of strong negative definitions of suicide. Recent work employing a new methodology, the Beach method, explores the cumulative impact of exposure to fictional depictions of suicide in the movies. For each additional voluntary exposure over time to a movie where the star died by suicide, the risk of a self-reported suicide attempt increased by 47.6% (Stack, Kral, & Borowski, 2014).

A third meta-analysis focused on fictional stories such as those in television soap operas and the movies. It assessed patterns in 183 findings from 26 studies (Stack, 2009). Studies that assessed the copycat effect of the suicide method, where the method of the role model is matched with the suicide rate by that method in society, were 4.04 times more apt than other studies to report a copycat effect. In addition, studies focusing on youth suicide rates were 4.39 times more apt than studies focusing on other rates of suicide to report a copycat effect. These findings suggest that copycat effects based on the fictional media are most apt to be documented in research concerning youth suicide and where the study is focused on the method of suicide used by the role model.

Research carried out since the first three meta-analyses has often focused on cases of celebrity suicides as opposed to fictional depictions and non celebrity suicide narratives in the media. Some of the more recent investigations have focused on single instances of a celebrity suicide such as studies done in Hong Kong (Yip et al., 2006) and one concerning a media celebrity in Quebec (Tousignant, Mishara, Caillaud, Fortin, & St Laurent, 2005). Fu and Yip (2009) assessed the copycat effect of three cases of media coverage of Asian entertainment celebrities. Etzersdorfer, Voracek, and Sonneck (2004) determined that the suicide of a well-known hotel owner/celebrity was linked to an increase in suicide, and this increase was proportional to the amount of coverage in various regions of Austria.

Investigations of the possible impacts of non celebrity suicides have become less common. However, the level of local news reporting (on mostly non celebrity cases of suicide) in six American cities was associated with an aggregate increase in the suicide rate (Romer, Jamieson, & Jamieson, 2006). A study of 4,635 news items concerning a variety of suicidal behaviors and reports determined that 39% were associated with increases in the male suicide rate and 31% with increases in the female rate of suicide (Pirkis, Burgess, Francis, Blood, & Jolley, 2006). These Australian results are consistent with a meta-analysis where most suicide coverage is unrelated to suicide rates (Stack, 2000).

Given a substantial and growing amount of work on celebrity suicide, a recent fourth meta-analysis assessed the strength and nature of the association between media coverage of celebrity suicide and suicide rates. Niederkratenthaler and colleagues (2012) assessed ten studies containing 98 celebrity suicides. Their pooled estimate found that a celebrity suicide was followed by an increase of 0.26 suicides/100,000 population. As in the earlier review by Stack (2005), the effect size was larger

for media coverage of one particular type of celebrity, the entertainment celebrity. The suicides of well-known entertainment celebrities, such as actors and actresses, may be especially apt to promote audience identification and trigger copycat suicides.

Media impact on suicide has been mainly explained by social learning theory (Pirkis & Blood, 2001a,b; Schmidtke & Schaller, 2000; Stack, 2000, 2005). The theoretical explanation fundamentally posits the presence of a group of vulnerable, suicidal individuals in society (e.g., depressive patients, terminal ill patients, the unemployed). In other words, any imitating suicide following a suicide story in the media is assumed to take place in already vulnerable people who are at an increased risk of suicide. According to some studies (Cheng, Hawton, Chen, et al., 2007; Hawton et al., 1999; Zahl & Hawton, 2004), a substantial number of patients who have attempted suicide reported having been affected by a suicide story in the media. In addition, the more prominent copycat effect of a celebrity suicide than that of a noncelebrity suicide has been explained using the differential identification theory. The key element of this theory is the principle of vertical identification which contends that people copy the behavior of superior others (e.g., celebrities) more than of inferior others (Stack, 1987, 2000; Wasserman, 1984). Moreover, the copycat effect of a celebrity suicide can be understood according to the principle of horizontal identification (Stack, 1990). People are more apt to copy the behavior of others like themselves than persons unlike themselves. For instance, people dying of cancer may be most apt to copycat highly publicized suicides of similar persons. It should be noted that vertical and horizontal identification is not mutually exclusive but can occur together (e.g., Marilyn Monroe was a celebrity, but also had long-term marital problems and substance abuse problems that could serve as points of horizontal identification).

In summary, because of the prominence of publicized stories involving a celebrity suicide, the copycat effect associated with media reporting is relatively evident in the literature. However, it is not clear whether copycat suicides after media reports of a celebrity suicide occur only in groups who are of a similar age and same gender as the deceased celebrity. Additionally, it is not fully clear whether similar suicide methods are used in these groups following a celebrity suicide. A few studies have reported that the imitation effect occurs in a similar or younger age group compared to the celebrity (Chen et al., 2010; Takahashi, 1998; Tousignant et al., 2005; Yip et al., 2006) or in the same gender group (Chen et al., 2010; Cheng, Hawton, Lee, & Chen, 2007; Takahashi, 1998; Tousignant et al., 2005; Yip et al., 2006). However, others have reported that imitation also occurs in groups with varying demographic characteristics (Chen et al., 2012). Additionally, findings from some studies revealed overt copycat behavior in terms of using the suicide method (Chen et al., 2010; Cheng, Hawton, Lee, et al., 2007; Takahashi, 1998; Tousignant et al., 2005; Yip et al., 2006), while other studies did not share this association (e.g., Chen et al., 2012).

These inconsistencies among studies about the existence of an imitation effect on actual suicides may result from various causes, one of which could be the reporting behavior of the media regarding celebrity suicides. The ways in which the media report and discuss celebrity suicides can play a critical role in the pattern of the occurrence of copycat suicides. For instance, the suicide of Kurt Cobain, an American grunge rock star and a cultural icon of the younger generation, had little impact on the incidence of the suicide rate of young people (Jobes, Berman, O'Carroll, Eastgard, & Knickmeyer, 1996; Martin & Koo, 1997). This could have been due to the restrictive and careful reporting by the media on his death and their emphasis on his negative profile (a drug addict who suffered from depression) (Jobes et al., 1996; Martin & Koo, 1997).

There has been previous research that has documented a discrepancy between established media guidelines for the reporting of suicide and the actual content of media reports (e.g., Fu & Yip, 2008; Jamieson, Jamieson, & Romer, 2003; Tatum, Canetto, & Slater, 2010). For example, a study of a representative sample of 157 suicide stories in the press determined that most violated one or more media guidelines such as providing details of the suicide method (56%) and location of the suicide (58%) and rarely provided information concerning the warning signs and risk factors (1%), prevention resources (6%), and the role of depression (6%) (Tatum et al., 2010). Efforts to promote the use of media guidelines to the press in Hong Kong had mixed success (Fu & Yip, 2008). After a campaign to promote the use of the guidelines, the press did reduce the pictorial representations and headlines mentioning suicide. However, research on the content of suicide stories generally does not assess the extent to which departures from the media guidelines in stories are linked with increases in suicide rates. However, it is important to note that a moratorium on the reporting of subway suicides in the Austrian press was found to be associated with a 75% drop in such suicides (Sonneck, Etzersdorfer, & Nagel-Kuess, 1994).

In this vein, the analysis of both the reporting behavior of the media regarding a celebrity suicide and the pattern of the copycat effect on suicide rates can be valuable for the development of suicide prevention programs involving the media. Moreover, this combination of both goals, assessment of a copycat effect and an exploration of the content of the coverage of the suicide in the media, has been largely absent in previous work. In particular, in this study we aim to explore the relationship between the quantitative and qualitative characteristics of media reports and the demographic pattern of the occurrence of copycat suicide. To pursue this, we attempted to answer two specific research questions: (1) Do the media reports follow the guidelines for suicide reporting? (2) Were there copycat effects of suicide disproportionate to any specific groups or with the method of suicide of the role model?

STORY BACKGROUND AND MEDIA GUIDELINES

In this study we focused on the suicide of Jin-Sil Choi, who committed suicide at the age of 39 by hanging herself on October 2, 2008, at her home in Seoul. She was considered South Korea's Julia Roberts or Angelina Jolie, and was nicknamed the "The National Actress." She was a considerable success, with leading roles in 18 movies and 20 television dramas. She also appeared in 140 commercials over the course of 20 years. However, beginning in 2000, there were many reports of her troubled marital life; she got divorced in 2004 and was the primary caretaker of her two young children. Reports of domestic violence surrounded her divorce. Because of this, she symbolized the difficulties of a single, divorced, working mother in South Korean society, which has a relatively conservative culture. However, she was also embroiled in vicious rumors circulating on the Internet that she was partially responsible for the suicide of fellow actor Ahn Jae-Hwan on September 8, 2008, which were later proven untrue by the police after her death.

After she died, foreign media outlets such as *The New York Times* (Choe, 2008) and most domestic media outlets reported that the cause of her death was due, in large part, to stress related to the Internet rumors. However, the causes of suicide are multiple and complex (World Health Organization [WHO] 2010a,b). The South Korean media coverage and focused on one possible cause, yet the contributing factors that precipitated her suicide remain unknown because a systematic psychological autopsy, which is performed by trained professionals and probes through structured interviews with significant others for the presence of a variety of established psychiatric and social risk factors for suicide, was

not conducted. Futhermore, there was extensive and repetitive reporting of her suicide because she was very popular with the majority of the Korean populations. In South Korea, the Ministry of Health & Welfare (MoHW), the Korean Association for Suicide Prevention (KASP), and the Journalists Association of Korea (JAK) had developed suicide reporting guidelines for professional journalists based on WHO guidelines (WHO, 2010a,b). It was recommended that all professional journalists follow these guidelines. Nevertheless, when Choi committed suicide, most South Korean media did not abide by the guidelines and repeatedly provided detailed reports about her death to the public.

METHODS

Data Source and Method

Data regarding media reporting behaviors were collected from three leading newspapers (*Chosun*, *Dong-A*, and *Joongang*) and their Web sites, and three national network television channels (*KBS*, *MBC*, and *SBS*) in South Korea. Data were retrieved from an online archival database from each media source using the word "suicide" (*ja-sal*, in Korean) to search for reports in 2008. We focused on 2008 because it was the year of Choi's death. A total of 4,298 media reports related to suicides or suicidal ideations in 2008 were found and were categorized by week (see Figure 1). The actor' name ("Choi, Jin-Sil") was used as a second search term to screen for relevant reports, with a time limit of 4 weeks after her death. A total of 1,161 items from the initial search were directly related to her suicide (Figure 1). These data were categorized by media type, reporting time of day, average reporting duration per a television item, reporting item type, and the weekly number of reporting items during the month after Choi's suicide. Reporting item types were categorized as follows: (1) only suicide news focusing on the event of her suicide, (2) memorial news focusing on the memory of her life as a popular actor, (3) suicide and memorial news addressing both the suicide event and memory of her, (4) special articles addressing her death and suicide as a public health issue, (5) editorials, and (6) other. To evaluate compliance with the WHO's suicide reporting guidelines by media during the 4-week period after her death, we selected only suicide news (n = 501)

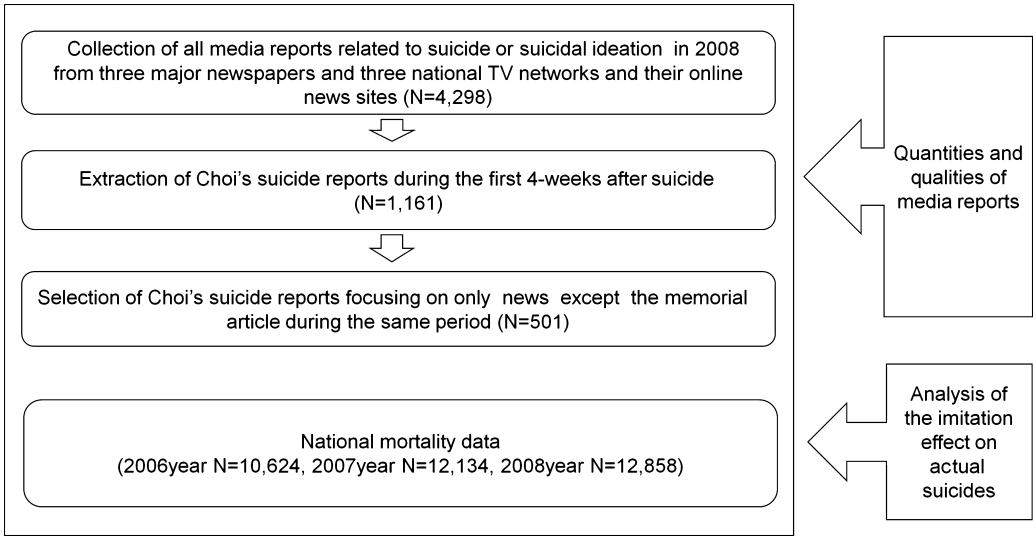

Figure 1. Data sources and study design.

focusing on the event of her suicide (Figure 1).

As shown in Figure 1, death certificate data from the National Statistical Office (NSO) of South Korea were used to analyze national mortality data for suicides from 2006 to 2008 (N = 35,686). Suicide is coded as X60-X84 in the *International Classification of Diseases, 10th Revision (ICD-10)*. Specifically, socio demographic information (gender and age), date of death, and method of suicide were obtained. Foreigners were excluded from our analyses. In order to control for the potential confounding effects, socio environmental factors on suicide risk, time series data on average temperature, average humidity, and weekly unemployment rate between 2006 and 2008 were obtained from the database of the Korean Meteorological Administration and the NSO.

Statistical Analysis

After a training session, four coders conducted a content analysis to examine the extent to which media reports complied with items of the WHO's guidelines. These items were "inappropriate language," "glamorous or sympathetic expression," "inappropriate headline," "inappropriate visual material," "detail of method," "mental health literacy," and "help service information." Intercoder reliability (Cohen's kappa) for items ranged between .89 and .99 (excluding general items such as type of medium and day of report). These seven guideline items with the detailed descriptions and actual examples used in the analysis are shown in Table 1.

The national mortality data for suicides between 2006 and 2008 (N = 35,686) were examined for changing rates in the frequency of suicides in the 4-week period before and after Choi's suicide in 2008, in comparison with that same period in 2006 and 2007. A Poisson time series autoregression model was used to examine whether there was a copycat effect following media reporting of Choi's suicide during the 4-week period. The 4-week duration was chosen based on findings from previous studies (Cheng, Hawton, Lee, et al., 2007; Tousignant et al., 2005; Yip et al., 2006), which stated that the impact of media reporting on actual suicides lasts for approximately 4 weeks on average after the first report. Between 2006 and 2008, the weekly frequency of suicide was analyzed with a Poisson distribution.

Controls were incorporated for possible potential confounding factors such as meteorological conditions (season, temperature, and humidity), calendar year, and weekly unemployment rates, which can impact suicide rates. A comprehensive review by Deisenhammer (2003) on the available literature on the association of meteorological conditions with attempted and/or completed suicide showed that most investigations have found an association of at least one meteorological factor with the incidence of suicide acts. These associations were observed in Taiwan (Lee et al., 2006) and South Korea (Kim, Kim, & Kim, 2011). Unemployment, which is a well-known risk factor for suicide, was found associated with completed suicide in South Korea (Chan et al., 2014). Both season and calendar year were treated as categorical variables, and temperature, humidity, and unemployment rates were treated as continuous variables. A consecutive series of autoregressive order from the previous week (order 1) to the last week (order 4) were included in the model to examine the effect of past observations on the current order. The same procedure was applied to subgroups of age, gender, and suicide method. We used SAS version 9.1 GENMOD (SAS Institute, Cary, NC, USA) with Poisson time series autoregression models.

RESULTS

Quantities and Qualities of Media Reports

As shown in Figure 2, the volume of suicide-related articles maintained a steady

TABLE 1
Description of Items Used in the Analysis

Item	Description and Rationale	Examples
Glamorous or sympathetic expression	Glamorous or sympathetic descriptions of a suicide can make readers misunderstand suicide as a solution to sufferings in their lives. Thus, these expressions should be avoided.	"Choi died, all people are in sorrow" (*SBS*, 10.2) "Choi, Jinsil Suicide, We Lost a Lover of Our Ages" (*Dong-A*, 10.3)
Inappropriate headline (using the word "committed suicide" or including personal details)	Since headlines give the essence of the story and attract the reader's attention, "suicide" should be avoided in the headline. Particularly in the case of a celebrity's suicide, a headline with the name of the deceased would draw readers' attention.	"Choi, Jinsil Found Dead in Her Bathroom. Suicide Presumed" (*Dong-A*, 10.3)
Detail of the method	Detailed discussion of the method should be avoided, since a step-by-step description may prompt vulnerable people to copy the act.	"Confirmed—Killed Herself with a Compress" (*Dong-A*, 10.3) "Choi. . .hanged herself with a compress in the shower booth in her bathroom. . ." (*SBS*, 10.2)
Photograph or footage depicting the suicide scene, precise location, or method used	Photographs or video footage of the scene is highly influential, so these should be removed in the report.	Numerous reports included photos depicting the suicide scene that revealed the bathroom and shower booth.
Simplistic explanations of the cause of suicide	Over simplification of a suicide based on insufficient information can lead readers to misunderstand the cause and to be motivated to commit suicide for simple reasons.	"Police's first report confirmed, Choi's suicide was caused by depression" (*MBC*, 10.2) "A day before, she was upset by a call from the person who condemned her" (*Chosun*, 10.2)
Is the suicide portrayed as being related to a mental illness?	The media need to educate the public to recognize the links between suicide and mental illness.	"Regarding the cause of death, she suffered from depression, was pessimistic with her status, and had been taking tranquilizers for half a year" (*Dong-A*, 10.2)
Does the item provide information on help services?	Specific "help" information should be included for supporting individuals who are distressed or prompted to consider self-harm because of the story.	"When a person shows a symptom of a suicide, we need to understand the cause and to empathize the person. We need to help the person find a realistic solution" (*Dong-A*, 10.3—An interview with a psychiatrist)

pattern, with around 20 weekly reports up until August 2008. However, the frequency curve peaked at roughly 515 reports during the period of September 4–10 due to the suicide of Jae Hwan Ahn, a famous South Korean actor, on September 8. There was another peak at 1,671 articles during the first week (October 2–6) after Choi's suicide

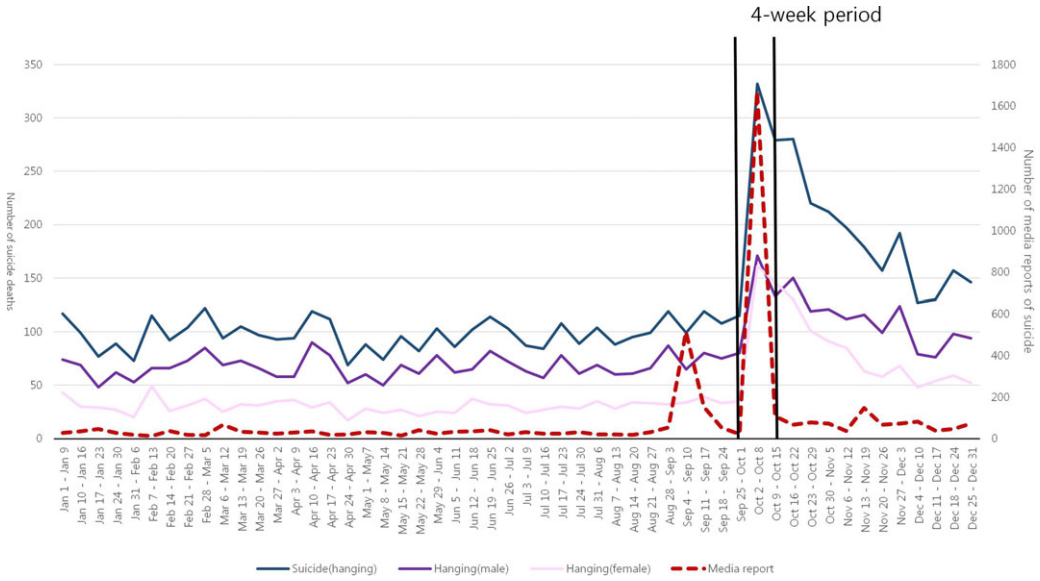

Figure 2. Trends of suicides by hanging and media reports before and after Choi's suicide in 2008.

on October 2 and 107, 67, and 77 in the second, third, and fourth weeks, respectively, after her death. The profile of media reports during the 4 weeks after her death is shown in Table 2. The majority of reports were retrieved from newspaper Web sites (82.3%), followed by television news (12.2%) and offline newspapers (5.5%). Approximately two-thirds of the reports were delivered during the morning (33.1%) and evening (28.9%). Reports broadcast on television (n = 142) were relatively long; in fact, most (98.6%) lasted 20 seconds or longer. Regarding the item's type, almost half of the reports (43.2%) dealt with only the suicide event and about one-third (32.7%) covered memorial stories. The majority of reports occurred during the first week after her death (85.9%), with the volume decreasing sharply after the first week, although reports continued to appear for weeks.

The quality of 501 news reports describing suicides during the 4-week period after Choi's death are presented in Table 3. The most problematic item was the oversimplification of the cause of the suicide in 56.2% of the reports. More than a third of the reports violated two items of the suicide reporting guidelines: 37.1% of the reports included detailed information about the method and 37.7% revealed photographs or footage depicting the suicide scene, the precise location, or the method. Over a quarter of the reports (28.4%) had inappropriate headlines that included the phrase "committed suicide" or disclosed detailed information about the person. In contrast, only 26.8% referred to the relevance of mental illness and only 10.5% provided information about help services (e.g., the number of a suicide hotline).

Compliance rates with the WHO suicide reporting guidelines of the three most problematic items (a detailed suicide method; photographs and footage depicting the location and method of suicide; and simplistic explanations of the cause of suicide) and individual media outlet's influence on the public according to media type are shown in Table 4. Reports using visual materials were much higher for television networks (77.5%) than other media (27.9%–50%). Articles simplifying the suicide cause comprised 65.2%, 46.2%, and 56.2% of reports on television networks, in newspapers, and on associated Web sites,

TABLE 2
Profile of the Media Reports on Choi's Suicide

	n (%)
Media type	
Television	142 (12.2)
Newspaper	64 (5.5)
Internet	955 (82.3)
Reporting time of day (*n* = 142, television)	
Morning	47 (33.1)
Afternoon	20 (14.1)
Evening	41 (28.9)
Unknown	34 (23.9)
Average reporting duration (*n* = 142, television)	
< 20 seconds	2 (1.4)
20 seconds to 1 minute	62 (43.7)
1 to 3 minutes	67 (47.2)
> 3 minutes	11 (7.7)
Reporting item types	
Only suicide news	501 (43.2)
Memorial news	380 (32.7)
Suicide and memorial news	161 (13.8)
Special article	16 (1.4)
Statistics news	6 (0.5)
Editorial	3 (0.3)
Other	98 (8.1)
Weekly number of reporting items during 1 month after Choi's suicide	
Week 1 (October 2–8)	1,086 (85.9)
Week 2 (October 9–15)	30 (2.4)
Week 3 (October 16–22)	21 (1.7)
Week 4 (October 23–29)	24 (1.9)

N = 1,161.

respectively. Importantly, these media have a critical impact in South Korea. Approximately 40% of households watched the evening news from the three major television networks during the first week after the celebrity suicide, indicating that 4 of 10 households were exposed to the report (Nielsen Korea, 2008). In addition, subscriptions to these three major newspapers comprise the majority (approximately 60%) of newspaper subscribers (Korea Press Foundation, 2008), and approximately 80% of all households in South Korea have access to the Internet (NSO, 2009).

The Copycat Effect: Relationship between Media Reports and Suicide

We examined whether the frequency of suicide during the first 4-week period in 2008 was high enough to support the influence of media reports, compared with 2006 and 2007. In order to exclude bias due to the particular year, the 4-week period before Choi's death and the corresponding dates in 2006 and 2007 were also examined (Table 5). In 2006 and 2007, the incidence of suicide was less than that in 2008 (−2.6% and −8.1%, respectively). However, in 2008, there was a large increase of 63.6% from presuicide to the postsuicide. The number of suicides of females and the

TABLE 3
Quality of Media Reports of Choi's Suicide During the First Four Weeks After Her Death

Items	Yes (%)	No (%)
Does the item have any example of glamorous or sympathetic expression of the suicide?	5.5	94.5
Does the item have an inappropriate headline (using the word "committed suicide" or including personal details such as name or age)?	28.4	71.6
Is there a detailed discussion of the method used?	37.1	62.9
Is a photograph or footage depicting the suicide scene, precise location, or method used?	37.7	62.3
Does the item use simplistic explanations of the cause of suicide?	56.2	43.8
Is the suicide portrayed as being related to a mental illness?	26.8	73.2
Does the item provide information on help services?	10.5	89.5

N = 501; only suicide news reporting.

TABLE 4

Reporting Rates of a Detailed Method, Visual Representations, and Simplistic Causal Explanation of Suicide and Individual Media Outlet's Influence on the Public According to the Type of Media

	Television				Newspaper				
	KBS (n = 23)	MBC (n = 37)	SBS (n = 29)	Subtotal (n = 89)	Chosun Ilbo (n = 11)	Donga Ilbo (n = 22)	Joongang Ilbo (n = 6)	Subtotal (n = 39)	Online News (n = 373)
A detailed suicide method	7	15	9	31	5	6	3	14	142
	30.4%	40.5%	31.0%	34.8%	45.5%	27.2%	50.0%	35.8%	38.1%
Photograph or footage depicting the location and method of suicide	22	24	23	69	4	4	3	11	104
	95.7%	64.9%	79.3%	77.5%	36.4%	18.2%	50.0%	28.2%	27.9%
Simplistic explanations of cause of suicide	16	23	19	58	7	8	3	18	201
	69.6%	62.2%	65.5%	65.2%	63.6%	36.4%	50.0%	46.2%	53.9%
Influence to public	17.6[a]	10.8[a]	11.6[a]	40.0%[a]	25.6[b]	14.3[b]	19.7[b]	59.6%[b]	80.6%[c]

N = 501; only suicide news reporting.

[a]Television evening news ratings: first 1-week average from the death of the celebrity.

[b]Newspaper readership ratings: subscription share in 2008 (Source: Korea Press Foundation, Survey of Media Audience in 2008).

[c]Households with access to the Internet (Source: National Statistics Korea, 2009).

TABLE 5
Number of Suicides During the 4-week Period Prior to and After the Celebrity Suicide

	Four Weeks Before the Suicide Event	Four Weeks After the Suicide Event	% Change
2006			
All	815	794	−2.6
Male	546	529	−3.1
Female	269	265	−1.5
< 29	118	90	−23.7
30–49	246	253	2.8
≥ 50	451	451	0.0
Hanging	324	331	2.2
2007			
All	937	861	−8.1
Male	615	553	−10.1
Female	322	308	−4.3
< 29	112	109	−2.7
30–49	336	274	−18.5
≥ 50	489	478	−2.2
Hanging	456	400	−12.3
2008			
All	1,013	1,657	63.6
Male	670	916	36.7
Female	343	741	116.0
< 29	148	311	110.1
30–49	369	654	77.2
≥ 50	496	692	39.5
Hanging	441	1,111	151.9

young (29 or younger) more than doubled (116.0% and 110.1%, respectively). The number of deaths by hanging (the same method as Choi's suicide) increased by 151.9%.

We used a Poisson auto-regression analysis to evaluate the risk of suicide during the first 4 weeks after her death. In order to control for potential biases such as seasonal variation, calendar year, temperature, humidity, and unemployment rates in the previous month, we adjusted our analyses to include those variables. As shown in Table 6, the analysis demonstrated a significant increase in suicides (adjusted relative risk, RR = 1.35; 95% CI 1.25–1.46) during those 4 weeks. The excess number of suicides resulting from the media effect was calculated to be 429.6: 1,657−(1,657/1.35) = 429.6 (95% CI: 331.4–522.1), where 1,657 represents the number of suicides during the 4-week period from the start of extensive media reporting of the celebrity suicide.

We then fitted the Poisson auto-regression model with the interaction terms

TABLE 6
Adjusted Relative Risk of Factors Associated with Suicide Risk After Media Reporting of the Celebrity Suicide

	Adjusted RR	95% CI[a]	*p* Value
Time period			
4 weeks	1.35	1.25–1.46	< .001
Others	1[b]		
Season			
Spring	0.85	0.81–0.90	< .001
Summer	0.77	0.71–0.83	< .001
Fall	0.89	0.84–0.94	< .001
Winter	1[b]		
Year			
2006	0.89	0.86–0.92	< .001
2007	1.01	0.98–1.03	.703
2008	1[b]		
Temperature (10°C)	1.14	1.10–1.19	< .001
Humidity (10%)	0.99	0.97–1.00	.0256
Unemployment rate	1.41	1.31–1.52	< .001
Last week suicides 1	1.02	1.02–1.02	< .001
Last week suicides 2	1.01	1.01–1.01	< .001
Last week suicides 3	1.01	1.01–1.01	< .001
Last week suicides 4	1.01	1.01–1.01	< .001
Z 1[c]	1.01	1.01–1.00	.1830
Z 2[c]	1.01	1.01–0.99	.5139
Z 3[c]	0.99	0.99–0.98	.4531
Z 4[c]	0.98	0.98–0.96	.0126

RR, relative risk; October 2008, South Korea.
[a]95% confidence interval.
[b]Reference group.
[c]Seasonal variation in suicide for each year.

between media reporting of the celebrity suicide and subgroup variables, including gender (male, female), age (≤ 29, 30–49, ≥ 50), and method of suicide (hanging, non-hanging). As shown in Table 7, the results demonstrated that there was an interaction between media reporting of the suicide and all three variables. The Poisson auto-regression model was further tested for subgroups combined with age, gender, and suicide method. The risk of suicide during the 4-week period after media began reporting, based on demographic groups, is presented in Table 8. During the 4 weeks after the initial media reporting of Choi's suicide,

TABLE 7
Interaction Between Media Reporting of the Celebrity Suicide and Age Group, Gender, and Suicide Method of Copycat Suicides

	DF	Likelihood Ratio	*p* Value
Media	1	31.71	< .0001
Age	2	121.37	< .0001
Sex	1	6.69	.0097
Method	1	61.22	< .0001
Age × Media	2	10.81	.0045
Sex × Media	1	7.55	.006
Method × Media	1	53.08	< .0001
Sex × Age × Media	4	52.09	< .0001
Age × Method × Media	4	164.78	< .0001
Sex × Method × Media	2	2.2	.3327
Sex × Age × Method × Media	4	126.29	< .0001
Season	3	59.64	< .0001
Year	2	122.86	< .0001
Temperature (10°C)	1	53.34	< .0001
Humidity (10%)	1	9.58	< .0001
Unemployment rate	1	93.75	< .0001
Last week suicides 1	1	287.77	< .0001
Last week suicides 2	1	79.32	< .0001
Last week suicides 3	1	18.87	< .0001
Last week suicides 4	1	10.79	.001
Z 1[a]	1	1.7	.1927
Z 2[a]	1	0.58	.4454
Z 3[a]	1	2.24	.1343
Z 4[a]	1	3.31	.069

[a]Seasonal variation in suicide in each year.

TABLE 8
Adjusted Relative Risk of Suicide After Media Reporting of the Celebrity Suicide According Age, Gender, and Suicide Method

	Male						Female					
	< 29		30–49		≥ 50		< 29		30–49		≥ 50	
	RR	95% CI[a]	RR	95% CI[a]	RR	95% CI[a]	RR	95% CI[a]	RR	95% CI[a]	RR	95% CI[a]
Hanging	1.13	0.75–1.72	1.88	1.54–2.32	1.35	1.09–1.68	3.0	2.18–4.14	2.56	1.99–3.29	1.63	1.20–2.20
Others	0.71	0.43–1.16	1.03	0.77–1.36	0.99	0.80–1.23	0.91	0.56–1.51	1.13	0.83–1.55	1.02	0.81–1.30

RR, relative risk.
[a]95% confidence interval.

suicide risk significantly increased for all subgroups (gender and age), except for the younger male age group (≤ 29). Across both genders and all age groups, those who committed suicide by hanging were at increased risks, while those using other methods showed no significant increase in suicide risks. In particular, the most prominent increase in suicide risk was in the younger female age group (≤ 29) using the same method (hanging) of suicides (adjusted RR = 3.0, 95% CI = 2.18–4.14). In summary, across all gender and age groups except for the young males (≤ 29), the incidence of copycat suicides significantly increased.

DISCUSSION

In this study we investigated the quantitative and qualitative aspects of the reporting behavior of the media describing a celebrity suicide and examined the copycat effect of these media reports on actual suicides in South Korea. After Jin-Sil Choi's suicide, the number of suicide-related articles reported increased around 80 times in the first week compared with the other weekly periods. The news of her death was broadcast on television all day, and almost all of the television reports about her death lasted more than 20 seconds. Substantial portions of the reports violated several critical items on the WHO's suicide reporting guidelines, such as oversimplification of the suicide cause, describing the detailed method of the suicide, and using visual material related to the suicide. After adjusting for potential confounding factors, the suicide rate during the 4 weeks after the celebrity's death significantly increased compared to other months. There was a significant increase in the number of copycat suicides across all subgroups except for younger males among those who used the same method as Choi's suicide.

Based on our findings that copycat suicide occurred mainly in those who used the same method (suicide by hanging), media reports of the detailed method of her suicide seem to play an important role in the subsequent suicides. This is consistent with results of previous studies conducted in Asia (Chen et al., 2012; Cheng, Hawton, Lee, et al., 2007). About 40% of media reports of Choi's suicide included detailed information about suicide method and revealed photographs or footage depicting the suicide site or methods. For instance, the fact that she committed suicide by hanging herself in the shower booth of her house was repetitively covered even with the scene of suicide site, for 4 weeks. These reports were in conflict with the WHO's suicide reporting guidelines. Intensive reporting of a suicide method can provide information about choosing a suicide method, especially for vulnerable people at high risk of suicide (e.g., previous suicide attempters, terminally ill patients). In a South Korean study (Kim, 2010), a content analysis of 3,412 professional suicide counseling sessions via telephone indicated that suicide stories in the news media do have an impact on suicidal people and that the key factors affecting them are methods, causes, and places of suicides.

In our analyses of demographics and the copycat effect, our results differed somewhat from the extant literature. Several earlier studies have reported that the copycat effect is found in people of the same sex or a similar or younger age as the celebrity (Chen et al., 2010; Cheng, Hawton, Lee, et al., 2007; Takahashi, 1998; Tousignant et al., 2005; Yip et al., 2006). In contrast, the current study showed that people throughout all subgroups, except for men aged 29 years or younger, were vulnerable to the copycat effect of suicide. This may have resulted from several reasons. First, two features of the reporting behavior of the media about Choi's suicide may have led to a wide range of copycat effects across demographic groups. The overt description of the method may have been useful information about choosing a suicide method to vulnerable people from other age/gender groups (Chen et al., 2012). Moreover, South Korean media reports of her death

were very extensive and repetitive. For instance, the number of suicide-related articles reported surged around 80 times in the first week compared with the other weekly periods. Her death was broadcast on television all day, and although the duration of suicide reporting on American television is often less than 10 seconds (Stack, 2000), almost all reports we found on Korean television lasted more than 20 seconds. While Pirkis and colleagues (2006) explained that inconsistencies among studies about the existence of a copycat effect of a suicide method are due to differences in sampling frames, findings from our study imply that such differences can be attributable to the degree of compliance with the WHO's suicide reporting guidelines.

Second, the large copycat increase in suicide found in the present study may also be attributed to aspects of the South Korean social context. The credibility and influential power of the media are relatively high in South Korea, and this may have evoked a significant copycat effect. As reviewed earlier, major television networks and newspapers are important players in the cultural scene in South Korea. For example, in the United States, three major television evening newscasts—ABC, NBC, CBS—drew a combined 5.93 million viewers during the 2011–2012 season, which is less than 2% of the entire U.S. population (TVNEWSER, 2013). In South Korea, three national television networks' evening news usually reaches at least 40% of the population (Nielsen Korea, 2008).

Finally, the large increase in copycat suicide after Choi's death may be interpreted on the basis of the relative incidence of suicidal behavior in South Korea. South Korea's suicide rate is the highest among Organized Economic Co-operative Development member countries and is still on the rise. Recent data from the WHO show that South Korea has the highest rate of female suicide (22.1/100,000) and the second highest general rate of suicide (31.0/100,000) in the world (Varnik, 2012). This implies that the number of persons who are vulnerable for copycat suicide after exposure to suicide stories in the media is relatively very large. The excess number of suicides resulting from the media effect during the 4 weeks after Choi's suicide was 429.6 (95% CI: 331.4–522.1). The size of the copycat effect suggests a much stronger influence of the media in South Korea than in other countries. For example, the largest increase in suicide rates in the United States occurred after the suicide of film icon, Marilyn Monroe (Stack, 2005). However, that copycat effect resulted in slightly over 200 suicides. Given that the United States has a population much larger than South Korea and the notoriety of Monroe was roughly equivalent to that of Choi in South Korea, further work is needed to explain why Choi's suicide was followed by twice as many suicides as Monroe. Possible explanations include differences in the content of news reporting, the notion that there are more vulnerable people in South Korea than in the United States based on the higher suicide rate in South Korea, and a generalized greater power of the media over individual behavior in Korea.

The current study has some limitations. First, due to the inherent limitations of content analysis and secondary data analysis, the precise causal relationship between media reports and increased suicide rates cannot be inferred. For instance, a survey of suicide attempters who visited emergency departments at hospitals could determine which elements (e.g., method of suicide, cause of suicide, visual description of suicide) of publicized suicide stories affected their suicide attempts. Second, the present study did not include reports on suicide from social network services (SNS) such as Twitter and Facebook. Given that their use has been growing, future research needs to include SNS media. Third, although the current study controlled for several potential confounding factors such as season, humidity, and unemployment, other potential factors may have affected the results. Future research needs to control additional possible confounders.

This study demonstrated that the reporting of Choi's suicide by the South Korean media did not follow many of the WHO's suicide reporting guidelines. However, because Choi's case was newsworthy enough to gain considerable attention, the various media outlets were in a competitive race for catching the attention of the public. Bohanna and Wang (2012) have argued that media guidelines can be effective in reducing suicide only when accompanied by media endorsement, active dissemination strategies, and ongoing training and monitoring. In this regard, the South Korean government and media industry should immediately begin the development and implementation of such strategies that will go beyond leaving such compliance up to the judgment of professional journalists.

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