"Myths and Facts" Campaigns Are at Best Ineffective and May Increase Mental Illness Stigma

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A variety of approaches exist to combat stigma related to mental illness. The "myths and facts" strategy involves the presentation of incorrect ideas or facts, and then debunking these "myths" with factual information. Some research suggests that this strategy may have the unintended effect of increasing the strength of myths, especially after a time delay. The current study evaluated the outcomes of a "Myth and Fact" flyer related to mental health stigma, with and without time delays. Stigma content was divided into three dimensions: avoidance, perceived danger, and responsibility, and the outcomes of the flyer were assessed within each dimension. A total of 359 university student participants were randomly assigned to one of four groups. All participants reviewed the flyer, and then answered a series of survey questions. Groups were randomly assigned to complete the survey immediately ($n = 86$) or also with a delay of 30 min ($n = 93$), 2 days ($n = 81$), or 7 days ($n = 99$). Internal validity was supported, as there were no statistical significances based on group assignment or participant gender. Outcomes were levels of stigma toward mental illness. The results indicated stigma did not change for the dimensions of avoidance and responsibility, but increased of perceptions of danger particularly in the shortest delay group. These results imply that the "Myth and Fact" social marketing strategy is at best ineffective and many actually increase mental illness stigma. Strengths and limitations of the study are discussed, and directions for novel research are provided.

Keywords: mental health, stigma, public campaigns

Many nations around the world have introduced programs to reduce stigma related to mental illness. Many of these programs involve public information, or marketing strategies, including England's "Time to Change" (Sampogna et al., 2017), New Zealand's "Like Minds, Like Mine" (Thornicroft et al., 2014), Scotland's "See Me" (Government of Scotland, n.d.), and Austria's and Germany's "Open the Doors" (Borschmann et al., 2014). Other national strategies such as Canada's "Open Minds" (Mental Health Commission of Canada, n.d.), and Croatia's "Patient Empowerment Programme" (Borschmann et al., 2014) also seek to reduce mental illness stigma through diverse initiatives. Not only has the moral imperative to address stigma been recognized in these countries, but it has also been estimated that stigma reduction and improved use of mental health services are highly cost effective (Ashwood et al., 2016).

A common public marketing strategy to reduce mental illness stigma is the "Myth and Fact" strategy. These campaigns state a common myth and then supply the correct information with the goal of amending the misinformation. Major national organizations such as the Canadian Mental Health Association "Myths About Mental Illness" (Canadian Mental Health Association, 2017), the U.S.

Department of Health & Human Services "Mental Health Myths and Facts" (Department of Health & Human Services, 2017), the Government of South Australia "Myths and Facts: What Comes to Mind When You Think 'Mental Illness'?" (Government of South Australia, n.d.), and England's Time to Change "Myths and Facts" (Time to Change, 2019) have all used the "Myth and Fact" strategy. This strategy has also been adopted by other organizations such as Canada's Centre for Addiction and Mental Health (Caton, 2018), The United States of America's National Alliance on Mental Illness (Ross, 2019), India's White Swan Foundation (White Swan Foundation, 2020) and Change Your Mind in Northern Ireland "Facts and Myths" (Change Your Mind, n.d.).

Although the reduction of mental illness stigma is an important goal, campaigns need to be carefully designed. For example, although the use of contact-based education is seen as an evidence-based strategy in the area of mental illness stigma, wherein a person with lived experience shares their story of illness and recovery, it has now been recognized that this strategy can actually increase stigma, if the person who is sharing their story is not fully prepared (Chen et al., 2016; Jorm, 2020). Other programs, such as Germany's and Austria's "Open the Doors" campaign was also associated with increased stigma toward people with schizophrenia (Borschmann et al., 2014).

Concerns regarding the efficacy of the "Myth and Fact" strategy were demonstrated by Skurnik and colleagues (Skurnik et al., 2005). That study tested the American Centre for Disease Control (CDC) "Myth and Fact" flyer that was used to attempt to dispel false beliefs regarding flu vaccinations. Somewhat surprisingly, they found that participants who viewed the "Myth and Fact" flyer actually misremembered myths as facts, especially after a time delay. They referred to this phenomenon as the "backfire effect."

Table 1
Survey Questions, by Category Type and "Myth or Fact" Status

Category	Myth	Fact
Avoidance	If you're around mentally ill people you can get used to their behaviors and start becoming odd yourself	Most interactions with mentally ill people are just like any other social interaction
	Mentally well people are better to have on a team since they are more productive	It's perfectly acceptable to be friends with those who have a mental illness
Danger	Some disorders, like borderline personality disorder or schizophrenia, are more dangerous to the public than other mental illnesses	It's safe to live next to someone with a mental illness
	The unpredictability of mental illness makes mentally ill people dangerous	Mental illness is not a good indicator of the risk for future violence
Responsibility	People who can handle a lot of stress won't get a mental illness	A person with a mental illness is not responsible for their disorder, even if it's heavily influenced by genetics
	Highly educated and wealthy people are less likely to have a mental illness	The risk of getting a mental illness is not associated with a person's character

It may be that repeating false information has the effect of increased familiarity, which is a cognitive heuristic that allows people to make quick judgments more shallowly, and which can lead to more stereotyped judgements when a familiar stimulus is encountered (Häfner & Stapel, 2009). Other evidence suggests that ignorance or not knowing something is less detrimental for decision making than believing misinformation (Lewandowsky et al., 2012).

The current study evaluated the potential for the backfire effect in mental illness stigma. As part of the consideration for the current study, it was recognized that the stigma of mental illness includes concerns about danger, social avoidance, and responsibility (Arboleda- Flórez & Sartorius, 2008; Corrigan, 2014), and that these concerns are common themes in current myths and facts campaigns. As such, this study provided myths and facts in each of the areas of danger, avoidance, and responsibility, and assessed the possibility of a backfire effect in these domains. This study also replicated real-world social marketing campaigns in which participants only briefly engage with a flyer or social information, but then use that information at a later period of time. As such, and in part based on previous research (Skurnik et al., 2005), different temporal delays were used to see if time affected the memory for stigma-related myths and facts.

Method

Participants

Undergraduate student participants were recruited from the University of Calgary Research Participation System (RPS), in which students who are registered in undergraduate psychology courses can participate in research in exchange for partial course credit compensation. Eligibility for the current study included English fluency, and the ability to physically attend the study at a selected time. No other inclusion or exclusion criteria were used.

Measure

Demographics

Participants were asked a series of demographic questions designed to describe the sample, including gender, age, place of birth, and ethnic background.

Survey

Mental illness stigma was divided into three categories: avoidance, danger, and responsibility. Content related to these three dimensions was included in study materials, and outcomes related to these dimensions were evaluated. A "Myth and Fact" flyer regarding mental illness was written. The content was based on various current mental health campaigns and university psychology textbooks (e.g., Canadian Mental Health Association, 2017; Department of Health & Human Services, 2017), and included avoidance, danger, and responsibility items, each with two facts and two myths on the flyer. Survey items were developed with a focus on ease of understanding, and were carefully edited for plain language and elimination of double negatives or words that may have been confusing. To enhance the credibility of the flyer, it bore the logo of the Mental Health Commission of Canada,[1] and appeared to be an official document.

Following their review of the "Myth and Fact" flyer, participants answered an initial 12-question survey. Survey questions were based on information directly from the flyer or were more general. Table 1 provides the list of questions, as broken down by their content category (avoidance, danger, and responsibility) and "myth or fact" status. The degree of endorsement for each item was rated on a 5- point Likert scale (Disagree, Somewhat Disagree, Neither Agree or Disagree, Somewhat Agree, and Agree). IA rating of Agree or Somewhat Agree for a myth, was taken to be an indicator of stigma. In contrast, a rating of Disagree or Somewhat Disagree for a truth was taken as an indicator of stigma. Survey questions were randomized within blocks to ensure that questions of the same category, myth, fact, or based on the flyer or the general category did not occur in sequence together and to control possible order effects.

As a quality control measure, the survey contained a qualifying question to ensure participants were paying attention, "To submit this survey please select the middle option." If a participant answered this incorrectly their data were removed.

As described below, participants were randomized into one of four conditions. In one condition participants only completed the survey once. All participants in the other three groups completed the survey a second time, with different delay periods. The questions in

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the second survey were identical to the initial survey, however the questions were re-ordered to reduce familiarity bias. The study's flyer and survey questions were hosted and completed on Qualtrics, a web-based survey tool.

Procedure

This research was approved by the University of Calgary Research ethics Board (protocol REB-19-1875) Research Ethics Board and the Department of Psychology Research Participation System (RPS). Potential participants logged to their RPS account and were able to register up for a convenient time slot. Time slots were randomized into one of the four study conditions. Once registered, participants attended a computer lab at the assigned time. Students were verbally read a script of instructions and given a web-link to the survey, which presented them with informed consent, demographic questions, a request for contact information, the mental health "Myth and Fact" flyer, and finally the initial survey.

Until this point in the study, all four conditions were identical. Following completion of the initial survey, however, the procedures varied. The first group served as the control group and only completed the survey once, after which they had completed their participation. The other three groups had a time delay of 30-min, 2 days, or 7 days after which they completed the survey a second time. The group assigned to the 30-min delay remained in the lab and read a story[2] and completed word searches, the content of which were irrelevant to the subject of mental health. After the delay, these participants completed the follow-up survey in the computer lab, and then were excused. The final two groups completed the initial survey in the computer lab and were sent an email after a time delay (2 days and 7 days, respectively). These emails contained a web-link to the follow-up survey, which had to be completed within the same day for their data to be included in the results. Once the study was complete all participants were awarded their credits and sent a study debrief by email. The groups are referred to below for convenience as the Control, 30-min delay, 2-day delay, and 7-day delay groups.

Results

As noted above, the data were all gathered either in a computer classroom, with all entries on an online computer platform, or else were completed with a delay, but on the same computer platform. As a result, there were no data entry errors, as responses were only allowed within predetermined parameters. This said, all variables were visually examined for extraneous or incorrect values, and none were found. All subsequent analyses were conducted with IBM SPSS version 25.

Sample Demographic Characteristics

A total of 370 students began the study. The Control group had 86 participants, with no loss of data. The 30-min delay group also had no loss of data and included 93 participants. The 2-day delay group initially had 87 participants, but one was removed because they incorrectly answered the qualifying question, and five were removed because they completed the follow-up survey too late, yielding a final sample of 81 participants. Finally, the 7-day delay group

initially had 104 participants. One participant was removed because they did not properly follow procedures, and four were removed because they completed the follow-up survey too late, yielding a final sample of 99 responses. Figure 1 presents a CONSORT flow diagram of participants and their loss to follow-up.

As a result of the above processes, responses from 359 participants were retained. The full sample included 321 females (89%), 35 males (10%), and 3 (1%) others (see Table 2). Participants had the following overall age distribution: 248 (69%) 18–19 years old, 74 (21%) 20–21 years old, 23 (6%) 22–24 years old, 9 (3%) 25–30 years old, and 5 (1%) 31+ years old. Participants had the following distribution for their place of birth: Canada 245 (70%), United States of America 7 (2%), China 6 (2%), India 10 (3%), U.K. 3 (1%), Latin America 9 (3%), and Other 70 (20%). Finally, participants self-identified with the following ethnic distribution: White/Caucasian/European Descent 162 (46%), Black or African descent 19 (5%), Indigenous/First Nations 5 (1%), Asian 71 (20%), Hispanic/Central or South American 10 (3%), Middle Eastern 21 (6%), South Asian 38 (11%), and Other 29 (8%). Chi-square analyses failed to find any significant group differences for any of the above variables, suggesting that randomization was successful on these dimensions.

Initial Levels of Stigma

Scores were tabulated as scores of 1–5 based on the degree of endorsement with the various myth and fact statements that were presented, with items coded so that higher scores reflected more negative or stigmatizing opinions. Responses were categorized by group and content (danger, avoidance, responsibility), as well as whether or not the statement was directly from the flyer or was more general in nature, and whether the time interval was the first presentation, or delayed in the three delay groups. The descriptive information for these responses can be found in Table 3.

A one-way ANOVA was conducted among groups at initial results for different types of stigma. No significant difference emerged for avoidance (F = 0.05, $df = 3/354$, ns), danger (F = 0.98, $df = 3/354$, ns), or responsibility (F = 0.44, $df = 3/353$, ns). The control group was then compared to the other groups on the three stigma categories, and as a function of whether the questions were based on the flyer or the general category. No significant difference was found on any dimension, as the F-ratios ranged from 0.23 for danger questions based on the flyer, to 0.96 for both avoidance and responsibility questions based on the flyer. This pattern of results suggests that the randomization process created groups of roughly equivalent levels of initial results stigma.

Measurement Reliability

As this was the first study to employ the current methodology, there were no prior studies to review that addressed the reliability of measurement. To examine this issue, Pearson product–moment correlations were computed between initial and subsequent levels of stigma, for each of the three categories of stigma assessed in the current study, and for each of the groups that provided repeated assessment. Across all participants, these correlations were .78, .78,

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[2] We thank Jade Maitre for providing "The Magic Paintbrush." This story can be read at https://www.storyberries.com/bedtime-stories-the-magic-paintbrush-by-jade-maitre/

Figure 1
CONSORT Flow Diagram
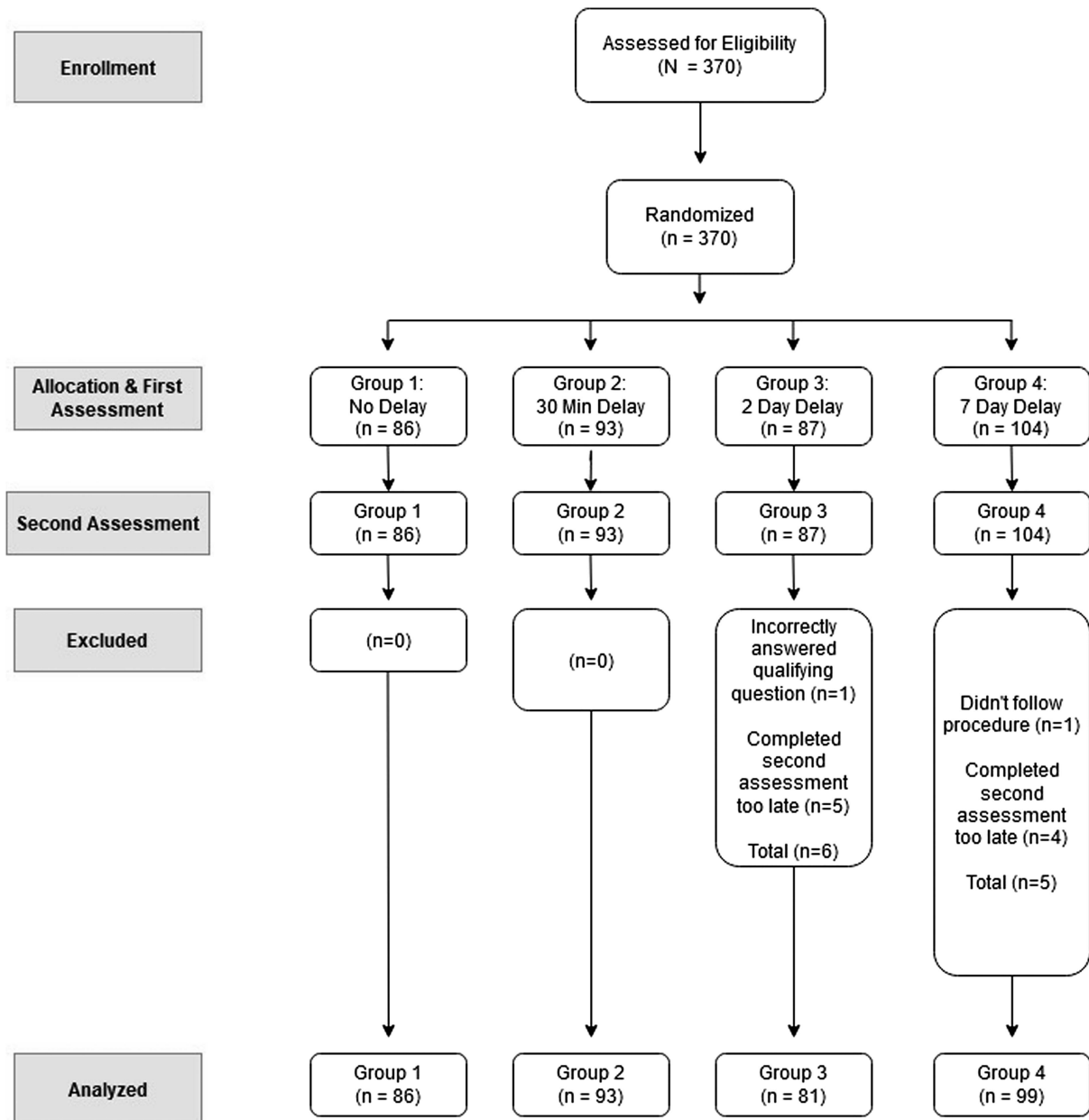
and .66 for the constructs of avoidance, danger, and responsibility, respectively. These results suggest good reliability of the first two constructs, but somewhat limited reliability for responsibility.

Changes in Stigma Levels

The following analyses consisted of three groups (30-min delay, 2-day delay, and 7-day delay) by time (initial, second, or delay) and source (whether the questions were based on material directly from the flyer or were more general in nature and not from the flyer) ANOVAs, separately for each of the three stigma categories of danger, avoidance, and responsibility. All ANOVAs were

conducted with the General Linear Model (GLM) routine in SPSS, followed by simple interactions, and within group repeated measures *t*-tests when time effects were found.

Danger

The analysis of danger scores revealed no significant three-way interaction among group, source and time, $F = 0.35$ (2/264), $p = .71$, $\eta^2_p = .003$ no interaction between group and time, $F = 1.99$ (2/264), ns, or between group and source, $F = 1.72$ (2/264), $p = .18$, $\eta^2_p = .013$. The main effect of group was also not significant, $F(2/264) = 0.75$, $p = .47$, $\eta^2_p = .911$. In contrast,

Table 2

Demographic Characteristics of the Sample (N = 359)

	Group			
Characteristic	Control (n = 86)	30-min delay (n = 92)	2-day delay (n = 87)	7-day delay (n = 104)
Sex (M:F: Other)	10:76:0	11:79:2	9:77:1	6:98:0
Age group (n/%)				
18–19	56/65.1%	67/72.8%	64/73.6%	70/67.3%
20–21	19/22.1%	17/18.5%	18/20.1%	21/20.2%
22–24	4/4.6%	8/8.7%	2/2.3%	9/8.6%
25–30	4/4.6%	0/0.0%	3/3.4%	2/1.9%
31+	3/3.5%	0/0.0%	0/0.0%	2/1.9%
Place of birth (n/%)				
Canada	59/68.6%	59/64.1%	6473.6%	67/64.4%
United States	2/2.3%	2/2.2%	0/0.0%	3/2.9%
China	1/1.2%	1/1.1%	1/1.1%	3/2.9%
India	1/1.2%	2/2.2%	2/2.3%	3/2.9%
United Kingdom	2/2.3%	1/1.1%	0/0.0%	0/0.0%
Latin America	1/1.2%	3/3.3%	3/3.4%	2/1.9%
Other	18/20.1%	24/26.1%	17/19.5%	26/25.0%
Ethnicity (n/%)				
White/European descent	36/41.9%	43/46.7%	42/48.3%	42/40.4%
Black/African descent	4/4.6%	2/2.2%	6/6.9%	8/7.7%
Middle Eastern	5/5.8%	7/7.6%	5/5.7%	5/4.8%
South Asian	12/14.0%	7/7.6%	10/11.5%	12/11.5%
Hispanic	0/0.0%	4/4.4%	3/3.4%	3/2.9%
South Asian	12/14.0%	7/7.6%	10/11.5%	12/11.5%
Indigenous/First nations	3/3.5%	1/1.1%	0/0.0%	1/1.0%
Other	8/9.3%	8/8.7%	8/9.2%	5/4.8%

the main effect for time was significant, $F(1/264) = 138.26$, $p < .001$, $\eta^2_p = .344$ as was the main effect for source, $F = 12.97 (1/264), p < .001, \eta^2_p = .047$ and the interaction between time and source, $F(1/264) = 15.85$, $p < .001$, $\eta^2_p = .057$ (see Figure 2.1 for representation of the interaction effect). As can be seen there, although generalized appraisals of danger were higher than those based on the pamphlet, these did not change over time. In contrast, there was a significant increase in pamphlet-based perceptions of danger over time.

Planned within group analyses revealed the source of the increases in perceived danger over time, as the 30-min group increased significantly, $t(76) = 4.70$, $p < .01$, whereas the 2 day group

increased but did not increase significantly, $t(87) = 1.01$, ns, and the 7 day delay group only revealed a trend, $t(92) = 1.75, p = .083$.

Avoidance

The analysis of avoidance scores revealed no significant three-way interaction among group, source and time, $F = 0.01 (2/266)$, $p = .99$, $\eta^2_p = .001$, no interaction between group and time, $F = 0.12 (2/266)$, $p = .88$, $\eta^2_p = .001$, or between group and source, $F = 2.19 (2/266)$, $p = .11$, $\eta^2_p = .016$. The main effect of group was also not significant, $F(2/266) = 0.10$, $p = .90$, $\eta^2_p = .001$. Further, although the main effect for time was

Table 3

Stigma Levels (M and SD) by Content and Group

Variable	Control group (n = 86)	30 min delay (n = 93)	2 day delay (n = 81)	7-day delay (n = 99)
Initial assessment				
Danger based on flyer	3.36 (1.37)	3.08 (1.51)	3.25 (1.40)	3.45 (1.49)
Danger not based on flyer	4.52 (1.45)	4.58 (1.47)	4.33 (1.51)	4.54 (1.59)
Avoidance based on flyer	2.87 (1.15)	2.83 (1.21)	2.88 (1.22)	2.82 (1.02)
Avoidance not based on flyer	3.24 (1.14)	3.22 (1.30)	3.34 (1.39)	3.25 (1.12)
Responsibility based on flyer	3.13 (1.24)	3.08 (1.30)	3.14 (1.54)	3.13 (1.22)
Responsibility not based on flyer	3.37 (1.51)	3.35 (1.36)	3.48 (1.86)	3.08 (1.33)
Second assessment				
Danger based on flyer	—	3.43 (1.80)	3.83 (1.59)	3.80 (1.59)
Danger not based on flyer	—	4.38 (1.51)	4.40 (1.62)	4.56 (1.65)
Avoidance based on flyer	—	2.86 (1.16)	2.81 (1.16)	2.95 (1.15)
Avoidance not based on flyer	—	3.19 (1.31)	3.23 (1.32)	3.35 (1.18)
Responsibility based on flyer	—	3.18 (1.47)	3.25 (1.62)	3.35 (1.56)
Responsibility not based on flyer	—	3.39 (1.47)	3.43 (1.52)	3.33 (1.46)

Figure 2.1

Danger Appraisals Over time, Collapsed Across Groups

■ Based on the Pamphlet   ▨ General

significant, $F(1/266) = 36.18, p < .001, \eta^2_p = .120$, the main effect for source, $F = 0.07(1/266), p = .79, \eta^2_p = .001$ and the interaction between time and source, $F(1/266) = 0.24, p = .62, \eta^2_p = .001$ were not significant (see Figure 2.2). There was a significant increase in avoidance appraisals over time. Within group analyses revealed that the three groups had different patterns of change, as the 30-min delay group did not change significantly, $t(76) = 1.44, p = .15$, whereas the 2 day group decreased but not significantly, $t(87) = -0.11$, ns, and the 7 day delay group increased significantly, $t(92) = 5.67, p < .01$.

Responsibility

The analysis of responsibility scores revealed no significant three-way interaction among group, source and time, $F = 0.33 (2/265)$, $p = .79$, $\eta^2_p = .002$, no interaction between group and time, $F = 1.22 (2/265)$, $p = .30$, $\eta^2_p = .009$, or between group and source, $F = 1.06 (2/265)$, $p = .35$, $\eta^2_p = .008$. The main effect of group was also not significant, $F(2/265) = 0.21$, $p = .81$, $\eta^2_p = .002$. Further, none of the main effect for time, $F(1/265) = 3.07$, $p = .08$, $\eta^2_p = .008$, the main effect for source, $F = 3.22 (1/265)$, $p = .07$, $\eta^2_p = .012$, nor the interaction between time and source, $F(1/265) = 0.33$, $p = 56$, $\eta^2_p = .01$, was significant, although the former two effects had trends in that direction (see Figure 2.3), with increases in responsibility appraisals over time, and more responsibility stigma for content that was more general in nature. Within group analyses were not conducted as a result.

Discussion

The use of "Myth and Fact" campaigns is popular in the field of mental illness stigma. This strategy follows the common-sense idea that correcting misperceptions or debunking misinformation can lead to improved attitudes. Inherent in this strategy, however, is the need to first present inaccurate information to then provide the correction, which raises the possibility that people who never held misperceptions in the first instance might mis-remember the errors. This "backfire effect" has been observed in flu inoculation campaigns (Skurnik et al, 2005), but had not been tested in the context of stigma toward people with mental illness prior to the current study. The current results demonstrated that the "Myth and Fact" strategy failed to decrease mental illness stigma in any of the three evaluated dimensions (danger, avoidance, responsibility). Rather, for the dimensions of avoidance and responsibility the strategy was associated with no significant changes in levels of stigma, but perceptions of danger actually increased, and in particular in the group with the shortest delay in repeated assessment. Thus, this study revealed the "backfire effect" in danger appraisals related to the stigma of mental illness.

When this study was designed, it was hoped to evaluate responses to information that was learned directly from the flyer, as opposed to more general stigma-related beliefs. Thus, items were written that both directly reflected information from the pamphlet related to perceptions of danger, avoidance, and responsibility, as well as other items related to these themes that might be inferred, but were not directly related to the pamphlet. This was considered an important design feature, as public information campaigns can only convey a limited amount of information. If these campaigns can only change perceptions related to the information being presented but not mental illness in general, they are not an efficient way to battle mental illness stigma. The current data suggested no significant difference in the responses to avoidance and responsibility items directly on the pamphlet or those that were more general in nature. Thus, participants did not differentiate between presented and more general information in these two categories. In contrast, while the danger appraisals based on the flyer were initially lower than more general stigmatizing ideas, they changed over time and became essentially the same at the later assessment point. If people are unable to differentiate information and organizations wish to

Figure 2.2

Responsibility Appraisals Over Time, Collapsed Across Groups

■ Based on the Pamphlet   ▨ General
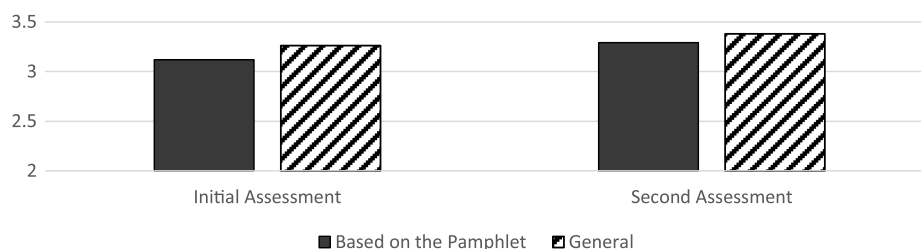
Figure 2.3

Avoidance Appraisals Over Time, Collapsed Across Groups

■ Based on the Pamphlet ▨ General
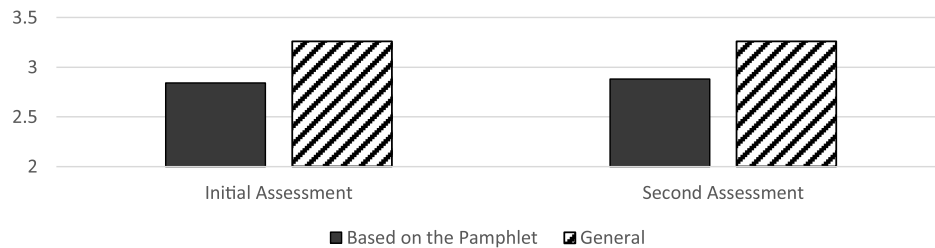
continue with the "Myth and Fact" marketing strategy, it seems to be less worthwhile to investigate which stigma beliefs are most problematic in their target audience and focus on those.

The danger category is arguably the important stigma domain that was examined in this study. A belief that people are dangerous because they have a mental illness can lead to more prejudice and severe consequences. Recent efforts to more fully portray individuals with mental health problems, but who are engaged in violent behavior, have been an important public information and media innovation (McGinty et al., 2013; Reavley et al., 2016). If the "Myth and Fact" strategy inadvertently increases perceptions of danger, then this unintended effect should be considered by organizations who wish to continue this marketing strategy, as it may actually run counter to other efforts to reduce stigma related to mental illness.

Strength and Limitations

This study addresses an important question about methods to reduce the stigma of mental illness. The well-designed and controlled conditions, the random assignment of participants to conditions, and the number of participants all increase confidence that the results are not the result of limited statistical power or Type I error. This said, there are important limitations in this study. All participants were young adults, mostly female, at the same university, in the same geographic location, and registered in at least one psychology course. Such participants can be expected to be more educated about mental illness causes, forms, and treatments than the public at large. It would be worthwhile to replicate this study with a more general population sample.

Further, this experiment was completed in a controlled setting. Participants sat at semi-private computers in a university computer lab and were only allowed to be on the study's website. Time on each aspect of the study was controlled, and participants had to spend a minimum amount of time on each page before moving onto the next. These strategies to capture participants full attention does not reflect the real world, where marketing competes with people who are constantly distracted. It has been estimated that people are exposed to 4,000–10,000 ads every day (Simpson, 2017). People are increasingly becoming more sensitive to ads that they have a personal interest in, while ignoring ads that are not of interest to them (Simpson, 2017), and marketing companies are increasingly able to target "personalized ads" to people based on their interests and demographics (Google AdSense, 2020). A study by Kaspar et al. (2019), found that ads that were demographically targeted lead to an increase in visual attention and number of visual fixations.

Thus, the current results require replication in a less controlled and more naturalistic setting.

It is important to note that the study used a single exposure to a "Myth and Fact" flyer as the intervention. Although even this minimal explore yielded significant increases in perceptions of dangerousness, the typical social marketing strategy is conducted over a period of time, and it is likely that citizens would obtain multiple exposures to the flyer or other social marketing devices being used. The current study cannot speak to whether repeated interaction with "Myths and Facts" might ultimately have the intended effect, and a future study could profitably examine the effects of single versus multiple exposures. Finally, we note that the study used the generic concept of "mental illness" as a target construct. It is recognized that many specific diagnoses exist, and that the current results cannot address whether the same patterns would have been found with specific diagnoses. For example, it may be that diagnostic categories that have more associated stigma would generate different patterns than for less stigmatized disorders. However, based on the current study it would be suggested that researchers or clinicians who wish to reduce the stigma of mental illness should avoid any presentation of myths associated with mental illness; at the best they do not change perceptions, and they may increase negative attitudes and perceptions.

Conclusions and Implications

This study challenges the commonly held notion that "Myth and Fact" campaigns are an effective way to battle mental illness stigma. In this study, the "Myth and Fact" flyer was at best an ineffective strategy to decrease mental illness stigma. At worst, the flyer increased mental illness stigma related to perceptions of dangerousness. It may be therefore that issues such as mental illness should be presented only with facts (see for example, Mental Health Commission of Canada, n.d.). This study also highlights how a single form of social marketing may be ineffective. Further study with combinations of strategies is an important research direction.

A potential final implication derives from the current research. There has been considerable media attention in recent years toward the use of disinformation strategies, and the psychological aspects of disinformation and "fake news" are beginning to be understood (Bago et al., 2020: Lewandowsky et al., 2012). It appears that even false information, if presented in an authoritative manner and without the opportunity for deliberation can be associated with increased recall. In this respect, the use of the "Myth and Fact" strategy may unwittingly engage psychological heuristics that increase the potential for the recall of myths. If future research

can substantiate this claim, then the "Myth and Fact" strategy should likely be repudiated in the field of mental health, and in fact it may be that mental health educators and activists should resist any temptation to repeat stigmatizing myths about mental illness in the effort to debunk or challenge them. In like manner, it may be that the repetition of disinformation in other domains prior to its debunking may unfortunately engender the backfire effect and support policies based on disinformation. Overall, the results from this study encourage further research to a more general populations and real-world setting, while encouraging the exploration of a different social marketing strategies from the "Myth and Fact" model.

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