Effects of Health Responsibility Frames: Testing a Mediation Model of Attributions, Emotions, and Social Support Intentions

LINN JULIA TEMMANN[1], DOREEN REIFEGERSTE[2], ANNEMARIE WIEDICKE[3], and SEBASTIAN SCHERR[4]

[1]*Department of Communication, University of Münster, Münster, Germany*
[2]*School of Public Health, Bielefeld University, Bielefeld, Germany*
[3]*University of Munich, Munich, Germany*
[4]*Center for Interdisciplinary Health Research & Department of Media, Knowledge, and Communication, University of Augsburg, Germany*

When news stories cover health and illness, they often address issues of responsibility. These *responsibility frames* can affect recipients' responsibility beliefs (i.e. attributions) and thereby indirectly affect emotions and motivation to support people affected by health problems. To date, it is not fully understood how responsibility frames affect social support intentions, and if attributions and emotions mediate this effect. In an online experiment with $N = 1{,}088$ German participants, we tested the effects of responsibility frames (individually controllable vs. non-controllable) for type 2 diabetes and depression on social support intentions through responsibility attributions and emotional reactions. Mediation analyses show that responsibility frames indirectly affect social support intentions through social-societal attributions and sympathy. This mediation effect was observed in both depression and type 2 diabetes, despite issue-specific differences in attributions, emotions, and social support intentions. We discuss these findings considering framing effects research and health reporting.

The objective of this study is to examine how *responsibility frames* in health communication can motivate people to provide *social support*, and what role attributions and emotions play in this process. Social support is an important predictor of physical and mental health (Heaney & Israel, 2008, Holt-Lunstad & Uchino, 2015, Wright, 2016). One factor that can influence the motivation to provide social support is the extent to which an affected person is held responsible for their (health) problem (Weiner, 1993, 2006). In the context of social problems, public media attribute responsibility to individual persons, groups, or structures – a process that media psychology and communication science describe as *responsibility framing* (Hannah & Cafferty, 2006, Major & Jankowski, 2020, Semetko & Valkenburg, 2000). Framing research suggests that media frames interact with the recipients' cognitive structures or schemata, facilitating their understanding and interpretations of an issue (Guenther, Froehlich, Milde, Heidecke, & Ruhrmann, 2015, Lecheler & de Vreese, 2019, Scheufele, 2004), which may in turn trigger emotional responses (Gross, 2008, Gross & D'Ambrosio, 2004) and social behaviors (Jin, Zhang, Lee, & Tang, 2018, Sun, Krakow, John, Liu, & Weaver, 2016). In line with attribution theory, research on framing effects highlights the importance of addressing both cognitive and emotional mediators (Kühne, Weber, & Sommer, 2015, Major, 2011). Based on attribution theory and the framing approach, it therefore appears plausible that responsibility framing in the health context can indirectly influence social support intentions. However, there is hardly any experimental evidence in communication research on the complete path from responsibility frames to attributions, emotional reactions, and social behaviors (Temmann, Wiedicke, Schaller, Scherr, & Reifegerste, 2022).

We aim to fill this gap by looking at the whole attribution path, and testing whether responsibility attributions and emotions mediate the effect of controllable (i.e., individual) vs. non-controllable (i.e., medical/genetic, social, societal) responsibility frames on social support intentions toward a fictitious person living with either type 2 diabetes or depression (as examples of two relevant physical and health mental issues). This study thus provides a replication of earlier experimental research on the attribution process (Corrigan, Markowitz, Watson, Rowan, & Kubiak, 2003, Rudolph, Roesch, Greitemeyer, & Weiner, 2004), extending Weiner's attribution theory (Weiner, 1993, 2006) to include the aspect of media responsibility framing in the health context.

Social Support in the Health Context

Social support is a heterogeneous concept, usually defined as a well-intended social interaction which might be expressed as instrumental (i.e., providing tangible help), emotional (i.e., showing love or empathy), or informational support (i.e., giving advice or information, Heaney & Israel, 2008). As a function of social networks, social support can be exercised by various actors, including formal (e.g., health care providers) and informal (e.g., partners, family members) ones.

Address correspondence to Linn Julia Temmann, Department of Communication, University of Münster, Bispinghof 9–14, 48143 Münster, Germany. E-mail: linn.temmann@uni-muenster.de

Over the years, research has repeatedly highlighted the beneficial effects of social support on health (Uchino, Uno, & Holt-Lunstad, 1999, Wright, 2016). For example, social support has been shown to protect from depression (Gariépy, Honkaniemi, & Quesnel-Vallée, 2016, Teo, Choi, Valenstein, & Coyne, 2013) and to positively influence the mortality of cardiovascular diseases, infectious diseases, and other physical and mental health outcomes (Holt-Lunstad & Uchino, 2015, Uchino, Uno, & Holt-Lunstad, 1999). Hence, understanding what kind of framing motivates people to provide social support is relevant to improve journalistic and strategic health communication, as well as the situation of people living with chronic and mental illness.

Attribution Theory and Social Support

Weiner's (1993, 2006) attribution theory explains how responsibility attributions influence social behaviors, including social support. There is robust empirical support for the assumption that responsibility attributions elicit emotional reactions of sympathy or anger, which in turn predict support intentions (Rudolph, Roesch, Greitemeyer, & Weiner, 2004).

When deciding whether a person is deserving of support, the aspects of *locus* and *controllability* are crucial; in the context of health, particularly the perception if someone has brought a supposedly avoidable illness on themselves, e.g., by lack of exercise or poor dietary choices. These internal and controllable attributions typically increase anger and lower support intentions (Weiner, 2006, Weiner et al., 1988). However, there are mitigating factors which might alleviate judgments of individual responsibility (Major & Jankowski, 2020, pp. 17–18), e.g., upbringing or structural barriers. When a person is not held responsible for their health issue, sympathy and consequently, the willingness to support them increases.

Media Framing of Health Responsibility

The way we think and feel about social issues, including health issues, is to a large extent shaped by media framing (Iyengar, 1991, Lecheler & de Vreese, 2019), i.e., the process of selecting and emphasizing certain aspects of an issue (D'Angelo, 2002, Entman, 1993). Both health communication and media psychology research show that framing plays a role in motivating behaviors (Gallagher & Updegraff, 2012, Lecheler & de Vreese, 2019).

News media often raise the question of who is responsible for causes and solutions when reporting on health issues (Major & Jankowski, 2020). These media frames attributing responsibility to individuals, social or societal actors are defined as *responsibility frames* (Iyengar, 1991, Semetko & Valkenburg, 2000). A systematic review of responsibility frames in health communication found that responsibility is mostly attributed to individuals, while influences from the social network and society often fall out of sight (Temmann et al., 2022).

Effects of Responsibility Frames

Because of their potential impact on attributions of responsibility and therefore, emotional and social responses, responsibility frames are especially relevant in news media covering mental and physical health issues. Even though studies on health responsibility attributions frequently refer to Weiner's (2006) attribution theory, social support is rarely studied in conjunction with responsibility frames (Temmann et al., 2022). Instead, studies mostly focus on attributions and policy support as outcome variables (e.g., Barry, Brescoll, & Gollust, 2013, Coleman, Thorson, & Wilkins, 2011, Garbarino, Henry, & Kerfoot, 2018, Gollust, Lantz, & Ubel, 2009, Gollust, Niederdeppe, & Barry, 2013, Major, 2018, Niederdeppe, Roh, Shapiro, & Gillison, 2015).

Effects on Attributions

Framing effects research suggests that recipients' attributions transform in the direction of the responsibility frames they perceive in the media coverage (*transformation effect*, Scheufele & Scheufele, 2010; Iyengar, 1991; Major & Jankowski, 2020). Although a large part of the literature into responsibility framing effects studies attributions as a dependent variable (Temmann et al., 2022), studies often fail to acknowledge the aspect of controllability which is crucial to attribution theory (Weiner, 2006). Instead, they merely differentiate between individual and societal responsibility. For instance, Major (2009) and Shen, Lee, Sipes, and Hu (2012) found that respondents adapted their attributions in the directions of individual vs. societal framing.

However, there are also studies testing effects on attributions which do not find any clear-cut transformation effects (Coleman, Thorson, & Wilkins, 2011, Major, 2018). This is partly due to conceptual and methodological characteristics of these studies (Temmann et al., 2022), and possibly because controllability has not been explicitly included in these studies. We aim to shed more light on the dimension of controllability and the potentially mediating role of attributions on emotions and support intentions as suggested by attribution theory.

Effects on Emotions

Even though framing effects research often focuses on cognitive or behavioral outcomes, studies increasingly show that emotions play a key role in this process. For instance, results from an experiment by Kühne, Weber, and Sommer (2015) illustrate that cognitive and emotional responses mediate the effect of responsibility frames on attitudes. In the context of framing effects and attributions, the content of the emotions is also pivotal, i.e., toward whom an emotion is directed (Gross, 2008, Gross & D'Ambrosio, 2004, Weiner, 2006). Works by Major (2009, 2011, 2018) show significant direct and mediating effects of positive and negative emotions in the context of health responsibility framing, but emotions were measured globally as a response to news stories rather than directed to affected individuals. In sum, communication research in this area does not yet allow conclusions on how social emotions such as anger and sympathy, which relate to affected persons, mediate effects of responsibility frames. According to attribution theory, it is precisely the social nature of these emotions that is key to explaining supportive behaviors (Weiner, 2006). Hence, we aim to investigate the role of emotions directed toward specific individuals affected by a health problem.

Effects on Social and Policy Support

Helping and support motivations are central to research on attribution theory (Rudolph, Roesch, Greitemeyer, & Weiner, 2004). *Social support*, while similar to constructs like helping behavior or policy support, plays an essential role in the health context because of its evident health-related consequences for people affected by chronic or mental illnesses (Gariépy, Honkaniemi, & Quesnel-Vallée, 2016, Martos-Méndez, 2015, Strom & Egede, 2012). Nevertheless, there is not enough framing research so far examining the effects of responsibility frames on social support intentions.

Jin, Zhang, Lee, and Tang (2018) found that frames attributing responsibility for depression to individuals increased the efficacy in identifying friends and family members with depression. However, the construct of efficacy relates more to the recipients' self-perceived abilities than to their social motivation. In an experiment on obesity frames, Sun, Krakow, John, Liu, and Weaver (2016) found an indirect effect of social-level responsibility frames on interpersonal and social behavioral intentions through social attributions. In the mentioned study, however, the outcome does not refer to the support of an affected person. Therefore, it remains largely unknown in how far responsibility frames might motivate social support toward individuals living with a disease, and whether this effect is mediated by attributions and emotional responses.

Research consistently shows that the way health responsibility is framed influences recipients' policy support. Gollust, Lantz, and Ubel (2010) found that non-controllable frames (genetic and societal) boosted support for diabetes research spending. Coleman, Thorson, and Wilkins (2011) showed that societal information in health news articles led to a significant increase in policy support. Consistent with this, two experiments by Barry, Brescoll, and Gollust (2013) showed that news frames focusing on an individual obese child lowered levels of policy support for childhood obesity. Against this background, it appears reasonable to expect the effects on social support to be in a similar direction as those for policy support, given that the intention to help individuals or groups affected by a health issue is similar in both constructs. However, it is unclear whether responsibility frames affect *social support intentions* in the same way, and in how far these effects emerge through attribution processes.

Research Objective and Hypotheses

An analysis of previous research on responsibility frames in the health context suggests that the following aspects require closer attention:

1. The dimension of controllability in the context of health-related attributions,
2. the role of emotions directed toward affected individuals,
3. social support intentions as a potential outcome of health responsibility framing,
4. the attribution path from responsibility framing to attributions to emotions to social support intentions.

Therefore, we ask: How do responsibility frames in health news emphasizing either controllable (i.e., behavioral) or non-controllable (i.e., social, societal) aspects of a disease affect attributions of responsibility, social emotions, and social support intentions?

Based on framing effects research (Scheufele, 2004, Sun, Krakow, John, Liu, & Weaver, 2016), we assume that frames focusing on the aspects of a disease that are not within an individual's control (*non-controllable responsibility frames*, i.e., social and societal causes and treatments), will lead to higher social-societal attributions (H1a) and lower individually controllable attributions (H1b). Following attribution theory (Rudolph, Roesch, Greitemeyer, & Weiner, 2004, Weiner, 2006), the non-controllable responsibility frames should have a positive, indirect[1] effect on social support intentions which is mediated by social-societal attributions and sympathy (H2). See Figure 1 for the hypothesized model. The fact that news coverage of health is often biased toward individually controllable causes and solutions (Temmann et al., 2022) raises the question whether such responsibility framing can also elicit negative reactions toward those affected. After all, in attribution theory, individually controllable attributions are linked to anger and reduced willingness to support (Rudolph, Roesch, Greitemeyer, & Weiner, 2004, Weiner, 2006). Therefore, we explore if there is an indirect negative effect of the responsibility frames on social support which is mediated by individually controllable attributions and anger (RQ1).

Coleman, Thorson, and Wilkins (2011, p. 950) found issue-specific differences in their experiment on health responsibility frames, indicating that the topic of a health article is at least as relevant as the way it is framed. Furthermore, different health conditions are linked to different degrees of stigmatization (Major & Jankowski, 2020, p. 85); in particular, judgments can differ depending on whether health issues are perceived as physical or mental-behavioral (Weiner et al., 1988). Therefore, we decided to include one physical (type 2 diabetes) and one mental health issue (depression) to explore issue-specific differences in attributions, emotions, and social support intentions (RQ2).

Methods

Procedure and Design

We conducted an online experiment[2] with $N = 1{,}088$ German participants in May 2020. Before they could proceed to the questionnaire, participants were asked to give their informed consent in digital form. Consenting participants were then randomly assigned to one of eight groups and read an online article about either type 2 diabetes or depression. The articles attributed

[1] According to attribution theory (Weiner, 2006), this is an indirect effect. Thus, we do not expect a total effect of the responsibility frames on social support intentions without including mediators into the model.

[2] The online experiment was originally conducted in a 4 (individual responsibility frame/social network responsibility frame/societal responsibility frame/medical frame) × 2 (type 2 diabetes/depression) between-subjects design. To test the attribution path hypotheses, the control group was excluded, while the remaining groups were merged into a two-level factor consisting of controllable (individual) vs. non-controllable (social network, society) responsibility frames (see supplementary Table 2).

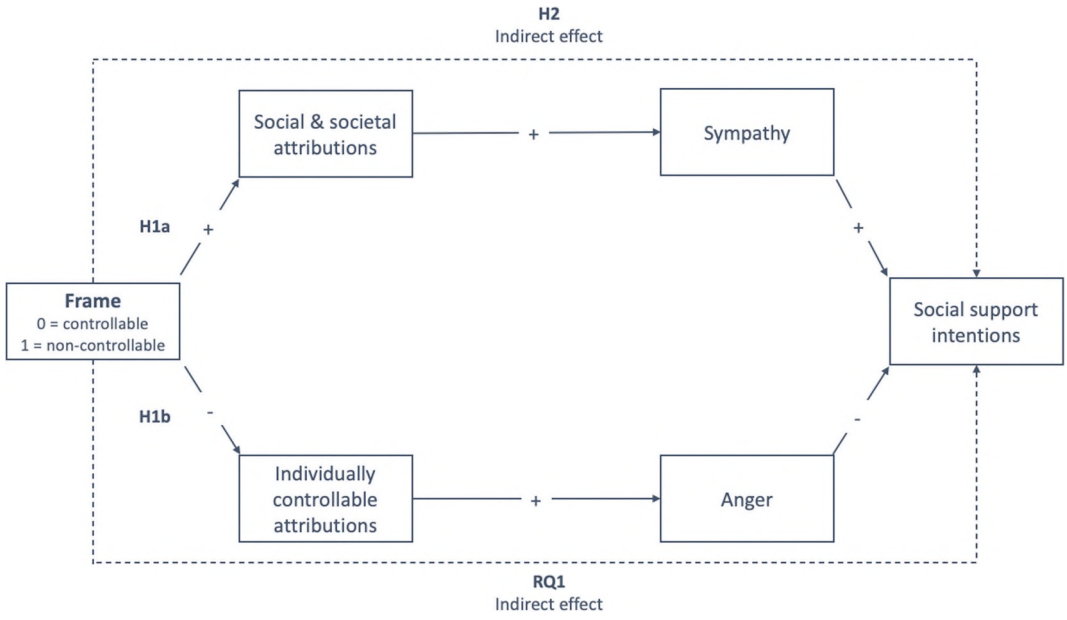

Figure 1. Hypothesized mediation model of controllable vs. non-controllable responsibility frames on social support intentions through attributions and emotions.

responsibility for the respective health issue to either non-controllable (i.e., social, societal) factors, or to controllable and internal (i.e., individual) factors. A control group article[3] did not attribute responsibility, but provided information about genetic causes, symptoms, and medical treatments. For the mediation analyses, we combined the social and societal responsibility frames[4] (external and non-controllable) and compared them with the individual responsibility frame (internal and controllable).

The questionnaire asked for self-assessed knowledge before and after reading the article, issue involvement, education, age, gender, political orientation, and experience with chronic and mental illness. Participants were only included in the sample if they passed an attention check. After completion ($Mdn = 21$ minutes, $SD = 8.85$), participants received a debriefing in which they were informed about the objective of the study. Participants were fully anonymized and received an incentive by the panel provider. The advisory board on ethical issues at the University of (anonymized for peer-review) approved the research project.

Choice of Type 2 Diabetes and Depression

For this study, we chose to take type 2 diabetes and depression as relevant examples for mainly two reasons. First, type 2 diabetes and depression are non-communicable diseases with a rising worldwide prevalence (Saeedi et al., 2019, World Health Organization, 2013). Second, causes and treatments of both type 2 diabetes and depression are multifactorial. Although the diseases are commonly treated at the individual level, e.g., through behavioral interventions or medication, research increasingly points toward the social and structural determinants of these conditions, such as income, employment, education, or social connectedness (Allen, Balfour, Bell, & Marmot, 2014, Assari, 2017, Gariépy, Honkaniemi, & Quesnel-Vallée, 2016, Price-Robertson, Obradovic, & Morgan, 2017, Walker, Smalls, Campbell, Strom Williams, & Egede, 2014). Particularly, concepts like *Social Determinants of Health* (SDH) and *Social Ecological Models* acknowledge a variety of individual, social and societal influences on health and health behavior (Marmot, 2005, Moran et al., 2016, Sallis, Owen, & Fisher, 2008). In view of attribution theory, these external non-controllable influences may be seen as "mitigating circumstances" (Major & Jankowski, 2020, p. 17) that attenuate judgments of individual responsibility.

Stimuli

The stimulus material[5] consisted of an online news article presenting the experiences of a fictitious 50-year-old woman living with either type 2 diabetes or depression. The articles had roughly the same length (617–631 words), and only the content of the frames was varied in terms of controllable vs. non-controllable causal attributions and treatment recommendations. The

[3]Excluded from mediation analyses for consistency.

[4]A univariate ANOVA with post hoc comparisons (Bonferroni corrected) demonstrated that social-societal attributions did not significantly differ between the social and societal responsibility frames ($M_{Social\ Network} = 4.72$, $SD = 1.16$, $N = 275$, $M_{Society} = 4.70$, $SD = 1.20$, $N = 260$, $p > .05$, $F(3,1084) = 16.56$, $\eta^2 = .04$), but only compared to the individual ($M_{Individual} = 4.22$, $SD = 1.19$, $p < .001$, $N = 286$) and control frame ($M_{Control} = 4.19$, $SD = 1.17$, $p < .001$, $N = 267$). Thus, the combination of the social and societal frames was deemed appropriate.

[5]All stimulus articles with highlighted responsibility frames can be requested from the first author or accessed via the following link: https://osf.io/d8zer/?view_only=804eddd843d14919bb6671ccce5c9713

individually controllable frame portrayed the causes and treatments of type 2 diabetes or depression to be behavioral and thus, under individual control (e.g., stress management, unhealthy diet), and recommended behavioral change (e.g., physical activity). The non-controllable frames described the causes and treatments within the social network (e.g., social support) or society (e.g., lack of healthy infrastructure). To increase external validity, the article was based on a previous content analysis of German newspapers (Temmann et al., 2022). Two trained coders unaware of the conditions confirmed that the articles contained the appropriate frames in a pilot test. In the final study, a manipulation check[6] assessing frame recognition indicated that the manipulation was effective, and article evaluations ("well done," "convincing," "motivating," "interesting," "balanced," measured on a 5-point semantic differential) did not significantly differ between conditions. Quality ("well done," $M = 4.07$) and persuasiveness ("convincing" $M = 3.94$) were rated moderately high.

Key Measures

Based on previous studies, we developed measures for responsibility attributions, emotions, and social support intentions. All scales showed a satisfactory reliability (Cronbach's *alpha* > .70, see supplementary Table S1 for scales, item wording, and reliability values, and Table S3 for descriptive statistics).

For *attributions of responsibility*,[7] participants were asked to state their agreement to individually controllable and social-societal attributions at baseline and after the stimulus. Agreement to the statements was measured on 7-point Likert scales. To facilitate comparisons between diabetes and depression, the wording was adjusted to fit specific causes and treatments in some items. Since there is no uniform, validated scale for attributions, previous studies (Coleman, Thorson, & Wilkins, 2011, Corrigan, Markowitz, Watson, Rowan, & Kubiak, 2003, Major, 2018, Niederdeppe, Shapiro, & Porticella, 2011, Sun, Krakow, John, Liu, & Weaver, 2016) were used to develop the items.

Sympathy and *Anger* were operationalized by agreement to seven statements on a 5-point Likert scale (1 = strongly disagree, 5 = fully agree). The statements referred directly to the person living with type 2 diabetes/depression portrayed in the stimulus article (e.g., "I felt pity for her").

As a measurement of *Social Support Intentions*, we combined items from the Berlin Social Support Scales (Schwarzer & Schulz, 2000) and the Diabetes Social Support Questionnaire (La Greca, 2002), the latter of which were adapted to depression. The final scale included 6 items for emotional support (e.g., "encourage her not to give up"), 4 items for instrumental support (e.g., "help her with housework"), and 1 item for informational support ("research information for her."). A mean index was calculated across all items.

Participants

$N = 1{,}088$ German citizens were recruited with the help of a panel provider (www.respondi.com). The sample was representative of the German population between 18–75 years ($M = 47.93$, $SD = 15.44$) regarding age, gender (50.1% female identified, 49.5% male identified, .3% diverse identified), and school education (33.2% had received at least the highest German school degree/"(Fach-)Abitur,"[8] 32.0% the intermediate German school degree/"Mittlere Reife," and 34.8% the lowest German school degree/"Hauptschulabschluss" or none). To test the effects of the individually controllable and non-controllable responsibility frames against each other, the control group receiving the article without responsibility frames ($N = 397$) was excluded from the mediation models, resulting in a sample of $N = 691$ for these tests. See supplementary Table S2 for an overview of the experimental groups and group sizes.

Results

Main Effects of Responsibility Frames on Attributions

A MANCOVA ($N = 1{,}088$) controlling for issue involvement, age, preexisting knowledge, and baseline attributions (see supplementary Tables 6–8) showed that the social and societal (i.e., non-controllable) responsibility frames had a significant positive effect on social-societal attributions $F(3) = 29.15$, $\eta^2_p = .08$, $p < .001$, Wilk's $\Lambda = .77$). Also, individually controllable attributions were significantly lower after receiving the individual (i.e., controllable) responsibility frames as compared to the other responsibility frames ($F(3) = 41.51$, η^2 $p = .10$, $p < .001$, Wilk's $\Lambda = .77$). H1a and H1b are thereby supported.

Indirect Effects of Responsibility Frames on Social Support Intentions

Separate mediation analyses[9] for depression and type 2 diabetes were conducted to test framing effects for both health issues (H2, RQ1). Figure 2 shows the mediation model for diabetes. Within the diabetes groups, there is no significant total effect of the responsibility frames on social support intentions without considering the mediators ($B = .11$,

[6]Means of multiple manipulation check items were in the predicted directions, with ANOVA indicating significant differences between the framing groups. See supplementary Table 3 and supplementary Table 4 for the ANOVA results.

[7]A principal axis factoring EFA with varimax rotation for depression and diabetes attributions (KMO = .913/.910, Bartlett χ^2 (df 325) = 5872.02/6396.92, $p < .001$) showed a different factor structure for diabetes (four factors) and depression (five factors). Since we aimed to test our model for both health issues, we decided to align the attributions with the experimental manipulation (individually controllable vs. social-societal frames) rather than calculating mean indices based on the 4- or 5-factor models. Thus, we combined the factors including family, work, and society items to match the frames: individually controllable attributions versus social-societal attributions.

[8]Equivalent to A-levels or high school diploma.

[9]Mediation analyses to test H2 and H3 were conducted with the Hayes Macro (Model 82; Hayes, 2018) in SPSS, which calculates standardized and partially standardized path coefficients using the ordinary least squares (OLS) method for total, direct, and indirect effect. The factor responsibility frame was dummy-coded (1 = non-controllable, i.e., social and societal responsibility frames, 0 = individually controllable responsibility frame). Bootstrapping with 5,000 iterations and heteroskedasticity-consistent standard errors (HC4) were used to determine confidence intervals (CI). Indirect effects are interpreted as significant if 0 is not included CI.

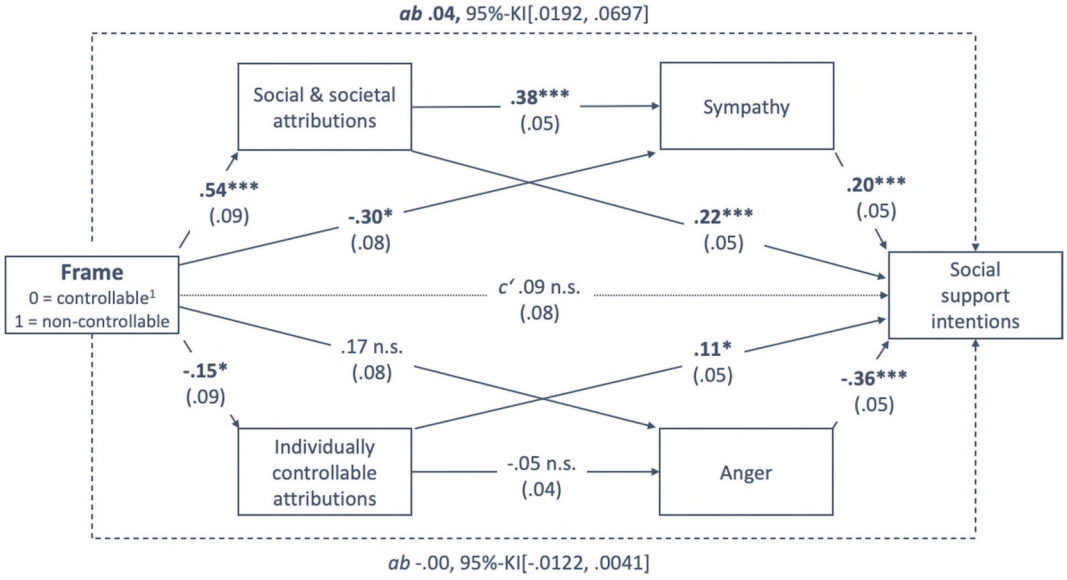

Figure 2. Sequential mediation model of diabetes-specific responsibility framing effects. ***Notes***. *n = 453 Hayes Model 82* (Hayes, 2018). *Includes(partially) standardized regression coefficients.* ***Covariates****: Issue involvement, education, age, gender, political orientation, pre-existing knowledge, baseline attributions (social-societal and individual).* [1]***"Controllable"*** *is the group which received the individual responsibility frame (n = 121).* ***"Non-controllable"*** *is a combination of the two groups receiving frames with social or societal responsibility frames (n = 233). n.s. p > .05, *** p < .001, ** p < .01, * p < .05.*

SE = .09, *p* = .220). Also, the non-controllable responsibility frames for diabetes have no significant direct effect on social support intentions when taking the mediators into account (*B* = .09, *SE* = .08, *p* = .279, R^2 = .47, *p* < .001). However, the confidence intervals indicate that there is an indirect effect of the non-controllable diabetes-specific responsibility frames on social support intentions, mediated by social-societal attributions and sympathy (*ab* = .04, *SE* = .01, 95%-CI [.0192, .0697]), corroborating H2 for diabetes. Regarding RQ1, there is no significant indirect effect of the non-controllable responsibility frames on social support intentions mediated by individually controllable attributions and anger (*B* = −.00, *SE* = .00, 95%-CI [−.0122, .0041]). Unexpectedly, the non-controllable diabetes-specific frames had a significant negative effect on sympathy (*B* = −.30, *SE* = .08, *p* < .001, R^2 = .28, *p* < .001), which we address in more detail in the discussion.

As illustrated in Figure 3, the same pattern can be found in the depression groups. The non-controllable responsibility frames did not have a total (*B* = −.02, *SE* = .08, *p* = .783, R^2 = .23, *p* < .001) nor direct (*B* = −.01, *SE* = .07, *p* = .866, R^2 = .43, *p* < .001) effect on social support intentions within the depression groups. Nonetheless, H2 was further supported as the non-controllable depression-specific frames had a significant indirect effect on social support intentions by increasing social-societal attributions and sympathy (*ab* = .02, *SE* = .01, 95%-CI [.0089, .0458]). Consistent with diabetes groups, there is no significant indirect effect of responsibility frames through individually controllable attributions and anger in the depression groups (RQ1; *ab* = .00, *SE* = .00, 95%-CI [−.0057, .0098]).

Issue-Specific Effects on Attributions, Emotions, and Social Support Intentions

A MANOVA testing the effects of health issue on the dependent variables in the attribution process (RQ2, see supplementary Table S10) showed significant effects on attributions, sympathy, and anger, but no significant effect on social support intentions (Wilk's Λ = .57). In particular, participants in the depression condition reported significantly higher levels of social-societal attributions ($M_{\text{Depression}}$ = 4.55, M_{Diabetes} = 3.61, *F*(1, 1,086), η^2 *p* = .20, *p* < .001) and sympathy ($M_{\text{Depression}}$ = 3.70, M_{Diabetes} = 3.48, *F*(1, 1,086), η^2 *p* = .01, *p* < .001). Participants in the diabetes groups showed significantly higher individually controllable attributions ($M_{\text{Depression}}$ = 4.08, M_{Diabetes} = 4.92, *F*(1, 1,086), η^2 *p* = .13, *p* < .001) and more anger ($M_{\text{Depression}}$ = 1.70, M_{Diabetes} = 1.70, *F*(1, 1,086), η^2 *p* = .01, *p* < .001).

Discussion

This study revealed two main findings: 1) Responsibility frames for type 2 diabetes and depression transform recipients' attributions in the direction of the respective responsibility frames (H1; *transformation effect*, Scheufele & Scheufele, 2010) and 2), responsibility frames attributing responsibility for type 2 diabetes and depression to non-controllable factors (i.e., social, societal) indirectly facilitate social support intentions through social-societal attributions and sympathy (H2; *indirect-only mediation*; Zhao et al., 2010). The former finding complements research on responsibility framing, which has so far produced inconclusive results regarding framing effects on attributions (Temmann et al., 2022). The latter result is in line

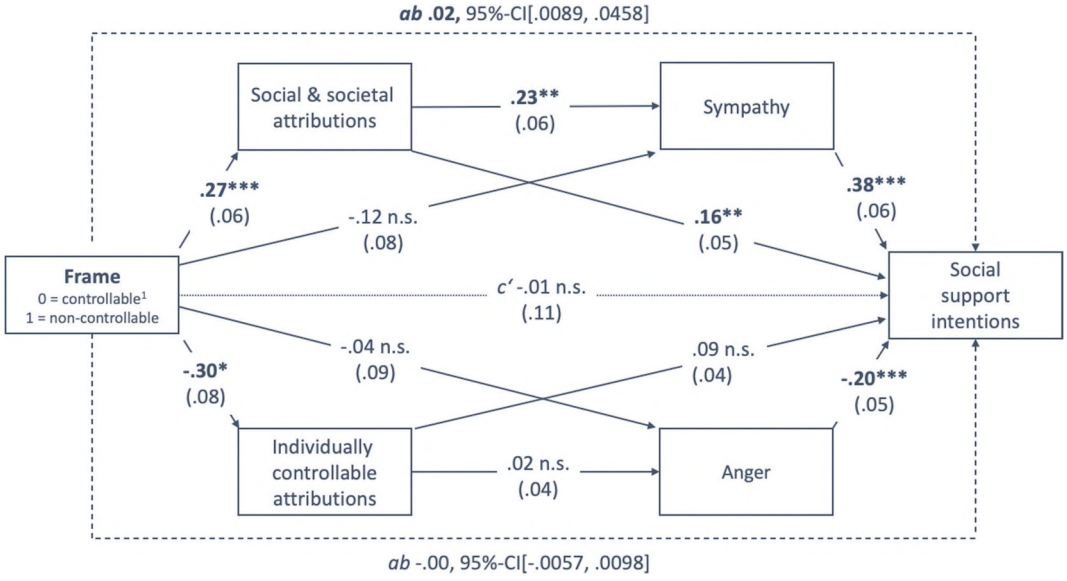

Figure 3. Sequential mediation model of depression-specific responsibility framing effects. ***Notes****. n = 457. Hayes Model 82* (Hayes, 2018). *Includes (partially) standardized regression coefficients.* ***Covariates****: Issue involvement, education, age, gender, political orientation, experience with chronic and mental illness, pre-existing knowledge, baseline attributions (social-societal and individual).*
*[1] "**Controllable**" is the group which received the individual responsibility frame (n = 115). "**Non-controllable**" is a combination of the two groups receiving frames with social or societal responsibility frames (n = 222). (n.s.) p > .05. *** p < .001, ** p < .01, * p < .05.*

with attribution theory, which suggests that emotional responses mediate the relationship between attributions and social behaviors.

In contrast, the explored path through individually controllable attributions and anger (RQ1) showed no significant effects. Unlike previous studies demonstrating links between individually controllable attributions and anger (Rudolph, Roesch, Greitemeyer, & Weiner, 2004), neither responsibility frames nor individually controllable attributions increased anger in this study. This could be explained by the fact that the portrayed person did not exhibit antisocial or morally ambiguous behavior. Alternatively, the episodic story featuring an individual exemplar might have been so positively emotionally engaging (see Gross, 2008, Major, 2011) that anger was suppressed. Also, the fact that we combined causal and solution responsibility might have curbed moral judgments and blame, and thus negative emotions.

Nevertheless, the significant mediating effects of attributions and sympathy on social support intentions stress the importance of acknowledging the indirect nature of responsibility framing effects on social behaviors (Gross, 2008, Kühne, Weber, & Sommer, 2015), and support the idea of framing effects as a multi-step mechanism (Scheufele, 2004, p. 419) from cognition to emotion to behavior. Without including attributions and emotions as mediators, this study would have only yielded a non-significant total effect of responsibility frames on social support intentions. Hence, this experiment adds to previous research testing responsibility framing effects only on single outcome variables, such as attributions (Coleman, Thorson, & Wilkins, 2011, Gollust, Lantz, & Ubel, 2009, Shen, Lee, Sipes, & Hu, 2012), or policy support (Barry, Brescoll, & Gollust, 2013, Coleman, Thorson, & Wilkins, 2011, Garbarino, Henry, & Kerfoot, 2018, Gollust, Lantz, & Ubel, 2009, Gollust, Lantz, & Ubel, 2010). Extending these studies, this experiment tested the full attribution path from framing over attributions and emotions to social behavior.

In addition to the mediation effects, the study also found small but significant differences between the two health issues examined. Regardless of the different responsibility frames, depression elicited more sympathy and stronger social-societal attributions, while people attribute more individual responsibility for type 2 diabetes and experience slightly more anger toward an individual living with type 2 diabetes, though anger levels were generally low. This result adds to previous research in three different ways: First, it highlights that responsibility for type 2 diabetes is mostly attributed to individuals (see Browne, Ventura, Mosely, & Speight, 2013, Himmelstein & Puhl, 2021), while depression is seen as less individually controllable and more responsibility is placed on external factors (e.g., politics, families, employers). Second, the differences between type 2 diabetes and depression substantiate previous findings indicating that issue-specific characteristics might influence attributions and emotions beyond framing (Coleman, Thorson, & Wilkins, 2011). And third, the identified mechanism through which responsibility frames affect social support intentions – i.e., mediated by social-societal attributions and sympathy – evidently occurs *across* different health issues, despite issue-specific differences in these variables.

Unexpectedly, the non-controllable responsibility frames had a negative effect on sympathy, but only in the diabetes groups. Since type 2 diabetes is mainly perceived as individually

controllable (Browne, Ventura, Mosely, & Speight, 2013, Gounder & Ameer, 2018), not acknowledging individual responsibility might have been dissonant with recipients' previous attributions (see Chong & Druckman, 2007), thus leading to more reactance and a less favorable emotional reaction toward the portrayed individual (see Niederdeppe, Shapiro, Kim, Bartolo, & Porticella, 2014, Niederdeppe, Roh, Shapiro, & Gillison, 2015). Future research should also investigate the effects of more complex or even competing responsibility frames while acknowledging recipients' preexisting attributions and emotional reactions toward specific (health) issues.

These results also have practical implications. Content analyses of health news found that causes and treatments of both diabetes and depression are portrayed disproportionately as individually controllable, while non-controllable causes and treatments, particularly social and societal ones, are often neglected (Gounder & Ameer, 2018, Zhang et al., 2016). Based on our findings, we reinforce the appeals of other researchers (e.g., Major, 2009, Wallack, 1993) to reconsider the predominance of individual responsibility in health reporting. To facilitate social support of people living with diabetes or depression, it appears effective to shift focus to the non-controllable aspects of these diseases, such as social determinants, genetic causes, or the responsibility of the social network. However, the notion of personal responsibility for health is so widely spread in individualized societies (Levy, 2019, Weiner, 1993, Wallack, 1993) that an overemphasis of social and societal responsibility might cause reactance by contradicting firmly held values. Instead, we propose a more balanced reporting on health responsibility which acknowledges causes and treatments at all levels, from individual predispositions and behaviors to the responsibility of social networks and societal actors.

Limitations

This study has several limitations we need to address. First, we measured social support intentions directed at a hypothetical person instead of an existing individual. This indirect measure served to keep the individual to be supported constant across all participants, making sure that the results are not confounded by different emotions and relationships toward real-life reference persons (see Greitemeyer, Rudolph, & Weiner, 2003). However, the hypothetical nature of the social support questions is likely different from the real-world experience, and not the same as successful social support (Schwarzer & Schulz, 2000). Also, the intention to be socially supportive does not seamlessly translate into actual supportive behavior (Sheeran & Webb, 2016).

Regarding external validity, effects observed in this study were small and only based on a single, short-term exposure. In everyday life, recipients interact with media frames in a much more complex way than in an experimental setting. Also, news stories do not always contain responsibility frames in their pure form (Iyengar, 1991). Thus, a standardized, single-exposure study like this one cannot capture the complexity in which people interact with responsibility frames in their everyday media practice.

An additional limitation concerns the aspect of the causal sequence of effects. Although our experimental design allows causal inferences about the effects of responsibility frames on attributions, mediators and outcomes were measured at the same time point, resulting in cross-sectional data. Therefore, conclusions about mediation need to be interpreted with caution (Maxwell & Cole, 2007). More longitudinal studies are needed to substantiate the sequence and persistence of the mediation effects we found in this study.

Finally, differential effects of causal and solution responsibility were not the focus of this study. Some research indicates that causal and solution responsibility may have different roles in the attribution process (Temmann, 2023, Sun, Krakow, John, Liu, & Weaver, 2016). Thus, future research should further investigate the differential effects of causal versus solution responsibility.

Conclusion

In sum, the results of this study highlight that responsibility frames in news media indirectly affect the support of people living with a health issue like diabetes or depression through social-societal attributions and sympathy.

Disclosure Statement

No potential conflict of interest was reported by the author(s).

Funding

The work was supported by the Deutsche Forschungsgemeinschaft [404881979].

Supplementary Material

Supplemental data for this article can be accessed online at https://doi.org/10.1080/10810730.2023.2232326

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