

The Pennsylvania State University

The Graduate School

**WHAT MESSAGES HELP ADDRESS PERIOD POVERTY? TESTING THE  
EFFECTIVENESS OF INDIVIDUAL AND COLLECTIVE NARRATIVES COMBINED  
WITH VISUALS OF MENSTRUAL BLOOD**

A Dissertation in

Mass Communications

by

Yin Yang

© 2024 Yin Yang

Submitted in Partial Fulfillment  
of the Requirements  
for the Degree of

Doctor of Philosophy

May 2024

The dissertation of Yin Yang was reviewed and approved by the following:

Jessica Gall Myrick  
Donald P. Bellisario Professor of Health Communication  
Donald P. Bellisario College of Communications  
Dissertation Advisor  
Chair of Committee

Chris J. Skurka  
Assistant Professor  
Donald P. Bellisario College of Communications

Mary Beth Oliver  
Bellisario Professor of Media Studies  
Donald P. Bellisario College of Communications

Jes L. Matsick  
Associate Professor of Psychology and Women's, Gender, and Sexuality Studies  
College of the Liberal Arts

Anthony Olorunnisola  
Professor & Associate Dean of Graduate Programs and Research  
Donald P. Bellisario College of Communications

## ABSTRACT

Narrative (or, telling a story) and using negative, arousing visuals can enhance message effectiveness. Yet, inconclusive findings in the literature indicate the importance and necessity to investigate these messaging strategies in different contexts and examine the boundary conditions under which they may lead to greater message effectiveness. Recruiting a sample of U.S. adults ( $N = 1229$ ), I conducted a 3 (nonnarrative vs. individual narrative vs. collective narrative)  $\times$  3 (no visual vs. visual before text vs. visual after text) + 1 (control) between-subjects, online experiment in the context of period poverty, which is inadequate access to menstrual products and other resources. I also tested the moderating role of audience gender identity in processing period poverty messaging.

Findings indicated that relative to the nonnarrative condition, the narrative conditions led to greater anger, which, in turn, positively predicted prosocial outcomes. Within narrative conditions, the individual narrative outperformed the collective narrative, in that the former evoked greater compassion and anger, which positively predicted the outcomes that would help address period poverty. Moreover, findings revealed that perceived narrativity (the degree to which a story is perceived to be narrative) helped explain the effects of individual (versus collective) narrative on narrative engagement and emotions, which were positively associated with prosocial outcomes. Additionally, the inclusion of a visual of menstrual blood in the period poverty message strengthened the effect of individual narrative on several persuasive outcomes via anger (but not via the hypothesized emotion: disgust). Findings also demonstrated the greater impact of the message manipulations on non-women participants than on women.

The present study contributes to the narrative persuasion literature by identifying underlying mechanisms of effectiveness of narrative (versus nonnarrative) messages, in general, and individual (versus collective) narratives, in particular. Further, this study identifies the

potential role of a negative, arousing visual in motivating deeper information processing, as well as the moderating role of audience gender identity in message processing. From a practical perspective, these findings provide important guidance for women's health advocates and policy makers on ways to design effective messages to combat period poverty.

## TABLE OF CONTENTS

LIST OF FIGURES .....	vii
LIST OF TABLES .....	ii
ACKNOWLEDGEMENTS .....	iii
Chapter 1 Introduction .....	1
Chapter 2 Literature Review .....	4
Narrative persuasion .....	4
Persuasive outcomes of narrative focus: Individual versus collective narratives .....	5
Mechanisms of narrative effects: Narrative engagement .....	12
Mechanisms of narrative effects: Emotions .....	14
Mechanisms of narrative effects: Message resistance .....	16
Mechanisms of narrative effects: Serial mediation .....	18
Disgust and its effects .....	19
Conceptualizing disgust .....	20
Effects of disgust .....	21
Gender difference .....	26
Chapter 3 Method .....	27
Participants .....	27
Procedure .....	29
Stimulus material .....	30
Measures .....	33
Analysis strategy .....	38
Chapter 4 Results .....	43
Effects of narrative (versus nonnarrative) messages .....	45
Direct effects of individual (versus collective) narratives .....	49
Mediation models .....	51
Interaction effects between text and visual conditions .....	64
Testing moderated mediation hypotheses .....	67
Examining gender differences through multigroup path analysis .....	69
Summary .....	70
Chapter 5 Discussion .....	73
Interpretation of findings .....	73
Narrative's role in enhancing persuasive outcomes via anger .....	73
The advantage for individual (versus collective) narrative .....	75
The positive effects of showing menstrual blood .....	78
The moderating role of gender .....	81

Theoretical implications.....82  
Practical implications.....83  
Limitations and future work.....84  
Conclusion .....86

References.....87

Appendix A Stimulus Material for Main Study.....101  
Appendix B Stimulus Material (Images) for Pilot Study.....109  
Appendix C Questionnaire for Main Study .....112  
Appendix D Nonsignificant Results of Separate Mediation Models .....121

## LIST OF FIGURES

Figure <b>1a</b> : Conceptual model testing the effects of different texts. ....	26
Figure <b>1b</b> : Conceptual model testing the interaction between text and visual conditions. ....	26
Figure <b>2</b> : Indirect effect between narrative (versus nonnarrative) messages and persuasive outcomes through anger. ....	49
Figure <b>3a</b> : Indirect effect between individual (versus collective) narrative and attribution of causal responsibility to individuals through compassion. ....	52
Figure <b>3b</b> : Indirect effect between individual (versus collective) narrative and attribution of causal responsibility to societal actors through compassion. ....	52
Figure <b>3c</b> : Indirect effect between individual (versus collective) narrative and policy support through compassion. ....	53
Figure <b>3d</b> : Indirect effect between individual (versus collective) narrative and donation intention through compassion. ....	53
Figure <b>4a</b> : Indirect effect between individual (versus collective) narrative and attribution of causal responsibility to societal actors through anger. ....	54
Figure <b>4b</b> : Indirect effect between individual (versus collective) narrative and policy support through anger. ....	54
Figure <b>4c</b> : Indirect effect between individual (versus collective) narrative and donation intention through anger. ....	54
Figure <b>5</b> : Simplified mediation model. ....	57
Figure <b>6</b> : Finalized serial mediation model. ....	60
Figure <b>7</b> : Conceptual model of exploratory analysis testing the mediating role of narrativity. ....	63
Figure <b>8</b> : Interaction between text and visual conditions on anger. ....	66

## LIST OF TABLES

Table 1: Sample description.....	28
Table 2: Pilot study results.....	32
Table 3: Descriptive statistics and scale reliability for measurements in the main study. ....	37
Table 4: Bivariate correlations of demographic variables included in the analyses. ....	41
Table 5: Descriptive statistics by experimental conditions.....	42
Table 6: Results of random assignment check.....	43
Table 7: Bivariate correlations of key measured variables. ....	44
Table 8: Descriptive statistics of outcome variables in narrative, nonnarrative, and control conditions.....	46
Table 9: Pairwise comparisons between narrative, nonnarrative, and control conditions. ....	46
Table 10: Modifications on the mediation model comparing narrative and nonnarrative. ....	48
Table 11: Descriptive statistics of outcome variables in individual narrative, collective narrative, and control conditions.....	50
Table 12: Pairwise comparisons between individual narrative, collective narrative, and control conditions.....	50
Table 13: Modifications on the complete mediation model.....	55
Table 14: Standardized direct and indirect effects revealed in the path analysis.....	57
Table 15: Modifications on the serial mediation model.....	59
Table 16: Standardized direct and indirect effects revealed in the serial mediation analysis.....	60
Table 17: Modifications on the mediation model with narrativity as a mediator. ....	62
Table 18: Results of exploratory mediation analysis with narrativity as a mediator. ....	63
Table 19: AIC and BIC of mediation models. ....	64
Table 20: Interaction effects between text and visual conditions on policy support and donation intention through anger. ....	67
Table 21: Summary of findings. ....	70



## ACKNOWLEDGEMENTS

There are countless people who have helped me approach this finish line of my Ph.D. journey, though I cannot list all of them here. To start, I want to thank my wonderful committee members: Drs. Jessica Gall Myrick, Christofer Skurka, Mary Beth Oliver, Jes L. Matsick. I cannot thank Jess enough for her support, encouragement, and expertise. As my academic advisor, Jess has helped me to grow and become a better scholar and teacher. I deeply appreciate her mentorship, allowing me to freely pursue the research I am passionate about while providing insightful, timely guidance throughout my four years at Penn State.

Chris has played an important role in my journey pursuing a Ph.D., too. By taking his classes, collaborating on projects, observing his teaching, and receiving his challenging questions (all the time), I have learned a lot from his intelligence and dedication to excellence. From Mary Beth, I learned the statistics needed for my research, and more importantly, I got inspired by her enthusiasm for making numbers and math such fun things to learn. I can never forget the path model "dancing" on the classroom's big screen. Last but not least, I am grateful for having Jes on my committee. Her knowledge in stigma, gender, and feminist psychology not only helped me complete my dissertation but boosted my confidence in conducting more research related to women's and gender minorities' health issues.

Additionally, I would like to thank some other faculty and staff members in the Bellisario College of Communications. I have developed my research and teaching skills by working as a teaching/research assistant or instructor of record under the supervision of many fabulous faculty members: Drs. Homero Gil de Zúñiga, Krishna Jayakar, Sara Liao, Lee Ahern, Juliet Pinto, Stephanie Madden, and Michelle Baker. The coordinator of the graduate program, Letitia Bullock, also deserves a shout-out. I cannot ask for a better person to help me with all the tedious tasks in milestone scheduling, reimbursement, course registration, etc.

My gratitude extends to my mom, Shouwei Tang, and my dad, Xiliang Yang. I haven't seen them since the beginning of my doctoral program (due to the COVID-19 pandemic and constantly expensive flight tickets). I am the only child, and I know they would rather have me study or work in China, but they never ask me to do so. They unconditionally support all the decisions I make. I am indebted to them. I also thank my partner, Dongyu Liang, for providing emotional and instrumental support whenever I need it, and for being the one who has driven thousands of miles back and forth between Milwaukee, WI/Detroit, MI, and State College, PA in the past four years when we are dealing with a long-distance relationship.

I am also grateful to the friends I have met at Penn State and in State College, including but not limited to those in the Bellisario College of Communications, Department of Communication Arts & Science, Asian Classic Music Club, Centre Safe. They make State College home for me.

## Chapter 1

### Introduction

Period poverty refers to inadequate access to menstrual products, sanitation facilities, and education (Michel et al., 2022). Affecting at least 1.25 billion people across the globe, period poverty poses threats to the physical, mental, and emotional well-being of people who menstruate (menstruators hereafter) (Michel et al., 2022; UN Women, 2019). Period poverty may directly cause physical health issues because without access to menstrual products, menstruators in some regions use leaves or rags to manage menstruation, which can cause infections and other medical problems (Miller, 2021). The impacts of period poverty on physical health can also be indirect, through lower frequency of exercise and skipping meals to save money (Miller, 2021).

Period poverty takes a toll on menstruators' mental health, too. Recent research has revealed that women experiencing period poverty are more likely to report moderate or high levels of depression (Cardoso et al., 2021). Additionally, teenage girls are often absent from school on a monthly basis due to a lack of menstrual products and the difficulty of publicly managing menstruation (Plan International, 2021). While one may think that period poverty only occurs in less developed countries, many menstruators in relatively developed countries also suffer from a lack of menstrual products, hygiene products, and/or education (Pycroft, 2022). Together, the aforementioned research demonstrates that period poverty is a pressing, global issue that requires greater awareness and more actions to address.

In light of these facts, there are an increasing number of initiatives and campaigns worldwide aimed at ending period poverty. Many of these groups focus on providing free menstrual products to those who need them. For instance, Alliance for Period Supplies is a nonprofit organization connecting and supporting organizations across the United States that

provide period support in local communities. The Cova Project, another example, is a registered Australian charity that has distributed 20,000 menstrual cups to girls and women in Liberia, Ghana, Uganda, Malawi, and South Africa as of February 2023.

Despite the important role it plays, free provision of menstrual products cannot address all of the issues related to period poverty. As such, more holistic, diverse approaches are needed to fight period poverty (Vora, 2020). Other pivotal goals discussed by scholars include removing taxes on menstrual products, destigmatizing menstruation and menstruators, and improving hygiene facilities (Fadnis, 2017; Vora, 2020). In other words, there is still a long way to go before achieving menstrual justice (Johnson, 2019).

To better achieve their goals, entities combating period poverty have to communicate with audience members appropriately, strategically, and responsibly. However, little is known about the messaging strategies that could help enhance message effectiveness in the context of period poverty. This is a unique messaging context given the stigma and taboo surrounding menstruation, the biological and gender issues involved, the need for structural, institutionalized change to end period poverty, and the possibility of emotional involvement as a response to period-related messages.

Taking all of these considerations into account leads the current research to focus on two potentially effective period poverty messaging strategies: telling a story (i.e., using narratives) and including a visual of menstrual blood. First, the role of narrative messages in reducing stigma (see Zhuang & Guidry, 2022 for a meta-analytic review) makes destigmatizing menstruation-related issues a possibility through this strategy. Second, since ending period poverty relies on policy change, a collective narrative (focusing on the story of a group of people) versus an individual narrative (focusing on one exemplar's story) may impact audience members' policy support perceptions differently (Skurka et al., 2020). In this sense, these two types of narratives need to be compared against each other in the context of period poverty in order to see what type

of narrative might be best at alleviating stigma, promoting policy support, and encouraging actions. Third, although adding visuals may not necessarily enhance persuasion (see Seo 2020 for a meta-analytic review), it is important to explore the impact of menstruation-related visuals. This is because images showing period blood may trigger a feeling of disgust, an emotion not only influencing information processing, retrieval, and memory, but also attention-grabbing (Rubenking, 2019). The possibility that using disgusting visuals may attract greater attention to period poverty provides a promising direction for message designers who seek to raise the public awareness of period poverty and motivate actions to combat period poverty.

Together, the purpose of this research is twofold. The first purpose is to test the effects of narrative (versus nonnarrative) messages and different types of narratives (collective versus individual) on causal responsibility attribution, stigma, policy support, and behavioral intention in the context of period poverty. The other purpose is to investigate how incorporating disgusting visuals of menstrual blood and their timing (before or after text) affect persuasive outcomes in this setting. Therefore, I conduct an experiment to examine the effects of narratives and menstrual visual placement.

In the following sections, a comprehensive literature review is outlined on narrative persuasion and disgust appeal, building on which I propose a series of hypotheses and research questions. Then, I describe an online, factorial, between-subjects experiment and present the results. Lastly, I discuss the findings, including their theoretical and practical implications, together with several directions for future research in narrative persuasion and disgust appeal.

## Chapter 2

### Literature Review

#### Narrative persuasion

Although scholars have defined narrative in various ways, they generally agree that a narrative message should include at least one character experiencing one or more events in certain settings (de Graaf et al., 2016). Thus, narratives are mostly concrete and specific, contrasting to didactic, statistical, or informational messages. While researchers are still seeking to unpack the mechanisms of narrative persuasion, the effectiveness of narratives has been documented across a variety of subfields of communication, including promoting narrative-consistent beliefs, attitudes, intentions, and behaviors (see Braddock & Dillard, 2016; Shen et al., 2015 for meta-analytic reviews), as well as reducing stigma (Zhuang & Guidry, 2022). These meta-analytic studies, however, have revealed relatively small effect sizes and several moderators of narrative persuasion. Additionally, other meta-analyses have found that narrative evidence is equally persuasive to, or even less persuasive than, statistical evidence (Xu, 2023; Zebregs et al., 2015).

Given the inconclusive findings in existing literature and the relatively novel issue like period poverty, it is necessary to investigate whether narrative (versus nonnarrative) messages are more effective in the outcomes of interest. Therefore, the first part of my dissertation is to replicate previous narrative persuasion research and test whether a narrative message is more persuasive than a nonnarrative message in the context of period poverty. The hypotheses comparing narrative and nonnarrative messages will be proposed below after the discussion of each outcome variable.

### **Persuasive outcomes of narrative focus: Individual versus collective narratives**

With increasing attention to narrative persuasion, researchers have been interested in variations of narratives and their impact on persuasiveness (see de Graaf et al., 2016 for a review), because narrative messages can vary in many respects across message, content, and thematic levels (Dahlstrom et al., 2017). The current research tests the impact of one message characteristic of narrative at the content level: Narrative focus. That is, whether a narrative message tells a story about one single character or a broader collective (Niederdeppe et al., 2012). The former one, or an individual narrative, structures a story around the experiences of one single individual, such as a single mother dealing with the period-related difficulties because of poverty. A collective narrative, in contrast, often illustrates the experiences of a collective having something in common. An example of a collective narrative could be a story about how those menstruators living below the poverty line manage their period. Narrative focus matters in narrative persuasion in general and the context of period poverty in particular, as discussed below.

#### ***Theoretical framework***

Multiple theories guide the investigation of narrative focus, though they do not suggest the exact same propositions as to the relative advantage for individual or collective narratives. To begin with, Iyengar (1991) distinguished episodic frames from thematic frames and suggested different effects of these two. Episodic frames depict societal issues in the form of a case study or event-oriented, concrete instance with a focus on a specific individual. By contrast, thematic frames refer to another way of storytelling that places “public issues in some more general or abstract context and takes the form of a ‘take out,’ or ‘backgrounder,’ report directed at general

outcomes or directions” (p. 14). The focus on an individual in episodically framed messages is more likely to direct audience’s attention to personal responsibility and promote victim blaming for a given societal issue than thematically framed messages, which reduces people’s support for policies addressing the issue (Iyengar, 1991). The proposition derived from Iyengar’s work has informed later research investigating the impact of narrative focus. However, it was not always supported in empirical testing. Some studies have even found opposite results, such that individual-focused frames actually increased policy support (e.g., Boukes, 2022; Grabe et al., 2017; Skurka et al., 2020).

Ostfeld and Mutz’s (2014) criticism provided a direction for thinking about the problem of the distinction between episodic and thematic framing effects and inconsistent findings in the literature. Their main argument is that in experimental research, episodic and thematic frames are not mutually exclusive in a single story. For instance, in journalism, an individual becoming unemployed would not make the news unless their situation was discussed with larger societal problems or trends (Ostfeld & Mutz, 2014). In a similar vein, Strange (2002) argued that a story about one’s experiences could also demonstrate how larger, societal factors may shape the character’s experiences, thoughts, and actions. As such, while an episodic frame may lead audience members to attribute responsibility to or blame a story protagonist, contextualizing the protagonist’s experiences with societal factors likely counteracts the negative influence (e.g., victim blaming) of an individual-focused story.

Therefore, exemplification theory and the identified victim effect provide the current investigation with more suitable theoretical foundations. According to the exemplification theory, if a message depicting a public issue includes the experiences of concrete individuals (versus abstract, statistical information), it can promote audience’s policy-related attitudes (Zillman & Brosius, 2000). The key mechanism of this effect is the capacity of exemplars in generating emotions among audience members. Additionally, the theoretical framework of identified victim



effect (Small et al., 2007) differentiates between identifiable and unidentifiable victims, and considers identifiable victims are more likely to encourage message recipients to take actions for change because of greater levels of sympathy and a sense of moral responsibility. The studies employing exemplification theory and the identified victim effect have provided highly consistent results in terms of the advantage for individual-focused stories (Ostfeld & Mutz, 2014). From the standpoint of experimental manipulation, the research contrasting the effects of identifiable victims relative to unidentifiable victims also minimizes the potential impact of confounding variables, which is a big concern for Iyengar's and his followers' work. Therefore, when comparing individual and collective narratives, I follow the practice of identifiable (versus unidentifiable) victims research, holding all information in the stimuli constant except the identification of an individual versus a collective (Small et al., 2007).

### *Attribution of causal responsibility*

Individuals attribute the causes of whatever happening in life as either external or internal (Weiner, 2010). External attributions refer to the inferences that external factors – which are out of one's control – lead things to happen, whereas internal attributions are the inferences that events occur due to individuals' attributes or behaviors, therefore being controllable.

Understanding and orienting people's attributions for a given issue matter because they affect people's beliefs in who is responsible for causing and/or solving it, and subsequently, affect support for policy solutions (Weiner, 2006). Following this reasoning, if people believe that external factors (e.g., tampon tax) cause period poverty, they are likely to support relevant changes in policy (e.g., removing tampon tax) to address the issue.

Informed by the theory on attributions, message design targeting policy change about an issue should lead audience members to believe that societal actors (e.g., policy makers, industry),

instead of individuals experiencing period poverty, cause the issue. But what specific message features can increase public policy for an issue requiring structural, institutionalized change? Niederdeppe et al. (2011) found that incorporating a story and a summary of evidence about obesity increased people's belief that societal actors should be responsible for causing obesity. One possible explanation was that telling a story reduced counterarguing, which in turn encouraged public support for addressing obesity.

The difference in causal responsibility attribution between individual and collective narratives is less clear. According to Iyengar (1991), episodically framed messages should result in the attribution of causal responsibility to individuals because they directed audience members' attention to the individuals, including their responsibilities for causing the issue. In this case, audience's cognitions in charge of "bigger pictures" are less readily available (Iyengar, 1991). However, as discussed above, the distinction between episodic and thematic frames appears to be problematic (Ostfeld & Mutz, 2014), which makes it unreasonable to follow the distinction. In contrast, exemplification theory would suggest a relative advantage for an individual narrative, which can be explained as follows: When a message with an exemplar describes a societal issue using concrete, individual instance, message receivers may generalize the depicted case, which in turn, shapes the perception of prevalence and severity of the public issue. In the meanwhile, message recipients may respond to the message emotionally, such as a feeling of compassion for the exemplar. These processes will eventually result in interpretations of societal, rather than individual, responsibilities. Recent research has confirmed this possibility (e.g., Boukes, 2022). Thus, the following hypotheses are proposed:

**H1:** Relative to a nonnarrative message, narrative messages will lead message recipients to attribute more causal responsibility to societal actors (menstrual product industry and policy makers) and less causal responsibility to the individuals.

**H2:** Relative to a collective narrative, an individual narrative will lead message recipients

to attribute more causal responsibility to societal actors (menstrual product industry and policy makers) and less causal responsibility to the individuals.

### *Stigma*

Stigma is defined as “an attribute that is deeply discrediting” and “reduces the bearer from a whole and usual person to a tainted, discounted one” (Goffman, 1963, p. 3). Menstruation-related issues have been socially stigmatized according to Goffman’s (1963) three categories of stigma, of which menstrual blood fits all. First, menstrual blood is considered one of the most disgusting substances of human body (Bramwell, 2001), thereby fitting Goffman’s first category “abominations of the body.” Relatedly, a stain of menstrual blood may be seen as a “blemish of individual character,” the second category of stigma. That is, leaks during menstruation are perceived to taint women’s femininity (Raftos et al., 1998), imply girls’ contamination (Lee, 1994), and be less competent (Roberts et al., 2002). The third category is “tribal” identities of marginalized groups, in that menstruation sets menstruators apart from normative human body (i.e., non-trans man body). Additionally, people may also be stigmatized due to poverty, or low socioeconomic status (Reutter et al., 2009). As such, menstruators suffering from period poverty face the double stigma.

Although preceding research has confirmed the role of narrative in reducing stigma (Zhuang & Guidry, 2022), distinguishing collective narratives from individual narratives based on their causal responsibility attributions may further benefit stigma reduction in the context of period poverty. Stigma is closely connected to shifting attributions of causal responsibility from individuals to societal factors because attributions of causal responsibilities play a role in (de)stigmatizing people who live with stigmatized issues (Weiner et al., 1988). Specifically, Smith’s (2007) model of stigma communication guides the examination of narrative focus

(individual versus collective) – stigma relationship. The model explicates that “responsibility on the part of the stigmatized for their membership in the stigmatized group” is one of the attributes of stigma messages (p. 463). In this sense, collective narratives that are potentially promoting more causal responsibility attributions to individuals should lead to stronger stigma-related outcomes, such as stigma attitude and isolation (Smith, 2007), compared to individual narratives. The following hypotheses are therefore posited:

**H3:** Narrative messages will lead to a lower level of stigma toward people experiencing period poverty than will a nonnarrative message.

**H4:** An individual narrative will lead to a lower level of stigma toward people experiencing period poverty than will a collective narrative.

#### ***Civic behavioral outcome: Policy support***

When it comes to a societal-level issue like period poverty, it is important to garner support for societal-level policy solutions, such as removing the tax on menstrual products. Research has confirmed the facilitating role of narrative (versus nonnarrative) messages in promoting policy support (Skurka et al., 2020). Additionally, policy support is also one of the most relevant outcomes in the narrative focus literature. On the one hand, Zhou and Niederdeppe (2017) revealed that stories about neighborhoods suffering from obesity led to stronger policy support than stories about an individual living with obesity. This finding aligned with the aforementioned framing effects (Iyengar, 1991). However, contradictory findings have also emerged. For instance, Skurka et al. (2020) found that individual narratives, relative to collective narratives, had a positive impact on policy support with respect to social determinants of health. In this study, the advantage for individual narratives can be explained by their effects on better engaging readers in the story, eliciting tender emotions, and motivating external thoughts about

the causes and solutions of social issues. These processing mechanisms, in turn, positively predicted policy support. These findings were in line with the exemplification theory (Zillmann & Brosius, 2000) that suggests that a story about an identifiable individual is superior in encouraging actions to address social issues given its vividness, compared to a story about multiple individuals. In light of the earlier discussion on theoretical frameworks, I follow the exemplification theory and propose the following hypotheses:

**H5:** Narrative messages will lead to greater support for policies addressing period poverty than will a nonnarrative message.

**H6:** An individual narrative will lead to greater support for policies addressing period poverty than will a collective narrative.

***Civic behavioral outcome: Intention to donate***

Because of the greater engagement and stronger emotional responses evoked by narrative messages, audience members exposed to narratives are more likely to provide help, such as donating money, to story protagonists than those exposed to nonnarrative messages (Oliver et al., 2012). Along the line of narrative focus, however, intention to donate has been less researched. But if the exemplification theory holds, audience members exposed to an individual narrative should feel motivated to do something and help fix the social problem to a greater extent than their counterparts seeing a collective narrative. In a similar vein, Small et al.'s (2006) identified victim effect suggests that people were more likely to donate money to an identifiable orphan, victim, or family than to unidentifiable ones embedded in a collective. Therefore, I suggest the following hypotheses:

**H7:** Narrative messages will lead to greater intention to donate than will a nonnarrative message.

**H8:** An individual narrative will lead to greater intention to donate than will a collective narrative.

### **Mechanisms of narrative effects: Narrative engagement**

In explaining the inconclusive findings about relative effectiveness of individual versus collective narrative, Skurka et al. (2020) argued that there might exist several competing mechanisms of effects of narrative focus. Therefore, it is important to examine possible mechanisms together in order for a more comprehensive understanding of narrative focus and its impacts. The first, and most oft-cited set of mechanisms of narrative effects concerns the degree to which audience members are engaged with the story (Slater & Rouner, 2002). Narrative engagement entails multiple dimensions, often including identification with the story character(s) (Cohen, 2001) and transportation into the story world (Green & Brock, 2000).

#### ***Identification***

Both Slater and Rouner's (2002) Extended Elaboration Likelihood Model and Moyer-Gusé's (2008) Entertainment Overcoming Resistance Model emphasize the role of identification in processing narrative messages. Identification occurs at the character level, when a message recipient takes on the perspective, thoughts, and feelings of a character and imagines themselves being the character (Cohen, 2001). As a result, the recipient is likely to accept the character's attitudes, intentions, and behaviors without much thought (Hamby et al., 2018).

Despite the ample evidence showing identification's mediating role in narrative effects, only limited studies have tested how narrative focus affected the level of identification. For example, Skurka et al. (2020) found that individual narrative promoted policy support via greater

identification with the story character, Cynthia, who was struggling to find healthy food. This finding corroborated the psychic numbing effect that suggests a negative relationship between number of characters in undesirable situations and behavioral outcomes through narrative engagement (Västfjäll et al., 2014). However, Zhou and Niederdeppe (2017) found that the inclusion of the story character's inner thoughts and feelings, a commonly seen practice in individual narratives, significantly decreased identification with the character. Together, I would argue that while reading a story about one single character (i.e., individual narrative), audience members have a clear target to identify with, which is more difficult in the case of a collective narrative. Additionally, Zhou and Niederdeppe's study did not refute the advantage for individual narratives in promoting identification. Instead, their finding revealed the impact of one feature (among many others) of individual narratives. Therefore, the following hypothesis is posited:

**H9:** The positive relationship between an individual (versus collective) narrative and persuasive outcomes will be mediated by greater identification with the story character.

### *Transportation*

Transportation, as the message-level absorption in a story, occurs when a message receiver loses themselves in the story, with the real world being partially inaccessible (Green & Brock, 2000). Once audience members are transported into the story, they may become psychologically distant from their own beliefs, therefore easily adopting story-consistent beliefs (Green, 2006). These beliefs, in turn, are associated with story-consistent attitudes, intentions, and behaviors.

Building on the psychic numbing effect, the fewer characters that a narrative depicts, the greater that message recipients engage in the story (Västfjäll et al., 2014). However, studies that compared individual versus collective narrative in terms of their contribution to transportation did

not provide clear results. A few studies did not find a significant relationship between individual (versus collective) or personalized (versus non-personalized) narrative and transportation (Skurka et al., 2020; Wald et al., 2021). The research that revealed the impact of depicting one character's inner states on transportation found the association to be significantly negative (Zhou & Niederdeppe, 2017). Because of the unclear impact of narrative focus on transportation, a research question is proposed:

**RQ1:** Will transportation mediate the relationship between an individual (vs. collective) narrative and persuasive outcomes?

### **Mechanisms of narrative effects: Emotions**

It is very likely that emotions emerge when one reads, listens, or watches a narrative message (Oatley, 2002). However, early scholarship in relation to narrative persuasion, such as Slater and Rouner's (2002) Extended Elaboration Likelihood Model and Moyer-Gusé's (2008) Entertainment Overcoming Resistance Model, does not consider the role of emotional responses as mechanisms of narrative effects. The exclusion of emotions from narrative persuasion literature may also – at least partially – explain the conflicting results as to the relative effectiveness of individual versus collective narratives (Polletta & Redman, 2020). Therefore, recent scholarly discussion about narrative effects, such as Bilandzic et al.'s (2020) Emotional Effects of Science Narratives Model, has included emotions, one component that can be elicited by narrative messages and in turn, predict persuasive outcomes.

Following the tradition of appraisal theories (Scherer et al., 2001), audience members of a narrative message may react to the narrative emotionally because of their evaluation of the message relative to their own goals. Emotions, in turn, shape some downstream behavioral outcomes due to their corresponding action tendencies (Lazarus, 1991). In line with prior research



that examined emotional reactions to narratives depicting underprivileged people (Skurka et al., 2020), the current study tested the mediating roles of several prominent emotions, including both positive and negative ones (compassion, sadness, disgust, anger).

First, the greater feelings of tender emotions (e.g., compassion and sadness) elicited by an individual narrative as opposed to a collective narrative can be explained with the notion of compassion fade (Västfjäll et al., 2014). Specifically, as the number of people in an undesirable situation increases, message recipients who encounter the message featuring those people may feel less emotionally attached to them. In other words, the emotional attachment is higher when audience members are exposed to a story about one single person in need. One step further, when message receivers experience greater tender emotions, their hostility emotions toward the protagonist (e.g., anger and disgust) should be lowered (Skurka et al., 2020).

Yet, audience emotions may be even more complicated, due to emotional responses can be elicited not only toward the story character(s), but toward other relevant entities, such as the groups or societal actors who are responsible for causing the issue. For instance, Aarøe (2011) found that when people in Denmark learned about the 24-year rule, an unfair rule in Danish immigration law, they felt angry and disgusting toward those responsible for the rule. The emotions, in turn, positively predicted attitudes in line with the (pro or con) frame of messages. In terms of period poverty, societal actors who should take the responsibility include law and policy makers and industry that produces and sells expensive menstrual products. As alluded to above, individual narratives likely lead to more attribution of causal responsibility to large, societal factors. This means, audience members may blame those who should be responsible for causing the issue of period poverty at the societal level, which should be related to several negative emotions toward societal actors. In light of the complexity of emotional responses to period poverty messaging, I propose the following research question:

**RQ2:** How will (a) compassion, (b) sadness, (c) disgust, and (d) anger mediate the

relationship between an individual (vs. collective) narrative and persuasive outcomes?

### **Mechanisms of narrative effects: Message resistance**

The advantage for narratives, relative to rhetorical, didactic, and/or statistical messages, may also be attributed to lower levels of resistance, which refers to “an individual’s motivated response, triggered by the perceived persuasive attempt and enacted to disregard the intent and/or the content of persuasion” (Ratcliff & Sun, 2020, p. 415). Message resistance takes multiple forms, among which counterarguing and perceived threat to freedom are the most often cited ones.

#### ***Counterarguing***

Counterarguing occurs when audience members generate thoughts that dispute persuasive arguments (Slater & Rouner, 2002). The body of research that investigates counterarguing in narrative persuasion falls into one of the two camps: (a) testing how narrative messages lowers counterarguing and (b) examining the multi-step processing of narratives with a focus on the relationship between narrative engagement and counterarguing (Ratcliff & Sun, 2020). Despite the different focuses (outcome or message processing), Ratcliff and Sun’s meta-analytic study found the relatively consistent role of narratives in reducing counterarguing. This may be because it is not easy for audience members to recognize an explicit argument in a narrative than in a didactic or statistical message, making it more difficult to identify the argument to counterargue with while reading the narrative (Dal Cin et al., 2004).

Previous studies that tested whether individual or collective narratives were more influential in reducing counterarguing did not find significant results (Skurka et al., 2020; Zhou &

Niederdeppe, 2017). Put differently, narrative focus seemed to have little impact on counterarguing. On the one hand, the greater that audience members identify with a story character, the less likely that they generate counterarguments (Ratcliff & Sun, 2020). On the other hand, the focus on the character in an individual narrative may lead message recipients to ponder what the story character could have done differently to avoid the undesirable situation (Polletta et al., 2021). These two mechanisms may occur simultaneously, thereby counterbalancing each other's impact. Due to the limited evidence from preceding research, the following research question is investigated:

**RQ3:** Will counterarguing mediate the relationship between an individual (vs. collective) narrative and persuasive outcomes?

### ***Perceived threat to freedom***

Perceived threat to freedom, in the context of persuasion, is defined as one's perception that their freedom to think or act is threatened by a persuasive attempt (Brehm & Brehm, 1981). Parallel to counterarguing, perceived threat to freedom is a form of message resistance in the narrative persuasion scholarship (Ratcliff, 2021; Ratcliff & Sun, 2020). Since narrative messages can lower the degree to which audience members perceive the persuasive intent in messages (Slater & Rouner, 2002), narratives should generate less perceived threat to freedom than nonnarrative messages. However, it remains understudied as to whether narrative focus affects perceived threat to freedom. Without sufficient empirical evidence, the next hypothesis is built upon the advantage for individual narratives in narrative engagement, as outlined above. Given that narrative engagement is negatively associated with perceived threat to freedom (Ratcliff & Sun, 2020), individual (versus collective) narratives that result in greater narrative engagement are likely to further reduce the perception of freedom threat. In light of this reasoning, the

following hypothesis is posited:

**H10:** The positive relationship between an individual (vs. collective) narrative and persuasive outcomes will be mediated by reduced perception of freedom threat.

### **Mechanisms of narrative effects: Serial mediation**

To better understand narrative processing, scholars have revealed that cognitive and emotional responses to narrative messages may be correlated, implying that several narrative processing variables may mediate narrative impact serially. Along this line of work, Ratcliff and Sun (2020) found that narrative engagement was negatively associated with message resistance in their meta-analysis. Although the findings were based on correlational data, relevant theories explicating narrative persuasion indicate that narrative engagement and message resistant might be serial mediators between narratives and persuasive outcomes. For instance, Slater and Rouner's (2002) Extended Elaboration Likelihood Model suggests that identification with story characters and transportation should reduce counterarguing, because (partially or fully) losing self during identification and becoming immersed in the narrative world can make audiences less critical of messages and less encouraged to counterargue message points. Moreover, identification and transportation may also lower perceived threat to freedom by reducing people's perceived persuasive intent (Ratcliff & Sun, 2020).

Therefore, if an individual (vs. collective) narrative leads to greater narrative engagement, it is possible that increased identification and transportation result in persuasive outcomes through reduced message resistance. With little empirical evidence in extant literature, I ask and test the following research question:

**RQ4:** Will narrative engagement (identification, transportation) and message resistance (counterarguing, perceived threat to freedom) mediate the relationship between an

individual (vs. collective) narrative and persuasive outcomes serially?

Story-induced emotions may be part of the serial mediation explaining narrative impact, too. Bilandzic et al.'s (2020) recent model of Emotional Effects of Science Narratives assumes that stories often elicit emotional responses, which in turn may facilitate, inhibit, or change the processing of information presented to viewers. In fact, most narrative processing mechanisms, such as narrative engagement, encompass emotional components (Busselle & Bilandzic, 2009; de Graaf et al., 2009). To examine whether narrative-induced emotions influence narrative processing and how they affect persuasive outcomes, I test the research question about the serial mediating roles of emotions and message resistance:

**RQ5:** Will emotions (compassion, sadness, disgust, anger) and message resistance (counterarguing, perceived threat to freedom) mediate the relationship between an individual (vs. collective) narrative and persuasive outcomes serially?

### **Disgust and its effects**

Although the emotion of disgust is outlined above, it is important to delve more deeply into its potential effects on audiences given the context of menstruation, which many people will view as disgusting. In discussing inconclusive findings in the narrative persuasion literature, researchers have called for attention to the context in which audience members are exposed to stories and how the context affects narrative effects (Heley et al., 2020; Polletta & Redman, 2020). This call is especially applicable in the context of period poverty, because a comprehensive understanding of period poverty, including factors contributing to it and potential solutions of it, requires the contextualization of period poverty, as well as the contextualization of menstruation in general (Johnston-Robledo & Stubbs, 2013). That is, audience members rarely encounter messages related to period poverty in vacuum. While it is difficult to manipulate

broader, social contexts, the current study investigates one contextual factor on a smaller scale: (disgusting) visuals accompanying text.

Anecdotal evidence has shown that using visuals of period in the context of menstrual justice has the potential to combat period poverty. For instance, Rupri Kaur, a female poet, performer, and photographer, posted a photo of herself on the Internet before the International Women's Day 2023, which featured her sleeping in a bed on one side. Therefore, viewers of the photo can see a blood stain on her pants and another one blood stain on the sheet. When posting this photo on her Instagram, Rupri Kaur wrote several paragraphs talking about issues related to menstruation, including period poverty and menstrual stigma. Within 24 hours, this post received approximately 7,000 comments, with many expressing agreement and sharing personal experiences. It appeared that this post combining text and visual encouraged people to talk about menstruation openly. This phenomenon demonstrated the effectiveness of Rupri Kaur's post. However, we cannot know the degree to which the visual, text, and the combination of visual and text contributed to the effectiveness, respectively.

It is important to investigate the influence of such a visual of menstrual blood because as some comments to Rupri Kaur's post have shown, menstrual blood may seem disgusting to many people. In fact, menstrual blood can be thought of as one type of disgusting substance that elicits pathogen disgust, and disgust is likely to affect people's attention, information processing, and action tendency (Rubenking, 2019). Because of the potentials of using visuals of menstrual blood and disgusting nature of such visuals, the second purpose of this dissertation research aims to answer one question: what impact will visuals of menstrual blood have in the context of period poverty narrative?

### **Conceptualizing disgust**

Disgust is a negative emotion with high arousal, characterized as intuitive and immediate rejection, offense, or repulsion to noxious objects (Darwin, 1965). Considering both academic and lay understanding, Nabi (2002) described disgust as a feeling of “grossed out.” The elicitors of disgust can be categorized into four groups: core or visceral disgusts, animal-nature disgusts, interpersonal disgusts, and moral disgusts (Rozin et al., 2008). According to Rozin et al., quintessential stimuli evoking core disgust include body envelop violation and body products. As such, menstrual blood is undoubtedly an elicitor of core disgust. Core disgust is derived from human oral rejection system, “which stimulates a sense of repulsion and a withdrawal from the elicitor, was preadapted for easy extension to other threatening entities, including social and moral threats” (Rozin et al., 2008, p. 11). Similarly, other scholars studying disgust have also proposed that people inherently tend to reject disgusting body products, such as blood, to avoid pathogens (Toronchuk & Ellis, 2007).

### **Effects of disgust**

From the conceptualization of disgust, it appears that the direct response to disgust is avoiding the disgust elicitor. However, media effects theorists have explicated the impact of disgust on multiple outcomes (e.g., Leshner et al., 2011; Nabi, 1999). The following literature review focuses on the outcomes that speak to the effectiveness of using disgust in media messages (and especially in period poverty messaging): recognition memory, stigma, and civic behavioral outcomes.

### ***Recognition memory***

Recognition memory is a relatively understudied effect of media messages. Yet it is a

prerequisite for many other effects to happen (Leshner et al., 2011). According to the Limited Capacity Model of Motivated Mediated Message Processing, or LC4MP (Lang, 2006), one approach to improve message recognition is including arousing, negative stimuli, such as disgusting images (Rubenking & Lang, 2014). This is because arousing and negative stimuli motivate the automatic allocation of cognitive resources to message processing, with which the message is encoded into working memory (Lang, 2006). This results in better recognition memory post message exposure. Prior studies have confirmed the role of disgusting images in facilitating recognition memory of message content that discouraged cigarette use (Leshner et al., 2009; Leshner et al., 2011; Leshner et al., 2018).

As disgust in messaging receives increasing attention, researchers have tested the relative effectiveness of different strategies of using disgusting images. One body of research concerns the placement of disgusting images. Specifically, disgusting images may facilitate people's recognition of message presented after the images, while dampen their recognition of information presented prior to the images (Newhagen & Reeves, 1992; Rubenking & Lang, 2014). However, the influence of disgust placement has only been tested in video modality. It remains unknown as to whether disgust placement matters in the form of text plus static image, which is still a commonly seen format in today's media landscape. Filling the void, the following hypothesis is tested in the context of period poverty narrative:

**H11:** The message showing a disgusting visual of menstrual blood before a narrative will lead to better information recognition from the narrative, compared to the message showing a disgusting visual of menstrual blood after a narrative.

The LC4MP is not the only theory positing that recognition memory may be affected by emotional appeals. Nabi's (1999) cognitive-functional model (CFM) also concerns the effects of a few negative emotions – including disgust – on information processing, recall, and resulting attitude change. Through the lens of CFM, disgust is considered an emotion associated with



avoidance tendencies, which will reduce message receivers' motivation to carefully process subsequent message. Reduced motivation, in turn, may result in worse post-exposure information recognition, therefore dampening the message effectiveness. In other words, the LC4MP and CFM suggest different predictions about the role of disgust in information recognition. Therefore, a competing hypothesis is proposed:

**H12:** Compared to the message showing a narrative only (without a disgusting visual), the message showing a disgusting visual of menstrual blood before a narrative will lead to worse information recognition from the narrative via increased disgust.

### *Stigma*

Researchers have acknowledged that using disgust appeals could be risky (Nelson-Field et al., 2013). One of undesirable ramifications of disgusting messages is reinforcing the stigma of stigmatized issues and/or people. As explicated by Smith's (2007) model of stigma communication, disgust induced by messages may promote stigma-related outcomes, such as avoiding future interaction with those in stigmatized situations and further stigmatization of undesirable conditions (e.g., period poverty). For example, Dawydiak et al. (2020) found that pathogen disgust positively predicted stigmatization of people with mental health conditions. In the context of this study, however, the role of disgust in facilitating stigma may not hold because, as outlined above, narratives help reduce stigma (Zhuang & Guidry, 2022). In other words, the stigma reinforced by disgust may be cancelled out by a narrative. While this possibility has not been empirically tested before, the current study suggests and examines following hypothesis and research question:

**H13:** Relative to the message showing a narrative only (without a disgusting visual), the message showing a disgusting visual of menstrual blood and a narrative will lead to

greater stigma toward people experiencing period poverty via increased disgust.

**RQ6:** Will people who read a message showing a disgusting visual of menstrual blood and a narrative have a different level of stigma toward people experiencing period poverty, relative to people in the control group (who see nothing)?

As discussed above, a nonnarrative message is more likely to increase the stigma of people experiencing period poverty than narrative messages. Then, including an additional disgust image may add to the stigma. As such, the message showing an image of menstrual blood with a nonnarrative message should result in the highest level of stigma among all messages. This reasoning leads to the following hypothesis:

**H14:** The message showing a disgusting visual of menstrual blood and a nonnarrative message will lead to greater stigma than all other message conditions via increased disgust.

### ***Behavioral outcomes: Policy support and intention to donate***

When disgust is used to prevent individuals from performing undesirable actions such as smoking, it works well in reducing harmful behaviors (Clayton et al., 2017; Leshner et al., 2009; Leshner et al., 2011; Leshner et al., 2018). However, the use of a disgusting visual in messages related to period poverty does not aim to elicit avoidance. Instead, messages about period poverty, such as a story about those experiencing period poverty, are designed to call for actions that help combat the issue. Put differently, with a different purpose and message content, the research with respect to cigarette use cannot necessarily guide the current investigation.

Then, what shall we expect from the inclusion of disgust in terms of post-exposure behavioral outcomes? Following stigma research, assigning stigma can be considered an approach to creating and maintaining social order by excluding people with stigmatized marks

(Parker & Aggleton, 2003). Due to this social exclusion, individuals without stigma are unlikely to take into consideration the interest of those with stigmatized marks (Smith, 2007), not to mention behavioral outcomes such as policy support and donation. Therefore, if the use of disgust enhances stigma as expected, then the advantage for (individual) narratives in promoting civic behaviors may disappear with the disgust visual, because of stigma-induced social exclusion.

Additionally, it is also important to think about what the message content is really like in combatting period poverty, which may influence the post-exposure behavioral outcomes. The message is often sent out by a nonprofit organization or an activist, who seeks to raise awareness of period poverty and mobilize audience members to take actions. However, disgusting items may bring about negative attitudes toward the overall message content. For instance, Shimp and Stuart (2004) found that the addition of disgust (operationalized as raw roast) in an advertisement significantly reduced consumers' ad evaluation through the feeling of disgust. As such, if message recipients of a period poverty message feel disgusting after seeing menstrual blood, they may hold negative attitudes toward the overall content, which in turn, reduce the possibility to follow the advocacy in the message. However, the context of period poverty is different from the context of Shimp and Stuart's (2004) research, because the former aims to promote the common good with little to do commercial and profit. If audience members recognize the purpose of the period poverty message, their evaluation of the message should not be that negative. Given the uncertainty and limited evidence from prior research, I ask a research question:

**RQ7:** Will the message showing a disgusting visual of menstrual blood reduce the facilitating role of (individual) narratives in promoting (a) policy support and (b) intention to donate?

Figure 1a presents the conceptual model summarizing the hypotheses and research questions comparing different texts (nonnarrative, individual, and collective narrative messages).

Figure 1b presents the conceptual model summarizing the hypotheses and research questions

about the interaction between different text and visual conditions.

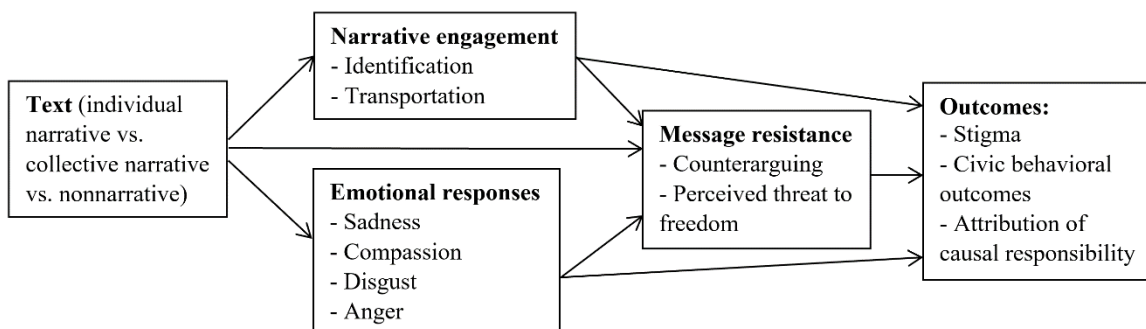


Figure 1a: Conceptual model testing the effects of different texts.

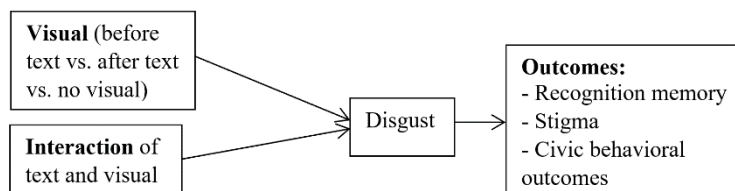


Figure 1b: Conceptual model testing the interaction between text and visual conditions.

### Gender difference

Gender is one of the most influential audience characteristics in the current investigation, because first, period poverty is undoubtedly a gendered issue, and second, gender may affect people's emotional and cognitive experience during message exposure regardless of the message topic (Brebner, 2003; Christov-Moore et al., 2014; Woller et al., 2007). Therefore, the last research question I explore is how gender affects the relationships between period poverty message (with different text and visual conditions) and message effectiveness through multiple cognitive and emotional responses:

**RQ8:** How will gender affect audience responses to and persuasive outcomes of period poverty messaging?

## Chapter 3

### Method

The current research employed an online, factorial, between-subjects experimental design with 10 conditions: 3 (text: nonnarrative vs. individual narrative vs. collective narrative)  $\times$  3 (visual: no visual vs. visual before text vs. visual after text) + 1 (control: no message or visual).

### Participants

#### Sample and recruitment

To determine the sample size, I conducted an a priori power analysis using G\*Power software (version 3.1.9.7) (Faul et al., 2007). First, I obtained the effect size Cohen's  $d = 0.2$  (Cohen's  $f = 0.1$ ) by averaging the effect sizes from previous studies that examined the impact of narrative focus (Niederdeppe et al., 2012; Skurka et al., 2020; Wald et al., 2021). Because research has found Cohen's  $f$  of the timing of disgusting visuals (before or after text) greater than 1 (Rubenking & Lang, 2014), the predicted interaction between narrative focus and timing of disgusting visuals should not be larger than 0.1. Therefore, the effect size was set to 0.1. Then, I calculated the sample size with the type of test "ANOVA: Fixed effects, special, main effects and interactions" under the F tests family, with the effect size 0.1, alpha error probability .05, power 0.80, numerator df 4, and number of groups 10. The analysis suggested a sample size  $N = 1199$ . Considering the cases with missing values, straight lining, or/and failure in attention check, I recruited 1254 participants.

Participants were recruited through the CloudResearch platform

(<https://www.cloudresearch.com/>) between December 15 and December 16, 2023. The inclusion and exclusion criteria were as follows: (a) Participants should be adults (i.e., 18 years of age or older), (b) living in the United States; and, (c) who did not participate in the pilot study (see details about the pilot study below). Given the gendered nature of period poverty, I recruited similar numbers of female and male participants. They were compensated with \$2.42 for completing the study. After removing the participants who failed the attention check ( $n = 25$ ), 1229 participants were included in the analyses.

### Sample description

Table 1 presents the demographic information of the sample. Overall, the sample included slightly more men-identifying participants than women-identifying participants, more Republicans than people with other political affiliations. Additionally, the majority in the sample identified as White/Caucasian and most of the participants received some college education or more advanced education.

Table 1: Sample description.

Variable	Category	n	M	SD
Gender	Female/Women	596		
	Male/Men	626		
	Other	7		
Political affiliation	Republican	451		
	Democratic	339		
	Independent	395		
	Other	43		
	American Indian, Native American, or Alaska Native	34		
Race	Asian or Asian American	25		
	Black or African American	44		
	Hispanic or Latino/a/x	18		
	Native Hawaiian or other Pacific Islander	4		
	White or Caucasian	1069		
	Not listed/Other	20		
	Multiracial	15		

	Less than a high school diploma	13	
	High school graduate or equivalent	198	
Education	Some college, no degree	324	
	Associate's degree	153	
	Bachelor's degree	315	
	Master's degree	185	
	Doctorate	41	
Household income (per year, before tax)	Less than \$20,000	139	
	\$20,000 to \$34,999	216	
	\$35,000 to \$49,999	202	
	\$50,000 to \$74,999	283	
	\$75,000 to \$99,999	164	
	Over \$100,000	223	
Age		68	11.22
Familiarity with menstruation	Female/Women	94	15.99
	Male/Men and other	49	29.78

### Procedure

Eligible participants recruited from CloudResearch's Prime Panels were automatically directed to the study housed on Qualtrics. The Qualtrics page introduced some basic information about the study and asked for each participant's consent to participate in this research. After indicating their consent and passing the screening question about their age, participants were randomly assigned to one of the ten experimental conditions and exposed to the corresponding message.

Next, participants provided their responses to a series of questions measuring the variables of interest, with the order of questions being randomized whenever possible. Specifically, after exposure to the stimuli, all participants first answered an attention check question and a manipulation check question, which were shown to participants in a random order. Then, participants reported their emotional responses during the stimulus exposure. For the four discrete emotions, there were twelve questions in total, which were displayed in a random order, too. Immediately after measuring emotions, participants completed the scales of narrative

engagement and message resistance. The order of measuring identification, transportation, counterarguing, and perceived threat to freedom was randomized. Finally, in terms of the measures for the outcome variables, the items were also randomized. At the end, participants reported their demographic information (gender, political affiliation, race, education, household income) and the degree to which they were familiar with menstruation.

### **Stimulus material**

The experimental stimuli were formatted as blog posts. Depending on the condition, the blog posts either showed both text and a visual or text only. I describe the details of the experimental stimuli below and provide all stimuli in Appendix A.

### **Text Conditions**

The texts used as stimuli were adapted from multiple sources. I used an actual CNN news story from 2018 (<https://www.cnn.com/2018/10/03/health/uk-period-poverty-asequals-intl/index.html>) as the basis of the post and relied on additional scholarly work with respect to period poverty (Van Eijk et al. 2016; Vora, 2020) to add facts about period poverty into the stimuli. I first created the individual narrative following the CNN article and presented the story of Michelle, a single mother struggling with financial difficulties and period poverty. For the collective narrative, I edited the individual narrative to make period poverty a collective issue affecting many people who menstruate (not just Michelle). Otherwise, I kept the essence of all the facts about period poverty and the structure of the narrative the same. Finally, to create the nonnarrative message, I replaced concrete details in narrative messages with didactic, statistical, and informational sentences.



To ensure the success of the narrative manipulation, participants in the main study (except those in the control condition) were asked to report the degree to which they perceived the text to be a story with three items on a 7-point Likert scale (Ren & Shen, 2022;  $M = 4.99$ ,  $SD = 1.39$ , Cronbach's  $\alpha = .84$ ). Each participant's responses to the three items were averaged as the narrative perception scale. Results of an independent samples t-test showed that participants exposed to the (individual and collective, combined) narrative messages ( $n = 752$ ) reported higher scores ( $M = 5.28$ ,  $SD = 1.24$ ) than those reading the nonnarrative message ( $n = 338$ ;  $M = 4.34$ ,  $SD = 1.49$ ),  $t(554) = 10.21$ ,  $p < .001$ . Therefore, the narrative manipulation was successful.

Although narrative focus (individual versus collective) was also manipulated, it was an intrinsic message feature. Following O'Keefe (2003), it was unnecessary to check if audiences actually perceived or noticed this manipulation as many inherent message features subconsciously affect audiences without them being able to accurately recall its presence in the message.

### **Visual Conditions**

The goal of the operationalization of a menstruation visual was to include images that elicited a moderate level of disgust and seemed realistic to audiences. To achieve this goal, I collected an array of images from the Internet of women with menstrual blood on their clothing. Then, to select eligible, appropriate visuals from this collection of images, I conducted a pilot study with 102 participants recruited from CloudResearch's Prime Panels on August 31, 2023. The sample for the pilot study included 70 women-identifying and 32 men-identifying participants, with the mean age being 55 years ( $SD = 17.87$ ). In general, the participants were familiar with menstruation or periods ( $M = 85.51$ ,  $SD = 25.64$ ), which was measured by asking participants to indicate how familiar they were with menstruation/periods (0 = not familiar at all,

100 = extremely familiar).

In this pilot study, participants were exposed to 12 images of menstrual blood in a random order (see all images in Appendix B). After seeing each of the images, participants indicated how much they agreed that the image “grossed me out,” “repulsed me,” and “made me sick to my stomach” on a 7-point Likert scale. I averaged the responses to these items as the disgust scale. Also on a 7-point Likert scale, participants reported how much they found the image “to be realistic.” After completing the pilot study, participants were compensated with \$1.00.

Table 2 presents the results of this pilot study.

Table 2. Pilot study results.

	Disgust		Perceived realism
	Cronbach's $\alpha$	$M(SD)$	$M(SD)$
Image #1	.96	3.54(2.10)	5.91(1.63)
Image #2	.94	2.99(1.81)	4.74(2.15)
Image #3	.93	4.06(2.17)	5.06(2.13)
Image #4	.94	3.98(2.13)	5.21(2.00)
Image #5	.93	4.26(2.18)	4.82(2.20)
Image #6	.92	4.11(2.15)	4.76(2.22)
Image #7	.92	3.41(2.03)	5.52(1.89)
Image #8	.92	3.93(2.10)	5.29(1.99)
Image #9	.92	4.24(2.11)	4.94(2.18)
Image #10	.94	3.97(2.11)	5.17(1.91)
Image #11	.95	4.35(2.24)	4.84(2.17)
Image #12	.93	4.08(2.14)	5.06(2.05)

As outlined above, the pilot study's goal was to find realistic images that elicited a moderate level of disgust among participants. Accordingly, image #5 and image #11 were selected. Although only one image was needed for each condition showing visual, I decided to choose two that met the criteria and used either of them randomly, for the sake of generalizability.

### **Measures**

All variables were measured on a 7-point Likert scale from 1 (*strongly disagree*) to 7 (*strongly agree*) unless stated otherwise. The descriptive statistics and scale reliability of key measurements are reported in Table 3. The descriptive statistics by experimental conditions can be found in Table 4. See Appendix C for the full instrument (i.e., online questionnaire).

#### **Attribution of causal responsibility**

Following Heley et al. (2020), I asked participants how much responsibility they thought each of the relevant groups had for causing the problem of period poverty on a 7-point Likert scale from 1 (*not at all*) to 7 (*a great deal*). Participants rated the causal responsibility of (a) individuals experiencing period poverty, (b) the menstrual product industry, and (c) policy makers. Participant's response to the first item was the *attribution of causal responsibility to individuals*, whereas the *attribution of causal responsibility to societal actors* was created by averaging the responses to the second and third items.

#### **Stigma**

Stigma was measured using 12 items adapted from (Link et al., 1989) that had been used in recent research (e.g., Smith et al., 2023). Participants were asked to think about people experiencing period poverty and rate their agreement with the items. Sample items include “Most people feel that experiencing period poverty is a sign of personal failure” and “Most people would accept a person experiencing period poverty as a teacher of young children in a public school” (reverse coded). I averaged participants’ responses to the 12 items to create the stigma scale.

### **Policy support**

Participants were asked to report their support for 8 policies proposed to address period poverty, on a 7-point Likert scale from 1 (*strongly oppose*) to 7 (*strongly support*). The policies were cited from the Menstrual Equity For All Act of 2021 (2021). The degree of support to all 8 policies was averaged to create the policy support scale.

### **Intentions to donate**

Participants’ intentions to donate money to organizations that are combating period poverty was measured using 3 items. Sample item includes “In the next six months, I will try to donate money to organizations combating period poverty.” The scale of donation intention was created by averaging the responses to the 3 items.

### **Recognition memory**

Following previous research (Clayton et al., 2017; Leshner et al., 2011), recognition data

were obtained by participants indicating whether they believed the information was from the message they viewed. Specifically, participants were provided with seven sentences related to period poverty and asked to judge whether each of these sentences was true or false based on the stimulus material. Each correct answer meant one point with each wrong answer leading to zero point, so participants' scores could range from 0 (all wrong answers) to 7 (all correct answers).

### **Identification**

Identification was measured with 5 items developed by Tal-Or and Cohen (2010). For different text conditions, the language used to measure identification was slightly different. Participants assigned to the individual narrative condition were told to think about “Michelle featured in the blog post, please rate your agreement with the following statements.” Sample items for the individual narrative include “I think I understood Michelle well,” “While reading, I felt like Michelle felt.” On the other hand, participants assigned to the collective narrative and nonnarrative conditions were instructed to think about “people experiencing period poverty, as discussed in the blog post, please rate your agreement with the following statements.” Sample items for these two conditions include “I think I understood them well,” “While reading, I felt like they felt.” I averaged participants' responses to the 5 items as the identification scale.

### **Transportation**

To assess transportation, participants reported how much they disagreed or agreed with 5 items used in prior research (Appel et al., 2015). Sample items include “I could picture myself in the scene of the events described in the blog post” and “I was mentally involved in the blog post while reading it.” The transportation scale was obtained by averaging participants' responses to

the 5 items.

### **Compassion**

Compassion was measured using 3 items adapted from Lu and Schuldt (2016), asking how much participants felt compassionate, softhearted, and tender during the message exposure on a 7-point Likert scale from 1 (*not at all*) to 7 (*a great deal*). The compassion scale was created by averaging the levels of compassion, softheartedness, and tenderness.

### **Sadness**

Sadness was measured using 3 items, which asked participants how much they felt sad, dreary, and sorrow when reading the message on a 7-point Likert scale from 1 (*not at all*) to 7 (*a great deal*) (Dillard et al., 1996; Kim & Niederdeppe, 2014). I average the levels of sadness, dreariness, and sorrow to create the scale of sadness.

### **Disgust**

I measured how much participants felt grossed out, sick, and disgusting when viewing the message on a 7-point Likert scale from 1 (*not at all*) to 7 (*a great deal*) (Dillard & Shen, 2018). Participants' responses to these 3 items were averaged to be the disgust scale.

### **Anger**

Anger was measured by asking participants how much they felt angry, outraged, and

infuriated on a 7-point Likert scale from 1 (*not at all*) to 7 (*a great deal*) (Dillard & Shen, 2005).

The scale of anger was created by averaging the levels of anger, outrage, and infuriation.

### **Counterarguing**

Four items measuring counterarguing were adapted from Moyer- Gusé and Nabi (2010). Participants reported their agreement with the items. Sample item includes “I was looking for flaws in the author’s arguments.” The responses to these 4 items were averaged to create the counterarguing scale.

### **Perceived threat to freedom**

Following Dillard and Shen (2005), participants indicated how much they disagreed or agreed with 4 items. Sample item includes “The blog post tried to make decision for me.” I averaged the responses to these 4 items to create the scale of perceived threat to freedom.

**Table 3:** Descriptive statistics and scale reliability for measurements in the main study.

	<i>M</i>	<i>SD</i>	Reliability
Attribution of causal responsibility to individuals	2.97	1.84	-
Attribution of causal responsibility to societal actors	4.04	1.71	.71
Stigma	4.25	0.91	.84
Policy support	5.17	1.40	.97
Intention to donate	3.58	1.66	.98
Recognition memory	6.03	1.20	-
Identification	4.73	1.30	.88
Transportation	4.52	1.44	.89

Compassion	4.51	1.44	.88
Sadness	3.99	1.55	.77
Anger	3.82	1.94	.93
Disgust	2.80	1.67	.83
Counterarguing	2.81	1.26	.82
Perceived threat to freedom	2.42	1.38	.88

---

### **Analysis strategy**

#### **Analysis strategy overview**

Hypotheses (Hs) 1, 3, 5, and 7 sought to compare narrative and nonnarrative messages in terms of their effects on several outcomes of interest. Given that these hypotheses did not address comparisons between types of narratives, I collapsed the individual and collective narratives into a single narrative condition and then ran a one-way multivariate analysis of variance (MANOVA) in SPSS. The MANOVA had three conditions (narrative, nonnarrative, control), five outcome variables (attributions of causal responsibility to societal actors and individuals, stigma, policy support, and intention to donate), and a series of control variables (see discussion of control variables below). When the MANOVA revealed significant overall differences, I conducted pairwise mean comparisons with Least Significant Difference (LSD) to compare the effectiveness of narrative and nonnarrative messages, as well as post-hoc analyses with Holm's sequential Bonferroni comparisons to examine the difference among three text conditions.

H2, H4, H6, and H8 offered predictions about the difference between individual and collective narratives on same set of outcomes. I ran a MANOVA in SPSS with three conditions



(individual narrative, collective narrative, and control), as well as with the same outcome and control variables that were included in the first MANOVA. If the MANOVA revealed significant overall differences, I also conducted pairwise mean comparisons with LSD for the hypotheses and post-hoc analyses with Holm's sequential Bonferroni comparisons to compare the three text conditions.

H9, H10, and Research Questions (RQs) 1-5 address a series of mediation effects explaining the relationships between the text condition (individual narrative vs. collective narrative) and outcome variables. The control condition was not included in the mediation analyses as participants in that condition did not respond to questions about the mediators. To test H9, H10, and RQ1-RQ3 (indirect effects with parallel mediators), I first conducted separate mediation analyses using the PROCESS macro in SPSS (Model 4; Hayes, 2018).

Then, to test the mediation effects in the multivariate context, I ran a path analysis using AMOS. Missing data were handled via regression imputation in SPSS. Regression imputation, in essence, uses the regression equation generated by complete cases to predict missing values (Tabachnick & Fidell, 2018). For these mediation analyses, the independent variable was the text condition: individual versus collective narrative. The mediators included identification, transportation, four discrete emotions (compassion, sadness, anger, disgust), counterarguing, and perceived threat to freedom. The same outcome and control variables that were entered in the MANOVA were included in the path analysis, too. That was, I included the control variables as exogenous variables predicting the outcomes. The model was conducted using a bias-corrected bootstrapping procedure ( $N = 2,000$ ) with 95% confidence intervals. I started the model with all variables and paths, and then modified the model following the modification indices, such as adding theoretically meaningful paths and error covariances, and removing the nonsignificant paths. I did one modification (e.g., adding one path, removing one path) each time, and stopped until the model showed acceptable fit indices.

In terms of RQ4 and RQ5 concerning serial mediation, I ran another path analysis in AMOS with text condition (individual versus collective narrative) as the independent variable, mediating variables that were significantly affected by the experimental condition as revealed by the aforementioned MANOVA and PROCESS macro models, and all dependent and control variables used in the first path analysis. The only difference between the two path analyses was the second one including serial mediators, as shown in Figure 1. The model was also conducted using a bias-corrected bootstrapping procedure ( $N = 2,000$ ) with 95% confidence intervals.

Hypotheses 11-14 and Research Questions 6-7 examine the interaction effects between different text and visual conditions on several outcomes with or without the feeling of disgust being a mediator. For the direct relationships (H11, RQ6, RQ7), I ran multiple two-way MANOVA in SPSS. The independent variables were text and visual conditions, and the outcomes variables included memory recognition, stigma, and civic behavioral outcomes. If the MANOVA revealed significant overall differences, I conducted pairwise mean comparisons with the adjustment of alpha level when necessary. In terms of the indirect relationships (H12-14), I first ran two sets of analysis of covariance (ANCOVA) with two independent variables (text and visual conditions), one dependent variable (disgust), and the relevant control variables. Then I ran two sets of MANOVA with the same independent variables and control variables, as well as two dependent variables (memory recognition and stigma). If the ANCOVA and MANOVA revealed significant differences, I then ran path analyses in AMOS to unpack the indirect effects.

Finally, to answer RQ8, I divided participants into two groups based on their gender (women or non-women) and then ran multigroup comparisons using AMOS. By doing so, I was able to examine whether participants in the two gender groups differed significantly in any of the paths.

### Control variables

In testing the effects of texts only (without considering the role of visual), namely, Hs 1-10 and RQs 1-5, visual condition (no visual vs. visual before text vs. visual after text) was included as a control variable after being dummy coded with the no visual condition serving as the reference group.

In all analyses, I also controlled the following demographic factors: (a) political affiliation (with Republicans being the reference group), because people with different political affiliations were found to process narrative messages differently (Niederdeppe et al., 2011); (b) education, which was significantly correlated with memory recognition ( $r = .06, p = .043$ ) and stigma ( $r = -.09, p = .001$ ); (c) familiarity with menstruation (measured on a 0-100 scale), because it was significantly correlated with memory recognition ( $r = .15, p < .001$ ), attribution of causal responsibility to societal actors ( $r = .14, p < .001$ ), stigma ( $r = .07, p = .020$ ), policy support ( $r = .25, p < .001$ ), and intention to donate ( $r = .17, p < .001$ ). Additionally, the correlations between these demographic variables were either negligible or weak (see Table 4), making it appropriate to include them in the analyses.

Table 4: Bivariate correlations of demographic variables included in the analyses.

Variable	1	2	3	4
1. Political affiliation: Democratic				
2. Political affiliation: Independent	-.43***			
3. Political affiliation: Other	-.12***	-.13***		
4. Education	.07**	-.01	-.06*	
5. Familiarity with menstruation	.09**	-.02	-.02	-.07*

Note. \*  $p < .05$ . \*\*  $p < .01$ . \*\*\*  $p < .001$ .

Table 5. Descriptive statistics by experimental conditions.

	Control		Nonnarrative		Individual narrative			Collective narrative		
	<i>M(SD)</i>	No visual	Visual before text	Visual after text	<i>M(SD)</i>	Visual before text	Visual after text	<i>M(SD)</i>	Visual before text	Visual after text
		<i>M(SD)</i>	<i>M(SD)</i>	<i>M(SD)</i>		<i>M(SD)</i>	<i>M(SD)</i>		<i>M(SD)</i>	<i>M(SD)</i>
Individual attribution	3.69(1.60)	2.72(1.80)	2.96(1.85)	2.60(1.75)	2.93(1.99)	2.91(1.86)	3.03(1.90)	3.15(1.87)	2.82(1.75)	3.10(1.86)
Societal attribution	3.31(1.68)	4.11(1.57)	4.07(1.71)	3.73(1.69)	4.01(1.68)	4.30(1.55)	4.04(1.86)	4.33(1.73)	3.98(1.86)	4.10(1.73)
Stigma	4.47(0.86)	4.42(0.89)	4.10(0.94)	4.20(0.93)	4.34(0.92)	4.22(0.92)	4.24(0.82)	4.24(0.90)	4.17(0.97)	4.11(0.89)
Policy support	4.61(1.51)	5.44(1.32)	5.40(1.34)	5.13(1.27)	5.18(1.37)	5.37(1.29)	5.14(1.31)	5.16(1.51)	5.19(1.47)	5.15(1.43)
Intention to donate	3.09(1.67)	3.74(1.57)	3.58(1.68)	3.49(1.48)	3.50(1.66)	3.92(1.57)	3.66(1.66)	3.63(1.58)	3.59(1.75)	3.69(1.80)
Recognition memory	-	6.09(1.13)	6.13(1.10)	6.02(1.16)	5.92(1.22)	6.18(1.09)	6.18(1.28)	6.02(1.16)	5.81(1.31)	5.90(1.25)
Identification	-	4.90(1.27)	4.76(1.24)	4.61(1.20)	4.60(1.48)	4.90(1.36)	4.67(1.27)	4.83(1.30)	4.56(1.27)	4.78(1.26)
Transportation	-	4.56(1.44)	4.46(1.41)	4.36(1.35)	4.45(1.53)	4.82(1.42)	4.52(1.43)	4.60(1.29)	4.44(1.52)	4.44(1.56)
Compassion	-	4.35(1.66)	4.51(1.61)	4.23(1.62)	4.50(1.67)	5.05(1.54)	4.64(1.63)	4.45(1.67)	4.42(1.72)	4.39(1.60)
Sadness	-	3.97(1.70)	3.98(1.65)	3.69(1.57)	3.92(1.49)	4.30(1.44)	4.01(1.46)	4.04(1.51)	3.99(1.64)	3.92(1.50)
Anger	-	3.66(1.94)	3.70(2.04)	3.32(1.80)	3.79(1.91)	4.37(1.94)	4.06(1.97)	3.96(1.72)	3.72(1.96)	3.73(1.85)
Disgust	-	2.72(1.70)	2.99(1.81)	2.63(1.61)	2.54(1.60)	2.92(1.76)	2.94(1.63)	2.79(1.72)	2.73(1.59)	2.89(1.63)
Counterarguing	-	2.64(1.28)	2.88(1.39)	2.89(1.21)	2.78(1.19)	2.66(1.24)	2.83(1.23)	2.75(1.33)	2.88(1.13)	2.97(1.35)
Perceived threat to freedom	-	2.10(1.35)	2.30(1.34)	2.50(1.45)	2.40(1.33)	2.35(1.29)	2.54(1.52)	2.51(1.39)	2.43(1.34)	2.59(1.36)

## Chapter 4

### Results

Prior to running analyses to test hypotheses and research questions, I first checked whether the random assignment used in the experimental design was successful by examining the relationships between experimental conditions and individual difference variables. For each continuous individual difference variable, I ran an analysis of variance (ANOVA), listing condition as the independent variable and the individual difference variable as the dependent variable. For each categorical individual difference variable, I conducted a Chi-square test, with the experimental condition and individual difference variable as two independent variables. Table 6 presents the results of these analyses, showing that random assignment was successful given the statistical non-significance of all tests.

Table 6: Results of random assignment check.

Analysis of variance	
Age	$F(9, 1929) = .71, p = .70$
Education	$F(9, 1929) = 1.31, p = .23$
Household income	$F(9, 1929) = 1.12, p = .35$
Familiarity with menstruation	$F(9, 1929) = .74, p = .68$
Chi-square test	
Ethnicity	$\chi^2 (df = 36, N=1228) = 40.34, p = .28$
Race	$\chi^2 (df = 63, N=1229) = 80.62, p = .07$
Gender	$\chi^2 (df = 45, N=1229) = 80.62, p = .10$
Political affiliation	$\chi^2 (df = 27, N=1228) = 17.80, p = .91$

Before hypothesis testing, I also ran bivariate correlations among key measured variables (see Table 7).

Table 7: Bivariate correlations of key measured variables.

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1														
2	-.05													
3	.03	-.06												
4	-.19***	.57***	.02											
5	-.05	.35***	.04	.53***										
6	-.24***	.14***	-.05	.22***	.07*									
7	-.12***	.48***	.08**	.63***	.49***	.17***								
8	-.13***	.50***	.01	.68***	.58***	.23***	.78***							
9	-.14***	.45***	.02	.57***	.51***	.23***	.61***	.68***						
10	-.08**	.42***	-.03	.49***	.48***	.15***	.51***	.59***	.75***					
11	-.06*	.45***	-.05	.45***	.43***	.14***	.47***	.53***	.60***	.71***				
12	.17***	.11***	-.13***	.03	.13***	-.08*	.07*	.10***	.20***	.42***	.47***			
13	.34***	-.42***	-.03	-.61***	-.37***	-.30***	-.61***	-.59***	-.55***	-.41***	-.38***	.11***		
14	.29***	-.14***	-.09**	-.32***	-.09**	-.21***	-.26***	-.18***	-.21***	-.07*	-.08**	.26***	.50***	
15	.04	.15**	.06*	.19**	.23**	.08*	.29**	.30**	.32**	.27**	.22**	.07*	-.23**	-.04

Note. 1 = Individual attribution, 2 = Societal attribution, 3 = Stigma, 4 = Policy support, 5 = Intention to donate, 6 = Recognition memory, 7 = Identification, 8 = Transportation, 9 = Compassion, 10 = Sadness, 11 = Anger, 12 = Disgust, 13 = Counterarguing, 14 = Perceived threat to Freedom, 15 = perceived narrativity. \*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$ .

## Effects of narrative (versus nonnarrative) messages

### *Direct effects of narrative (versus nonnarrative) messages*

Hypotheses (Hs) 1, 3, 5, and 7 anticipated the advantage for narrative (versus nonnarrative) in terms of attributing more causal responsibility to societal actors and less to individuals (H1), lower stigma toward people experiencing period poverty (H3), greater support for policy solutions (H5), and stronger intention to donate (H7).

A one-way MANOVA revealed a significant main effect for text condition, Wilks'  $\Lambda = .97$ ,  $F(10, 2404) = 3.41$ ,  $p < .001$ , partial  $\eta^2 = .01$ . The univariate analysis for causal responsibility attribution to individuals (individual attribution hereafter) revealed a significant main effect for text condition,  $F(2, 1206) = 3.73$ ,  $p = .02$ , partial  $\eta^2 = .01$ . Similarly, the univariate analysis for causal responsibility attribution to societal actors (societal attribution hereafter) also revealed a significant main effect for text condition,  $F(2, 1206) = 3.03$ ,  $p < .05$ , partial  $\eta^2 = .01$ . The follow-up pairwise comparisons with no adjustments (i.e., LSD) found that participants in the narrative condition reported a significantly higher level of individual attribution ( $M = 2.99$ ) than those in the nonnarrative condition ( $M = 2.77$ ),  $SE = .12$ . Despite the statistical significance, this finding was opposite to H1. Thus, H1 was not supported.

In terms of H3, the univariate analysis for stigma revealed a nonsignificant main effect of the text condition,  $F(2, 1206) = 1.23$ ,  $p = .29$ , partial  $\eta^2 = .00$ , rejecting H3.

Testing H5, the univariate analysis for policy support revealed a significant main effect of text condition,  $F(2, 1206) = 9.40$ ,  $p < .001$ , partial  $\eta^2 = .02$ . The follow-up pairwise comparisons using LSD, however, did not find a significant difference in policy support between narrative ( $M = 5.20$ ) and nonnarrative ( $M = 5.33$ ) messages,  $SE = .09$ . The main effect of text condition occurred because of the difference between the control ( $M = 4.62$ ) and narrative conditions ( $M =$

5.20),  $SE = .14$ , and between the control ( $M = 4.62$ ) and nonnative conditions ( $M = 5.33$ ),  $SE = .14$ . H5 was not supported.

Additionally, the univariate analysis for donation intention demonstrated a significant main effect of text condition,  $F(2, 1206) = 4.28$ ,  $p = .01$ , partial  $\eta^2 = .01$ . However, the difference in donation intention between narrative ( $M = 3.66$ ) and nonnarrative texts ( $M = 3.60$ ), revealed by LSD pairwise comparisons, was not statistically significant,  $SE = .11$ , therefore rejecting H7.

Table 8 presents the descriptive statistics of dependent variables by three text conditions. Table 9 presents the results of pairwise comparisons (between narrative, nonnarrative, and control conditions) using different post-hoc analysis methods.

**Table 8:** Descriptive statistics of outcome variables in narrative, nonnarrative, and control conditions.

	Control (No text)		Nonnarrative		Narrative	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Individual attribution	3.31	1.68	2.77	1.80	2.99	1.87
Societal attribution	3.70	1.61	3.99	1.66	4.11	1.75
Stigma	4.47	0.86	4.23	0.93	4.22	0.90
Policy support	4.62	1.52	5.33	1.32	5.20	1.40
Intention to donate	3.08	1.67	3.60	1.58	3.66	1.68

**Table 9:** Pairwise comparisons between narrative, nonnarrative, and control conditions.

Dependent variable	Comparison groups		<i>p</i> - value	
			LSD	Bonferroni
Individual attribution	Control	Nonnarrative	.01	.04
	Control	Narrative	.18	.52
	Nonnarrative	Narrative	.04	.13
Societal attribution	Control	Nonnarrative	.13	.39
	Control	Narrative	.02	.05
	Nonnarrative	Narrative	.24	.73
Stigma	Control	Nonnarrative	.14	.43
	Control	Narrative	.13	.39
	Nonnarrative	Narrative	.94	1.00
Policy support	Control	Nonnarrative	.00	.00
	Control	Narrative	.00	.00
	Nonnarrative	Narrative	.12	.35
Intention to donate	Control	Nonnarrative	.02	.05
	Control	Narrative	.00	.01



---

Nonnarrative	Narrative	.57	1.00
--------------	-----------	-----	------

---

As shown in Table 9, while the difference between narrative and nonnarrative messages was not in line with the hypotheses, there were significant differences between control and experimental conditions via Holm's sequential Bonferroni comparisons. First, participants in the control condition attributed greater causal responsibility to individuals ( $M = 3.31$ ) than participants in the nonnarrative condition ( $M = 2.77$ ),  $SE = .20$ . Second, participants who read the period poverty messages, regardless of nonnarrative or narrative, showed greater support for policy solutions (nonnarrative:  $M = 5.33$ ; narrative:  $M = 5.20$ ) compared to those seeing nothing ( $M = 4.62$ ),  $SE = .14$  (same  $SE$  for the nonnarrative-control compassion and narrative-control comparison). Lastly, a similar pattern was revealed for donation intention: reading period poverty messages, either nonnarrative or narrative, led to stronger intentions to donate (nonnarrative:  $M = 3.60$ ; narrative:  $M = 3.66$ ), compared to reading nothing ( $M = 3.08$ ),  $SE = .18$  (for the nonnarrative-control comparison) or  $.17$  (for the narrative-control comparison).

***Exploratory analysis: Indirect effects of narrative (versus nonnarrative) messages***

Despite the nonsignificant direct effect of narrative (versus nonnarrative) messages on the outcome variables, it is still possible that narrative and nonnarrative messages would differ in certain cognitive and/or emotional responses that were captured by the mediating variables. Therefore, I conducted a path analysis in AMOS, with the text format (narrative versus nonnarrative) as the independent variable, emotions and message resistance variables as the mediators, and the relevant outcomes as the dependent variables. I did not include the narrative engagement variables because it was difficult, if not impossible, for participants exposed to the nonnarrative message to identify with the story protagonist or be transported into the story world.

The original model showed an unacceptable model fit:  $\chi^2 = 3428.129$ ,  $df = 54$ ,  $p = .000$ , RMSEA = .240, 90% CI: .233 - .246, CFI = .368. Thus, I modified the model by deleting nonsignificant paths and adding paths and error covariances that were theoretically meaningful (see Table 10 for the model modifications).

**Table 10:** Modifications on the mediation model comparing narrative and nonnarrative.

Modification	Rationale	
Correlate errors	Compassion and sadness Counterarguing and perceived threat to freedom Disgust and anger Societal attribution and policy support Policy support and donation intention Sadness and anger Anger and counterarguing Anger and perceived threat to freedom Compassion and anger Sadness and disgust	There might be shared variance that cannot be captured by the constructs.
Delete nonsignificant paths	Education to donation intention Democratic affiliation to individual attribution Message manipulation to disgust Sadness to stigma Independent affiliation to societal attribution Message manipulation to counterarguing Independent affiliation to donation intention Anger to stigma Anger to individual attribution Compassion to individual attribution Sadness to individual attribution Education to societal attribution Independent affiliation to individual attribution Counterarguing to stigma Education to individual attribution Independent affiliation to stigma Familiarity with menstruation to stigma Familiarity with menstruation to societal attribution Education to policy support Familiarity with menstruation to individual attribution Sadness to societal attribution Disgust to societal attribution Perceived threat to freedom to societal attribution Democratic affiliation to stigma Perceived threat to freedom to stigma Message manipulation to sadness Disgust to donation intention	

	Message manipulation to compassion Disgust to policy support Message manipulation to perceived threat to freedom	
Add suggested paths	Compassion to counterarguing	Emotion and resistance may mediate narrative impact serially.

The final model achieved an acceptable model fit:  $\chi^2 = 486.751$ ,  $df = 73$ ,  $p = .000$ , RMSEA = .072, 90% CI: .066 - .078, CFI = .923. Results revealed that participants in one of the narrative conditions reported greater anger than those viewing the nonnarrative message, which in turn, positively predicted greater societal attribution, policy support, and donation intention (see Figure 2). However, narrative messages did not outperform the nonnarrative message in terms of other mediators.

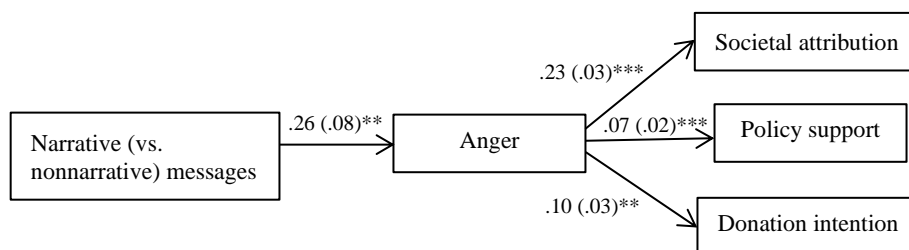


Figure 2: Indirect effect between narrative (versus nonnarrative) messages and persuasive outcomes through anger.

*Note.* Unstandardized coefficients and standard errors (in parentheses) are reported. \*\*  $p < .01$ , \*\*\*  $p < .001$ . The indirect effects are significant. When societal attribution is the outcome:  $b = .06$ , 95% CI = [.02 - .10]. When policy support is the outcome:  $b = .02$ , 95% CI = [.01 - .04]. When donation intention is the outcome:  $b = .03$ , 95% CI = [.01 - .05].

### Direct effects of individual (versus collective) narratives

Hs 2, 4, 6, 8 hypothesized that an individual narrative would outperform a collective narrative, reflected by more causal responsibility to societal actors and less to individuals (H2), lower stigma toward people experiencing period poverty (H4), greater support for policy

solutions (H6), and stronger intention to donate (H8).

A one-way MANOVA found that the main effect for text condition approached the significance level, Wilks'  $\Lambda = .98$ ,  $F(10, 1734) = 3.41$ ,  $p = .05$ , partial  $\eta^2 = .01$ . The following univariate analyses revealed that the main effect of text condition was statistically significant for policy support,  $F(2, 871) = 5.23$ ,  $p = .01$ , partial  $\eta^2 = .01$ , and approached the significance level for stigma,  $F(2, 871) = 2.97$ ,  $p = .05$ , partial  $\eta^2 = .01$ , and donation intention,  $F(2, 871) = 2.95$ ,  $p = .05$ , partial  $\eta^2 = .01$ . Therefore, H2 was not supported.

To determine whether Hs 4, 6, 8 were supported, I conducted pairwise comparisons with LSD and Bonferroni post-hoc tests. The results showed that there were no significant differences between individual and collective narratives in policy support, stigma, or donation intention. Hs 4, 6, 8 were, therefore, not supported.

Table 11 presents the descriptive statistics of dependent variables by the three text conditions. Table 12 presents the results of pairwise comparisons (between individual narrative, collective narrative, and control conditions) using different post-hoc analysis methods.

**Table 11:** Descriptive statistics of outcome variables in individual narrative, collective narrative, and control conditions.

	Control (No text)		Individual narrative		Collective narrative	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Individual attribution	3.31	1.68	2.95	1.91	3.03	1.83
Societal attribution	3.70	1.61	4.11	1.72	4.12	1.77
Stigma	4.47	0.86	4.27	0.88	4.18	0.92
Policy support	4.62	1.52	5.23	1.32	5.17	1.47
Intention to donate	3.08	1.67	3.70	1.64	3.63	1.72

**Table 12:** Pairwise comparisons between individual narrative, collective narrative, and control conditions.

Dependent variable	Comparison groups		<i>p</i> - value	
			LSD	Bonferroni
Individual attribution	Control	Individual narrative	.21	.62
	Control	Collective narrative	.38	1.00
	Collective narrative	Individual narrative	.53	1.00

Societal attribution	Control	Individual narrative	.05	.15
	Control	Collective narrative	.06	.19
	Collective narrative	Individual narrative	.85	1.00
Stigma	Control	Individual narrative	.21	.62
	Control	Collective narrative	.02	.07
	Collective narrative	Individual narrative	.12	.37
Policy support	Control	Individual narrative	.00	.00
	Control	Collective narrative	.01	.03
	Collective narrative	Individual narrative	.30	.88
Intention to donate	Control	Individual narrative	.02	.05
	Control	Collective narrative	.06	.17
	Collective narrative	Individual narrative	.41	1.00

Despite the nonsignificant difference between individual and collective narratives, Holm's sequential Bonferroni comparisons suggested that reading the individual narrative boosted policy support ( $M = 5.23$ ) and donation intention ( $M = 3.70$ ) relative to the control group (policy support:  $M = 4.62$ ,  $SE = .15$ ; donation intention:  $M = 3.08$ ,  $SE = .19$ ). Additionally, participants exposed to the collective narrative reported greater policy support ( $M = 5.17$ ) than those assigned to the control condition ( $M = 4.62$ ),  $SE = .15$ .

## Mediation models

### *Separate mediation models*

H9 hypothesized that identification would mediate the impact of individual (versus collective) narrative on causal responsibility attribution (to individuals or societal actors), stigma, policy support, and intention to donate. Results of five separate mediation models showed that identification was not a significant mediator between the narrative focus and any of the persuasive outcomes (see Figures A1-A5 in Appendix D). H9 was not supported.

RQ1 asked whether transportation would mediate the relationship between individual (versus collective) narrative on the five outcome variables. Results of five separate mediation

models showed that transportation was not a significant mediator between narrative focus and any of the persuasive outcomes (see Figures A6-A10 in Appendix D).

RQ2(a) addressed the mediating role of compassion between the individual (versus collective) narrative and persuasive outcomes. Results of five separate mediation models revealed that compassion significantly mediated the impact of individual (versus collective) narrative on reduced attribution of causal responsibility to individuals (Figure 3a), increased attribution of causal responsibility to societal actors (Figure 3b), greater support for policy solutions (Figure 3c), and stronger intention to donate (Figure 3d). However, compassion did not significantly mediate the impact of narrative focus on stigma (Figure A11 in Appendix D).

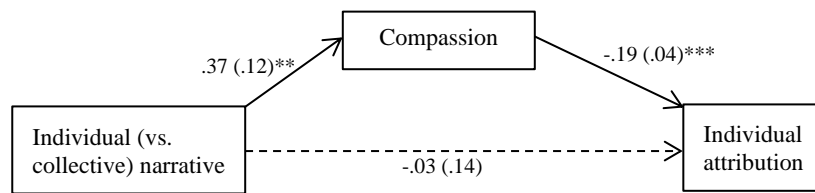


Figure 3a: Indirect effect between individual (versus collective) narrative and attribution of causal responsibility to individuals through compassion.

Note. Unstandardized coefficients and standard errors (in parentheses) are reported. The indirect effect is significant:  $b = -.07$ , 95% CI =  $[-.13 - -.02]$ . \*\*  $p < .01$ , \*\*\*  $p < .001$ .

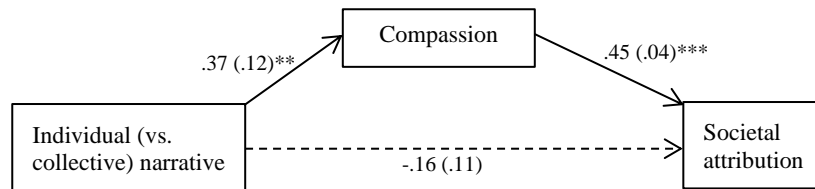


Figure 3b: Indirect effect between individual (versus collective) narrative and attribution of causal responsibility to societal actors through compassion.

Note. Unstandardized coefficients and standard errors (in parentheses) are reported. The indirect effect is significant:  $b = .17$ , 95% CI =  $[.06 - .28]$ . \*\*  $p < .01$ , \*\*\*  $p < .001$ .

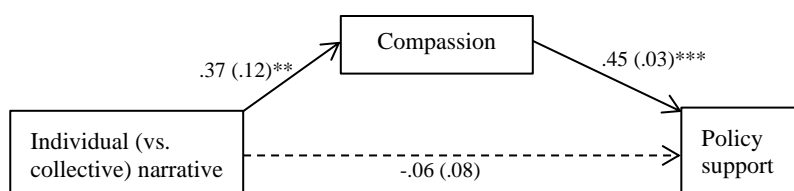


Figure 3c: Indirect effect between individual (versus collective) narrative and policy support through compassion.

*Note.* Unstandardized coefficients and standard errors (in parentheses) are reported. The indirect effect is significant:  $b = .17$ , 95% CI = [.06 - .28]. \*\*  $p < .01$ , \*\*\*  $p < .001$ .

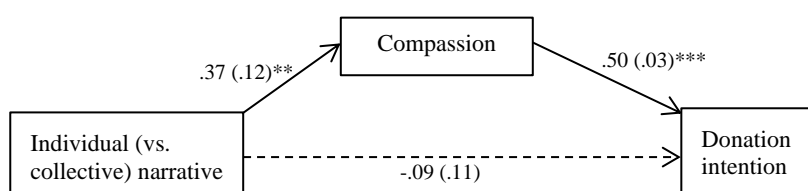


Figure 3d: Indirect effect between individual (versus collective) narrative and donation intention through compassion.

*Note.* Unstandardized coefficients and standard errors (in parentheses) are reported. The indirect effect is significant:  $b = .19$ , 95% CI = [.07 - .31]. \*\*  $p < .01$ , \*\*\*  $p < .001$ .

RQ2(b) asked whether sadness mediated the relationship between narrative focus and persuasive outcomes. Results of five separate mediation models did not show a significant mediating role of sadness (see Figures A12-A16 in Appendix D).

RQ2(c) asked whether disgust would be a mediator between narrative focus and persuasive outcomes. Results of five separate mediation models did not reveal any indirect effect of individual (versus collective) narrative via disgust (see Figures A17-A21 in Appendix D).

RQ2(d) addressed the mediating role of anger between narrative focus and persuasive outcomes. Results of five separate mediation models revealed that anger significantly mediated the impact of individual (versus collective) narrative on more attribution of causal responsibility to societal actors (Figure 4a), greater support for policy solutions (Figure 4b), and stronger intention to donate (Figure 4c). Meanwhile, anger did not significantly mediate the impact of

narrative focus on stigma or attribution of causal responsibility to individuals (Figures A22-A23 in Appendix D).

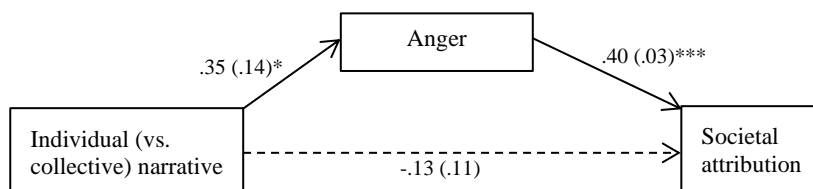


Figure 4a: Indirect effect between individual (versus collective) narrative and attribution of causal responsibility to societal actors through anger.

*Note.* Unstandardized coefficients and standard errors (in parentheses) are reported. The indirect effect is significant:  $b = .14$ , 95% CI = [.03 - .25]. \*  $p < .05$ , \*\*\*  $p < .001$ .

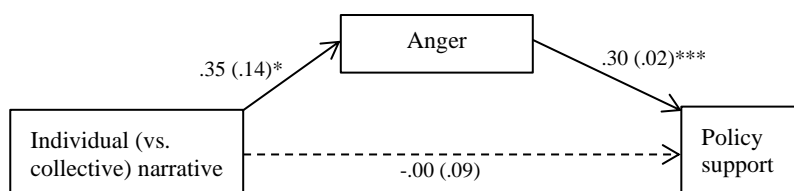


Figure 4b: Indirect effect between individual (versus collective) narrative and policy support through anger.

*Note.* Unstandardized coefficients and standard errors (in parentheses) are reported. The indirect effect is significant:  $b = .11$ , 95% CI = [.03 - .19]. \*  $p < .05$ , \*\*\*  $p < .001$ .

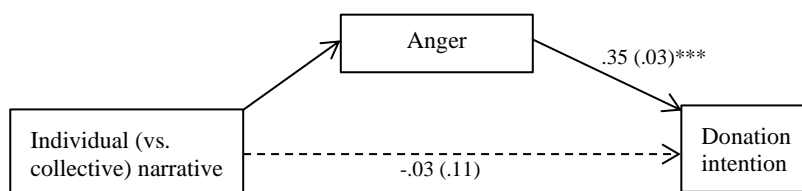


Figure 4c: Indirect effect between individual (versus collective) narrative and donation intention through anger.

*Note.* Unstandardized coefficients and standard errors (in parentheses) are reported. The indirect effect is significant:  $b = .12$ , 95% CI = [.03 - .23]. \*  $p < .05$ , \*\*\*  $p < .001$ .



RQ3 asked whether counterarguing mediated the impact of individual (versus collective) narrative condition on persuasive outcomes. Results showed that the indirect effect of narrative focus on persuasive outcomes via counterarguing was not significant (See Figures A24-A28 in Appendix D).

H10 hypothesized that perceived threat to freedom would mediate the effect of narrative focus on persuasive outcomes. Results showed that perceived threat to freedom did not mediate the impact of narrative focus on persuasive outcomes (see Figures A29-A33 in Appendix D). H10 was not supported.

### *A complete mediation model*

The complete mediation model with all mediators and dependent variables included was analyzed as a path analysis using AMOS. The initial model showed an unsatisfactory model fit:  $\chi^2 = 3882.447$ ,  $df = 76$ ,  $p = .000$ ,  $RMSEA = .258$ ,  $90\% \text{ CI: } .251 - .265$ ,  $CFI = .299$ . Therefore, the model was modified according to the modification indices that made theoretical sense. Table 13 presents the model modifications.

**Table 13:** Modifications on the complete mediation model.

Modification	Rationale
Correlate errors	There might be shared variance that cannot be captured by the constructs.
Identification and transportation	
Compassion and sadness	
Disgust and anger	
Counterarguing and perceived threat to freedom	
Societal attribution and policy support	
Sadness and anger	
Transportation and compassion	
Sadness and disgust	
Compassion and anger	
Policy support and donation intention	
Anger and counterarguing	
Message manipulation to disgust	

---

Delete nonsignificant paths	Independent affiliation to individual attribution Compassion to stigma Sadness to individual attribution Counterarguing to donation intention Education to individual attribution Independent affiliation to donation intention Familiarity with menstruation to donation intention Education to policy support Anger to individual attribution Independent affiliation to societal attribution Anger to stigma Compassion to societal attribution Democratic affiliation to individual attribution Message manipulation to counterarguing Perceived threat to freedom to stigma Familiarity with menstruation to societal attribution Message manipulation to perceived threat to freedom Transportation to individual attribution Democratic affiliation to donation intention Sadness to societal attribution Perceived threat to freedom to donation intention Message manipulation to sadness Disgust to donation intention Message manipulation to transportation Familiarity with menstruation to individual attribution Familiarity with menstruation to stigma Identification to donation intention Counterarguing to stigma Education to societal attribution Disgust to societal attribution Familiarity with menstruation to policy support Sadness to stigma Perceived threat to freedom to societal attribution Compassion to policy support Education to donation intention Compassion to individual attribution Anger to donation intention Independent affiliation to stigma Democratic affiliation to stigma Anger to policy support Disgust to policy support Compassion to donation intention	
Add suggested paths	Identification to counterarguing Compassion to counterarguing Identification to perceived threat to freedom Identification to compassion Transportation to sadness Identification to anger	Narrative engagement and resistance may mediate narrative impact serially; Emotions and resistance may mediate narrative impact serially; Narrative

---

---

engagement may involve emotional experiences.

---

The modified model achieved a satisfactory model fit:  $\chi^2 = 451.810$ ,  $df = 102$ ,  $p = .000$ ,  $RMSEA = .068$ , 90% CI: .061 - .074,  $CFI = .936$  (Hu & Bentler, 1999; Hair et al., 2010). Figure 5 presents the simplified mediation model showing significant mediators and relevant relationships. Table 14 reports all significant paths (both direct and indirect) revealed in the path analysis with standardized coefficients.

Same as with the separate mediation models, the path analysis revealed that compassion and anger mediated the impact of narrative focus on outcomes of interest. However, likely due to the multivariate context, the path analysis revealed fewer sets of indirect effects than in separate mediation models, as presented in Table 14.

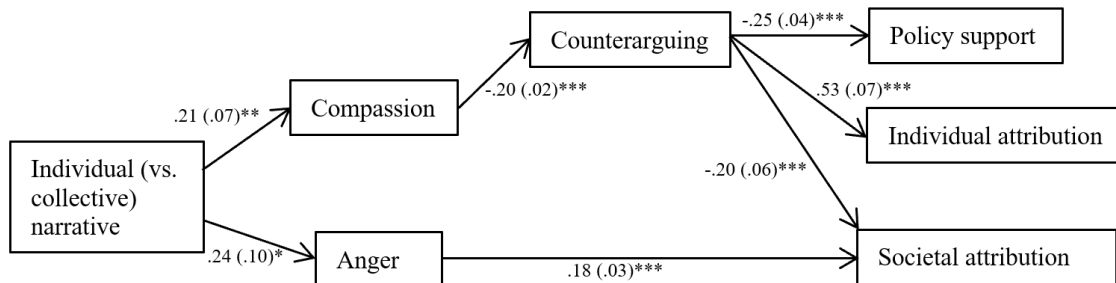


Figure 5: Simplified mediation model.

*Note.* For the purpose of demonstration, only significant mediators and their relevant relationships are included in the figure (reported are unstandardized coefficients and standard errors in parentheses). Political affiliation, education, and familiarity with menstruation were controlled for. \*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$ .

Table 14: Standardized direct and indirect effects revealed in the path analysis.

Direct effects	$\beta$
Individual (vs. collective) narrative $\rightarrow$ Compassion	.07**
Individual (vs. collective) narrative $\rightarrow$ Anger	.07*
Identification $\rightarrow$ Compassion	.60***

Identification → Counterarguing	-.47***
Identification → Threat to freedom	-.28***
Identification → Anger	.44***
Identification → Individual attribution	.13**
Identification → Societal attribution	.18***
Identification → Stigma	.17**
Identification → Policy support	.11*
Transportation → Sadness	.55***
Transportation → Societal attribution	.17***
Transportation → Stigma	-.13*
Transportation → Policy support	.39***
Transportation → Donation intention	.42***
Compassion → Counterarguing	-.26***
Sadness → Policy support	.07*
Sadness → Donation intention	.18***
Disgust → Individual attribution	.09**
Disgust → Stigma	-.12***
Anger → Societal attribution	.21***
Counterarguing → Societal attribution	-.14***
Counterarguing → Individual attribution	.35***
Counterarguing → Policy support	-.21***
Threat to freedom → Individual attribution	.15***
Threat to freedom → Policy support	-.08**
Indirect effects	
Individual (vs. collective) narrative → Compassion → Counterarguing	-.02**
Individual (vs. collective) narrative → Compassion → Counterarguing → Policy support	.01**
Individual (vs. collective) narrative → Compassion → Counterarguing → Individual attribution	-.01**
Individual (vs. collective) narrative → Compassion → Counterarguing → Societal attribution	.01**
Individual (vs. collective) narrative → Anger → Societal attribution	.04*
Compassion → Counterarguing → Policy support	.06**
Compassion → Counterarguing → Societal attribution	.04**
Compassion → Counterarguing → Individual attribution	-.09**
Transportation → Sadness → Donation intention	.10**
Transportation → Sadness → Policy support	.04*
Identification → Compassion → Counterarguing	-.16**
Identification → Counterarguing → Individual attribution	-.23**
Identification → Threat to freedom → Individual attribution	-.06**
Identification → Anger → Societal attribution	.11**
Identification → Counterarguing → Societal attribution	-.08**

\*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$ .

### *Serial mediation*

RQ4 and RQ5 addressed serial mediation models. Specifically, I asked whether narrative

engagement (identification, transportation) and message resistance (counterarguing and threat to freedom) would mediate the relationship between narrative focus and persuasive outcomes serially (RQ4), and whether emotions (compassion, sadness, disgust, anger) and message resistance would play the mediating roles serially (RQ5).

For RQ4, because both the PROCESS macro models and the path analysis above suggested that individual and collective narratives did not differ significantly in affecting identification or transportation, no additional analysis was needed to answer RQ4. I, therefore, concluded that narrative engagement and message resistance did not mediate the impact of narrative focus on persuasive outcomes.

For RQ5, given that the PROCESS macro models and the path analysis revealed that compassion and anger functioned as significant mediators between narrative focus and persuasive outcomes, I ran an additional path analysis to investigate whether these two emotions and message resistance variables (counterarguing and threat to freedom) would mediate the relationship between narrative focus and persuasive outcomes serially. The initial model showed an unsatisfactory model fit:  $\chi^2 = 1175.200$ ,  $df = 45$ ,  $p = .000$ ,  $RMSEA = .183$ , 90% CI: .174 - .192,  $CFI = .558$ . Consequently, I modified the model following the modification indices that were theoretically meaningful (see Table 15 for the model modifications).

Table 15: Modifications on the serial mediation model .

Modification		Rationale
Correlate errors	Compassion and anger Counterarguing and perceived threat to freedom Policy support and donation intention Societal attribution and policy support	There might be shared variance that cannot be captured by the constructs.
Delete nonsignificant paths	Democratic affiliation to individual attribution Anger to perceived threat to freedom Education to donation intention Counterarguing to stigma Independent affiliation to societal attribution Independent affiliation to individual attribution	

	Education to individual attribution	
	Independent affiliation to donation intention	
	Familiarity with menstruation to societal attribution	
	Education to policy support	
	Education to societal attribution	
	Familiarity with menstruation to individual attribution	
	Perceived threat to freedom to policy support	
	Perceived threat to freedom to stigma	
	Independent affiliation to stigma	
	Democratic affiliation to stigma	
	Familiarity with menstruation to stigma	
Add suggested paths	Compassion to donation intention Anger to donation intention	Emotions may lead to behavioral intention.

The finalized model achieved a good model fit:  $\chi^2 = 298.904$ ,  $df = 56$ ,  $p = .000$ , RMSEA = .076, 90% CI: .068 - .085, CFI = .905 (Hu & Bentler, 1999; Hair et al., 2010). Figure 6 shows the significant paths of this serial mediation model. Table 16 shows all significant paths (both direct and indirect) revealed in the path analysis with standardized coefficients.

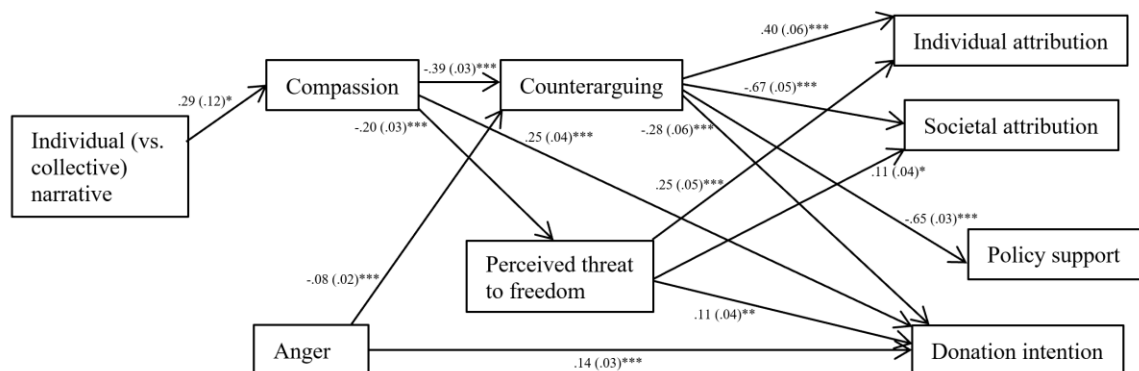


Figure 6: Finalized serial mediation model.

Note. For the purpose of demonstration, only significant paths are included in the figure. Unstandardized coefficients and standard errors (in parentheses) are reported. Political affiliation, education, and familiarity with menstruation were controlled for. \*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$ .

Table 16: Standardized direct and indirect effects revealed in the serial mediation analysis.

Direct effects	$\beta$
----------------	---------

Individual (vs. collective) narrative → Compassion	.09*
Compassion → Counterarguing	-.51***
Compassion → Threat to freedom	-.23***
Compassion → Donation intention	.26***
Anger → Counterarguing	-.13***
Anger → Donation intention	.16***
Counterarguing → Societal attribution	-.49***
Counterarguing → Individual attribution	.27***
Counterarguing → Policy support	-.60***
Counterarguing → Donation intention	-.21***
Threat to freedom → Individual attribution	.18***
Threat to freedom → Societal attribution	.09*
Threat to freedom → Donation intention	.09**
Indirect effects	
Individual (vs. collective) narrative → Compassion → Threat to freedom	-.02**
Individual (vs. collective) narrative → Compassion → Counterarguing	-.05*
Individual (vs. collective) narrative → Compassion → Donation intention	.07*
Individual (vs. collective) narrative → Compassion → Threat to freedom → Donation intention	-.01*
Individual (vs. collective) narrative → Compassion → Counterarguing → Donation intention	.03*
Individual (vs. collective) narrative → Compassion → Threat to freedom → Individual attribution	-.01**
Individual (vs. collective) narrative → Compassion → Counterarguing → Individual attribution	-.04*
Individual (vs. collective) narrative → Compassion → Counterarguing → Policy support	.03*
Individual (vs. collective) narrative → Compassion → Threat to freedom → Societal attribution	-.01*
Individual (vs. collective) narrative → Compassion → Counterarguing → Societal attribution	.08*
Anger → Counterarguing → Donation intention	.03***
Anger → Counterarguing → Individual attribution	-.03***
Anger → Counterarguing → Policy support	.08**
Anger → Counterarguing → Societal attribution	.06**
Compassion → Threat to freedom → Donation intention	-.02*
Compassion → Counterarguing → Donation intention	.11**
Compassion → Threat to freedom → Individual attribution	-.05**
Compassion → Counterarguing → Individual attribution	-.15**
Compassion → Threat to freedom → Societal attribution	-.02*
Compassion → Counterarguing → Societal attribution	.26**
Compassion → Counterarguing → Policy support	.31**

\*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$ .

As seen in Figure 6 and Table 16, compassion and counterarguing mediated the impact of individual (versus collective) narrative on certain persuasive outcomes (individual attribution, societal attribution, policy support, and donation intention) serially. Moreover, compassion and perceived threat to freedom mediated the impact of individual (versus collective) narrative on several persuasive outcomes (individual attribution, societal attribution, and donation intention) serially, too.

*Exploratory analysis: The mediating role of perceived narrativity*

When checking the success of the narrative manipulation, I found that, relative to the collective narrative ( $M = 4.91$ ,  $SD = 1.29$ ), the individual narrative led to a higher level of perception that the message was telling a story ( $M = 5.66$ ,  $SD = 1.06$ ),  $t(750) = 8.71$ ,  $p < .001$ . The notion of narrativity captures this difference, referring to the amount and intensity of narrative message elements, which may be affected by engaging presentation style, character development, and demonstrated consequences of actions (Myrick, 2023). Despite the limited amount of research investigating narrativity, scholars argue that narrativity should be positively linked to stronger emotional responses and greater identification with story protagonists (Kinnebrock & Bilandzic, 2006; Myrick, 2023). Therefore, I conducted a path analysis with perceived narrativity as the immediate mediator subsequent to the independent variable (individual versus collective narrative conditions; see Figure 7). Given the unacceptable model fit indices ( $\chi^2 = 3400.504$ ,  $df = 56$ ,  $p = .000$ ,  $RMSEA = .282$ , 90% CI: .274 - .290,  $CFI = .371$ ), I modified the model (see Table 17 for the modifications), leading to a model with acceptable model fit indices:  $\chi^2 = 177.560$ ,  $df = 57$ ,  $p = .000$ ,  $RMSEA = .053$ , 90% CI: .044 - .062,  $CFI = .977$ .

Table 17: Modifications on the mediation model with narrativity as a mediator.

Modification	Rationale
Correlate errors    Donation and policy support	There might be shared variance that cannot be captured by the constructs.
Delete nonsignificant paths	Independent affiliation to donation intention Education to policy support Education to donation intention Democratic affiliation to donation intention

I found that perceived narrativity was a significant mediator between the message



manipulations and narrative processing (cognitive or emotional) variables or/and between the message manipulation and downstream outcome variables. Table 18 presents significant indirect effects with perceived narrativity as a mediator.

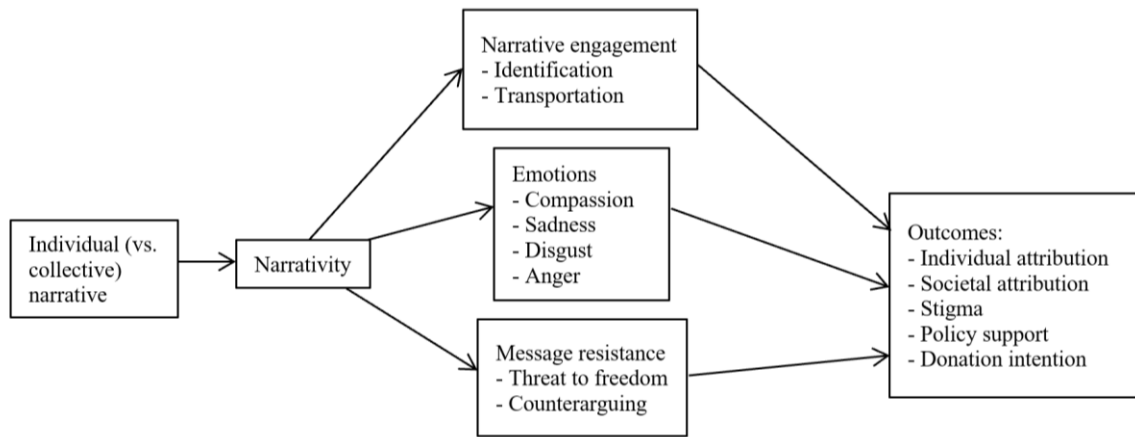


Figure 7: Conceptual model of exploratory analysis testing the mediating role of narrativity.

Table 18: Results of exploratory mediation analysis with narrativity as a mediator.

	$\beta$
Individual narrative → Narrativity → Identification → Threat to freedom → Individual attribution	-.02**
Individual narrative → Narrativity → Identification → Threat to freedom → Policy support	.01*
Individual narrative → Narrativity → Identification → Individual attribution	.05**
Individual narrative → Narrativity → Identification → Societal attribution	.06**
Individual narrative → Narrativity → Identification → Stigma	.03**
Individual narrative → Narrativity → Identification → Counterarguing → Individual attribution	-.04***
Individual narrative → Narrativity → Identification → Counterarguing → Societal attribution	.02**
Individual narrative → Narrativity → Identification → Counterarguing → Policy support	.02**
Individual narrative → Narrativity → Identification → Policy support	.03*
Individual narrative → Narrativity → Transportation → Societal attribution	.06**
Individual narrative → Narrativity → Transportation → Stigma	-.02*
Individual narrative → Narrativity → Transportation → Counterarguing → Individual attribution	-.03**
Individual narrative → Narrativity → Transportation → Counterarguing → Societal attribution	.01**
Individual narrative → Narrativity → Transportation → Counterarguing → Policy support	.01**
Individual narrative → Narrativity → Transportation → Donation intention	.15**
Individual narrative → Narrativity → Transportation → Policy support	.11**
Individual narrative → Narrativity → Compassion → Counterarguing → Individual attribution	-.03**
Individual narrative → Narrativity → Compassion → Counterarguing → Societal attribution	.01**
Individual narrative → Narrativity → Compassion → Counterarguing → Policy support	.01**
Individual narrative → Narrativity → Sadness → Donation intention	.07**

Individual narrative → Narrativity → Sadness → Policy support	.02*
Individual narrative → Narrativity → Disgust → Stigma	-.01*
Individual narrative → Narrativity → Anger → Societal attribution	.06**
Individual narrative → Narrativity → Anger → Policy support	.02*

\*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$ .

*Note.* Individual narrative = Individual (vs. collective) narrative

### ***Comparing different mediation models***

Given the three different mediation models exploring how individual and collective narratives differed in audience responses and persuasive outcomes, it would be helpful to compare their model fits to identify the best model. Table 19 presents the Akaike information criterion (AIC) (Akaike, 1974) and Bayesian information criterion (BIC) (Stone, 1979) of the three models. Despite the critics of using AIC and BIC for non-nested model selection, these criteria are used often in communication research (e.g., Dillard et al., 2023; Ma et al., 2023). According to these criteria, the mediation model including narrativity is the one showing the best model fits.

**Table 19:** AIC and BIC of mediation models.

Model	AIC	BIC
Model 1 (see Figure 5)	589.810	908.779
Model 2 (see Figure 6)	396.904	623.419
Model 3 (narrativity as a mediator)	303.560	594.792

### **Interactions between text and visual conditions**

H11 hypothesized that the message showing a disgusting visual of menstrual blood before a narrative would lead to better information recognition from the narrative, compared to the message showing a disgusting visual of menstrual blood after a narrative. Results of two-way

MANOVA with three text conditions (nonnarrative, narrative, and control) and three visual conditions (visual before text, visual after text, and no visual) revealed nonsignificant effect of visual placement on memory recognition, Wilks'  $\Lambda = .99$ ,  $F(8, 2130) = 1.53$ ,  $p = .14$ , partial  $\eta^2 = .01$ . Looking at the pairwise comparisons (with no adjustments), the message showing a disgusting visual of menstrual blood before the narrative did not lead to better information recognition ( $M = 5.97$ ,  $SD = 1.23$ ) than the message showing the visual after the narrative ( $M = 6.07$ ,  $SD = 1.26$ ),  $SE = .11$ ,  $p = .38$ . Therefore, H11 was rejected.

RQ6 sought to compare the levels of stigma reported by participants who viewed a disgusting visual of menstrual blood and a narrative, relative to those seeing nothing. I conducted a two-way MANOVA with two text conditions (narrative, control) and three visual conditions (with visual, without visual, and control), finding a nonsignificant main effect of visual condition, Wilks'  $\Lambda = .10$ ,  $F(3, 872) = 1.17$ ,  $p = .32$ , partial  $\eta^2 = .00$ . However, looking at the results of Holm's sequential Bonferroni comparisons, I found that participants in the control group reported a higher level of stigma ( $M = 4.47$ ,  $SD = 0.86$ ) than those who viewed both a visual and a narrative ( $M = 4.19$ ,  $SD = 0.90$ ),  $SE = .09$ ,  $p = .003$ .

RQ7 asked two questions, one concerning the influence of visual on the relationship between narrative (versus nonnarrative) and policy support and donation intention, with the other examining the effect of visual on the relationship between individual (versus collective) narrative and the same outcome variables. Results of MANOVA showed that the interaction effects between text condition and visual condition were not significant, either with three text conditions (nonnarrative, narrative, control), Wilks'  $\Lambda = 1.00$ ,  $F(2, 1206) = 0.05$ ,  $p = .95$ , partial  $\eta^2 = .00$ , or with four text conditions (individual narrative, collective narrative, nonnarrative, control), Wilks'  $\Lambda = 1.00$ ,  $F(2, 1204) = .91$ , partial  $\eta^2 = .00$ .

*Exploratory analysis: Interaction effect on mediators*

Because the PROCESS macro models and path analyses suggested that the effects of individual (collective) narratives on policy support and donation intention were indirect through several mediators, I conducted an exploratory analysis to investigate whether the interaction between text and visual conditions would differ in one or more mediators. I conducted a two-way MANOVA with two text conditions (individual and collective narratives) and two visual conditions (with visual, without visual), all mediators proposed as the dependent variables, and the same set of covariates. Results revealed a significant interaction between text and visual conditions on anger,  $F(1, 733) = 4.98, p = .03, \text{partial } \eta^2 = .01$ . Specifically, when exposing participants to a combination of narrative and visual, using an individual narrative led to greater anger ( $M = 4.22, SD = 1.95$ ) than a collective narrative ( $M = 3.70, SD = 1.90$ ),  $SE = .16, p < .001$ .

Figure 8 presents the interaction between text and visual conditions on anger.

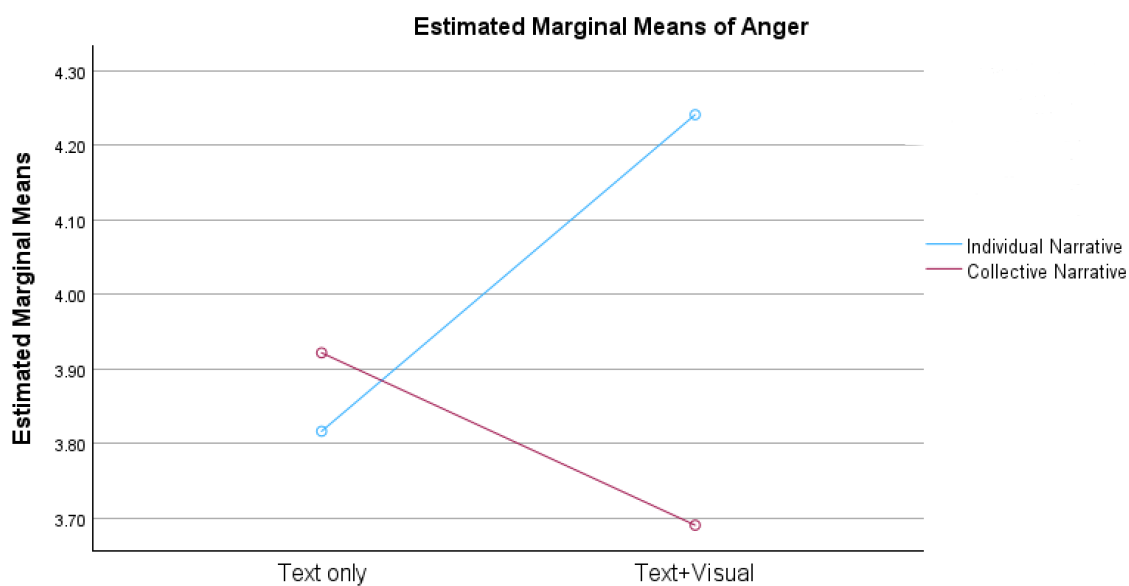


Figure 8: Interaction between text and visual conditions on anger.

I further probed the interaction between text and visual conditions on policy support and

donation intention via anger, finding two moderated mediation models. When the dependent variable was policy support, the index of moderated mediation (IMM) indicated the presence of moderated mediation: IMM = .20, SE = .09, 95% Boot CI: .02 - .37. Additionally, when the dependent variable was donation intention, the IMM also revealed the presence of moderated mediation: IMM = .23, SE = .10, 95% Boot CI: .02 - .44. The conditional indirect effect was further probed, finding that when both text and a visual were present, the individual (versus collective) narrative led to significantly greater policy support via increased anger. However, this mediation result did not hold when only text (without a visual) was shown to participants. In a similar vein, for participants viewing both text and visual, anger positively mediated the positive association between individual (versus collective) narrative and donation intention. Table 20 presents the interaction effects between text and visual conditions on policy support and donation intention via anger.

**Table 20:** Interaction effects between text and visual conditions on policy support and donation intention via anger.

	Indirect effect	SE	Bootstrapped CI	
Individual (vs. collective narrative) → anger → policy support (no visual)	-.03	.07	-.17	.12
Individual (vs. collective narrative) → anger → policy support (with visual)	.17	.05	.07	.27
Individual (vs. collective narrative) → anger → donation intention (no visual)	-.04	.09	-.20	.13
Individual (vs. collective narrative) → anger → donation intention (with visual)	.20	.06	.08	.32

### Testing moderated mediation hypotheses

H12 anticipated that compared to the message showing a narrative only (without a disgusting visual), the message showing a disgusting visual of menstrual blood before a narrative will lead to worse information recognition from the narrative via increased disgust. Results of an ANCOVA did not find significant main effect of text (nonnarrative, narrative) ( $F(1, 1067) = 0.24$ ,  $p = .63$ , partial  $\eta^2 = .00$ ), visual (no visual, visual before text, visual after text) ( $F(2, 1067) = 0.97$ ,

$p = .38$ , partial  $\eta^2 = .00$ ), or the interaction between text and visual conditions ( $F(2, 1067) = 1.75$ ,  $p = .17$ , partial  $\eta^2 = .00$ ) on the feeling of disgust. Results of MANOVA showed that the main effect of text (Wilks'  $\Lambda = 1.00$ ,  $F(2, 1067) = 0.77$ ,  $p = .46$ , partial  $\eta^2 = .00$ ), visual (Wilks'  $\Lambda = .99$ ,  $F(4, 2134) = 2.25$ ,  $p = .06$ , partial  $\eta^2 = .00$ ), or the interaction effect between text and visual conditions (Wilks'  $\Lambda = 1.00$ ,  $F(4, 2134) = 0.82$ ,  $p = .51$ , partial  $\eta^2 = .00$ ) was not statistically significant on outcome variables either. H12 was rejected.

H13 hypothesized that, relative to the message showing a narrative only (without a disgusting visual), the message showing a disgusting visual of menstrual blood and narrative text will lead to greater stigma toward people experiencing period poverty through increased disgust. H14 anticipated that the message showing a disgusting visual of menstrual blood and a nonnarrative message will lead to greater stigma than all other message conditions through increased disgust. These two hypotheses were tested together. First, results of an ANCOVA revealed no significant main effect of text (nonnarrative, narrative) ( $F(1, 1069) = 0.03$ ,  $p = .86$ , partial  $\eta^2 = .00$ ), visual (no visual, with visual) ( $F(1, 1069) = 1.20$ ,  $p = .28$ , partial  $\eta^2 = .00$ ), or the interaction between text and visual conditions ( $F(1, 1069) = .27$ ,  $p = .61$ , partial  $\eta^2 = .00$ ) on the feeling of disgust.

Results of a MANOVA showed that the main effect of text (Wilks'  $\Lambda = 1.00$ ,  $F(2, 1069) = 0.94$ ,  $p = .39$ , partial  $\eta^2 = .00$ ) or the interaction effect between text and visual conditions (Wilks'  $\Lambda = 1.00$ ,  $F(2, 1069) = 1.02$ ,  $p = .36$ , partial  $\eta^2 = .00$ ) was not statistically significant on outcome variables either. Although there existed a significant main effect of visual (Wilks'  $\Lambda = .99$ ,  $F(2, 1069) = 4.42$ ,  $p = .01$ , partial  $\eta^2 = .01$ ), either H13 or H14 was supported. For H13, the difference in stigma between participants who viewed the narratives only ( $M = 4.29$ ,  $SD = 0.91$ ) and those exposed to both narratives and visuals ( $M = 4.19$ ,  $SD = 0.90$ ) was not statistically significant,  $p = .16$ . In terms of H14, the message showing a disgusting visual of menstrual blood and a nonnarrative message did not lead to the higher level of stigma among all conditions (see

Table 5).

### **Examining gender differences through multigroup path analysis**

To answer RQ8 concerning the role of audience gender identity in shaping audience responses to and persuasive outcomes of period poverty messaging, I conducted three multigroup path analyses. The first multigroup path analysis compared gender difference in all paths shown in Figure 5. The chi-square difference test showed that the model fits of the women group and non-women group did not differ significantly but approached significance ( $\Delta\chi^2(29) = 40.803, p = .07$ ). Therefore, I conducted subsequent chi-square difference tests to identify which specific paths differed between the two groups. At the 90% confidence interval level, the path from counterarguing to societal attribution was statistically significant among non-women participants ( $\beta = -.21, p < .001$ ), but nonsignificant among women participants ( $\beta = -.07, p = .20$ ). Moreover, at the 95% confidence interval level, the path from counterarguing to policy support was stronger among non-women participants ( $\beta = -.30, p < .001$ ) than among women participants ( $\beta = -.14, p = .01$ ).

The second multigroup path analysis compared gender differences across all paths shown in Figure 6. The chi-square difference test showed that the model fits of the women group and non-women group did not differ significantly ( $\Delta\chi^2(16) = 17.781, p = .34$ ). However, the following chi-square difference tests with only one path constrained at a time suggested several paths that differed between the two groups. At the 90% confidence interval level, the relationship between individual (versus collective) narrative and anger was statistically significant among non-women participants ( $\beta = .14, p = .01$ ), but nonsignificant among women participants ( $\beta = .01, p = .82$ ). Additionally, the path from threat to freedom to societal attribution was statistically significant among women participants ( $\beta = .17, p < .001$ ), but nonsignificant among non-women

participants ( $\beta = .05, p = .31$ ). At the 95% confidence interval level, the path from counterarguing to policy support was stronger among non-women participants ( $\beta = -.64, p < .001$ ) than among women participants ( $\beta = -.57, p < .001$ ).

The third multigroup path analysis compared gender differences across all paths of the significant moderated mediation model as indicated in Table 20. At the 90% confidence interval level, the association between anger and policy support was stronger among non-women participants ( $\beta = .47, p < .001$ ) than among women participants ( $\beta = .39, p < .001$ ).

## Summary

Table 21 summarizes how the results reflected upon the proposed hypotheses and research questions. Overall, varied versions of period poverty messaging did not directly affect most of the narrative processing variables and outcomes, but individual and collective narratives differed significantly in perceived narrativity among participants, which in turn, predicted different levels of narrative processing variables and subsequent outcomes.

In terms of the role of a disgust-evoking visual showing period blood, it strengthened the advantage for the individual narrative on anger, which in turn, positively predicted policy support and donation intention in participants. Finally, gender difference was found in several relationships, indicating the moderating role of gender in processing period poverty messages.

Table 21: Summary of findings.

Hypothesis/Research question	Findings
<b>H1:</b> Relative to a nonnarrative message, narrative messages will lead message recipients to attribute more causal responsibility to societal actors (menstrual product industry and policy makers) and less causal responsibility to the individuals.	<b>Rejected</b>
<b>H2:</b> Relative to a collective narrative, an individual narrative will lead message recipients to attribute more causal responsibility to societal actors (menstrual product industry and policy makers) and less causal responsibility to the individuals.	<b>Rejected</b> (Supported with mediators)



<b>H3:</b> Narrative messages will lead to a lower level of stigma toward people experiencing period poverty than will a nonnarrative message.	<b>Rejected</b>
<b>H4:</b> An individual narrative will lead to a lower level of stigma toward people experiencing period poverty than will a collective narrative.	<b>Rejected</b> (Supported with mediators)
<b>H5:</b> Narrative messages will lead to greater support for policies addressing period poverty than will a nonnarrative message.	<b>Rejected</b>
<b>H6:</b> An individual narrative will lead to greater support for policies addressing period poverty than will a collective narrative.	<b>Rejected</b> (Supported with mediators)
<b>H7:</b> Narrative messages will lead to greater intention to donate than will a nonnarrative message.	<b>Rejected</b>
<b>H8:</b> An individual narrative will lead to greater intention to donate than will a collective narrative.	<b>Rejected</b> (Supported with mediators)
<b>H9:</b> The positive relationship between an individual (versus collective) narrative and persuasive outcomes will be mediated by greater identification with the story character.	<b>Rejected</b> (Supported with narrativity as a mediator)
<b>RQ1:</b> Will transportation mediate the relationship between an individual (vs. collective) narrative and persuasive outcomes?	<b>No</b> (Yes when narrativity as a mediator)
<b>RQ2(a):</b> How will compassion mediate the relationship between an individual (vs. collective) narrative and persuasive outcomes?	<b>Positively</b>
<b>RQ2(b):</b> How will sadness mediate the relationship between an individual (vs. collective) narrative and persuasive outcomes?	<b>No mediation</b> (Positively when narrativity as a mediator)
<b>RQ2(c):</b> How will disgust mediate the relationship between an individual (vs. collective) narrative and persuasive outcomes?	<b>No mediation</b> (Positively when narrativity as a mediator)
<b>RQ2(d):</b> How will anger mediate the relationship between an individual (vs. collective) narrative and persuasive outcomes?	<b>Positively</b>
<b>RQ3:</b> Will counterarguing mediate the relationship between an individual (vs. collective) narrative and persuasive outcomes?	<b>No</b> (Yes, when narrativity as a mediator)
<b>H10:</b> The positive relationship between an individual (vs. collective) narrative and persuasive outcomes will be mediated by reduced perception of freedom threat.	<b>Rejected</b> (Supported when narrativity as the first mediator)
<b>RQ4:</b> Will narrative engagement (identification, transportation) and message resistance (counterarguing, perceived threat to freedom) mediate the relationship between an individual (vs. collective) narrative and persuasive outcomes serially?	<b>No</b> (Yes, when narrativity as the first mediator)
<b>RQ5:</b> Will emotions (compassion, sadness, disgust, anger) and message resistance (counterarguing, perceived threat to freedom) mediate the relationship between an individual (vs. collective) narrative and persuasive outcomes serially?	<b>Yes</b>
<b>H11:</b> The message showing a disgusting visual of menstrual blood before a narrative will lead to better information recognition from the narrative, compared to the message showing a disgusting visual of menstrual blood after a narrative.	<b>Rejected</b>
<b>H12:</b> Compared to the message showing a narrative only (without a disgusting visual), the message showing a disgusting visual of menstrual blood before a narrative will lead to worse information recognition from the narrative through increased disgust.	<b>Rejected</b>
<b>H13:</b> Relative to the message showing a narrative only (without a disgusting visual), the message showing a disgusting visual of menstrual blood and a narrative will lead to greater stigma toward people experiencing period poverty through increased disgust.	<b>Rejected</b>
<b>RQ6:</b> Will people who read a message showing a disgusting visual of menstrual blood and a narrative have a different level of stigma toward	<b>Yes</b> , a combination of narrative and visual led

people experiencing period poverty, relative to people in the control group (who see nothing)?

**H14:** The message showing a disgusting visual of menstrual blood and a nonnarrative message will lead to greater stigma than all other message conditions through increased disgust.

**RQ7:** Will the message showing a disgusting visual of menstrual blood reduce the facilitating role of (individual) narratives in promoting (a) policy support and (b) intention to donate?

**RQ8:** How will gender affect audience responses to and persuasive outcomes of period poverty messaging?

---

to lower stigma than the control condition

**Rejected**

**No** (Visual reinforced the advantage for individual narrative)

**Changed the strength** of several relationships

## **Chapter 5**

### **Discussion**

In this dissertation, I first investigated the effects of narrative (versus nonnarrative) and, then, types of narratives (individual versus collective) on persuasive outcomes in the context of period poverty. This study was premised upon narrative persuasion theories (Moyer-Gusé, 2008; Slater & Rouner, 2002), exemplification theory (Zillman & Brosius, 2000), and identified victim effect (Small et al., 2007). Second, informed by the LC4MP (Lang, 2006), the cognitive-functional model (Nabi, 1999), and the model of stigma communication (Smith, 2007), I tested the impact of the presence and order effects of disgusting visual of menstrual blood alongside text on blog readers. I also examined the role of audience gender identity in moderating audience responses to period poverty messaging, given the highly gendered nature of the topic. The findings of this research helped unpack the underlying mechanisms of advantages for narrative and individual narrative, reveal the impact of a disgusting visual, and identify the moderating role of gender in narrative and visual effects.

### **Interpretation of findings**

#### **Narrative's role in enhancing persuasive outcomes via anger**

It is widely acknowledged that narrative messages are typically more persuasive than nonnarrative messages in terms of attitude and behavior change, which is supported in meta-analytical research (Braddock & Dillard, 2016; Shen et al., 2015). Yet, contradictory findings also exist, such that messages describing narrative and statistical evidence do not necessarily differ in

message effectiveness in either health- or non-health-related communication contexts (Xu, 2023).

The contradictory findings in the narrative persuasion literature underscore the necessity of exploring whether and when narratives may be more or less effective than nonnarrative messages. In the relatively novel context of the present investigation (i.e., period poverty), I compared the effectiveness of narrative and nonnarrative messages, finding most of the direct relationships between narrative (versus nonnarrative) messages and persuasive outcomes to be nonsignificant. One possible explanation is that to many participants, period poverty messaging, regardless of the message format, presents much new information due to the limited media or interpersonal communication around period poverty in people's everyday life (Johnston-Robledo & Chrisler, 2020). As such, novelty might reduce counterarguing (Lang et al., 2013) and increase message effectiveness (Kishiyama et al., 2009; Sopory & Dillard, 2002). Consequently, the hypothesized differences between narrative and nonnarrative messages may be neutralized when the message topic is novel.

Although the relative effectiveness of period poverty messaging, compared to the control condition, was not originally hypothesized, my results showed that exposure to either a narrative or nonnarrative message (as opposed to seeing no message in the control condition) generated several persuasive outcomes. For instance, relative to seeing no message, exposure to the nonnarrative message led to less individual attribution and greater policy support with exposure to one of the narrative messages resulting in greater policy support and donation intention. While the persuasiveness of narratives relative to the control group is in line with prior research (Braddock & Dillard, 2016), the effectiveness of the nonnarrative message indicates that message format may not matter much in this specific context as long as it is well crafted.

Notably, an exploratory analysis examining the indirect effects of narrative (versus nonnarrative) messages revealed that narrative messages led to greater anger, which in turn, was linked to more societal attribution, greater policy support, and stronger intention to donate. It was

possible that participants reading the narratives felt angrier about the issue or the societal actors who should be responsible for the issue, relative to those reading the nonnarrative message, and this feeling of anger was significantly associated with the aforementioned outcomes. In particular, the findings imply the approach tendency of anger that predicts prosocial behaviors. That is, when participants felt angry after viewing the period poverty messaging, they were likely to engage in some pro-social behaviors, such as donating money to help address period poverty and support relevant policies. Though earlier narrative persuasion theories did not take into account the role of emotions when explaining the impact of narratives (e.g., Moyer-Gusé, 2008; Slater & Rouner, 2002), the current study reinforced the importance of considering emotional reactions to narratives, as explicated in Bilandzic et al.'s (2020) recent model of narrative's emotion-based effects on audiences.

### **The advantage of individual (versus collective) narratives**

One of the narrative characteristics, narrative focus, speaks to the number of characters in a story, such that a story depicting one single character is considered an individual narrative whereas a story depicting a group of people is called a collective narrative. The current study showed that individual and collective narratives did not differ in the relevant outcomes directly, yet indirectly through cognitive and emotional responses. I presented three different mediation models in this study. The first one was originally built from a parallel mediation model, although the finalized version of this model included serial mediation paths due to model modifications. The second model was established based on the reasoning of serial mediation effects. And the third model included perceived narrativity as the first mediator immediately affected by narrative focus, which in turn, predicted different levels of emotional and cognitive responses.

All three models revealed that the individual narrative led to greater compassion than the

collective narrative, which in turn, predicted multiple prosocial outcomes. Compassion arises from witnessing others' suffering that subsequently generates a desire to help alleviate others' difficulty (Goetz et al., 2010). In the current study, compassion was induced by learning about an individual or a group of people living with period poverty. Due to the approach tendency of compassion, participants who felt compassionate were likely to improve their attitudes toward stigmatized people (Oliver et al., 2012) and take prosocial actions (Oveis et al., 2010), which was found in the current investigation, too. Moreover, the difference between individual and collective narratives in compassion aligned with the premises of the exemplification theory (Zillman & Brosius, 2000), identified victim effect (Small et al., 2007), and especially the notion of compassion fade (Västfjäll et al., 2014), as the individual narrative evoked greater emotional attachment than the collective narrative.

In addition to mediating the impact of the individual narrative on prosocial outcomes (e.g., donation intention), compassion also predicted lower counterarguing which in turn was associated with persuasive outcomes. This means, the individual narrative produced less counterarguing than the collective narrative through increased compassion, but not directly. In other words, the individual narrative may instigate a lower level of counterarguing than the collective narrative, but only if it succeeds in eliciting greater compassion. This serial path was confirmed in all of the three mediation models, indicating its validity. While the facilitating role of message-induced compassion in persuasiveness has been documented in previous research (Lu, 2018), the present study adds to the literature by revealing that the relationship between message-induced compassion and persuasive outcomes might be indirect.

### **The best mediation model: Perceived narrativity matters**

According to the commonly used criteria for model selection (AIC and BIC), the

mediation model that included perceived narrativity as a mediator had the best model fit compared with the other two mediation models that did not include perceived narrativity. As outlined previously, theoretical frameworks do exist to help predict and explain the advantages for individual narratives, such as exemplification theory and identified victim effect. These conceptual perspectives mainly point to the capacity of concrete, identifiable exemplars in generating emotional responses and moral responsibility. However, integrating the concept of perceived narrativity provides another angle to understand the difference in effects between individual and collective narratives. Perceived narrativity, or the degree to which participants perceive a text to be narrative, can be conceptualized and operationalized as a continuous variable, one that may be affected by the amount and intensity of narrative elements (Myrick, 2023). Through the lens of narrativity, the narrative about one single protagonist experiencing period poverty seemed more like a story than the narrative depicting a group of people sharing the same experience of period poverty. The higher perceived narrativity due to reading the individual (versus collective) narrative then served as the conduit for the individual narrative to manifest its advantages in narrative engagement and emotional attachment, which ultimately predicted stronger persuasive outcomes.

This finding provides empirical evidence for Kinnebrock and Bilandzic's (2006) seminal work concerning the textual factors that contribute to narrative transportation (termed *narrativity factors*), among which the uniqueness or singularity of an event depicted in a story is thought to facilitate transportation. Moreover, since transported readers/viewers are both cognitively and emotionally involved in the story (Green, 2004), audience members who are highly transported into the story due to one or more narrativity factors should also identify with the story character more and experience greater emotional engagement. Such greater narrative engagement and emotional responses not only directly predicted prosocial outcomes in the current study, but also indirectly through reduced message resistance (perceived threat to freedom and counterarguing),

aligning with the extant literature (Kinnebrock & Bilandzic, 2006). With literature identifying the uniqueness/singularity of an event as a textual factor leading to greater narrativity (Kinnebrock & Bilandzic, 2006), suggesting the persuasive influence of greater narrativity (Dahlstrom & Rosenthal, 2018), and confirming the advantages for individual (versus collective) narratives (Skurka et al., 2020), the current study bridges these lines of work by revealing the persuasiveness of an individual narrative (reflecting the singularity of event) mediated by enhanced narrativity.

A caveat when understanding the role of perceived narrativity is that the current study could not confirm whether narrativity comes before other mediators after message exposure. In other words, perceived narrativity and other mediators could have reverse causality. For instance, it was possible that those transported into the story world to a greater extent would be more likely to perceive the message to be narrative. The order of multiple mediators in narrative processing – including perceived narrativity – appears to be a fruitful direction for future narrative persuasion research.

### **The persuasive effects of showing menstrual blood**

The impact of including a visual of menstrual blood was another question I aimed to answer in the current investigation. Opposite to my hypotheses, the visual of menstrual blood, which was rated to be moderately disgusting in the pilot study, did not increase the level of disgust when they were shown to participants with a text about period poverty. Consequently, the hypothesized effects of the visual on multiple outcomes (e.g., memory recognition, stigma) through increased disgust were not confirmed either. Interestingly and unexpectedly, while a narrative alone did not significantly reduce audience members' stigma toward people experiencing period poverty, showing participants a narrative and a visual of menstrual blood



simultaneously led to less stigma compared to the control group.

One plausible explanation may be rooted in the connection between disgust and empathy, in that certain manifestations of disgust and empathy are both “self”-involved (Herz, 2012; Konrath et al., 2010). That is, being disgusted by seeing a noxious stimulus, such as menstrual blood on clothes, can be caused by empathizing oneself about the possibility of experiencing the same fate (White et al., 2018). As such, it was possible that the “self”-involved part of disgust triggered empathy among participants, which entailed both cognitive and emotional elements and might subsequently contribute to destigmatization (Bartsch et al., 2018).

Another possible explanation for the destigmatization effect of showing a narrative and a visual is that the visual of menstrual blood is attention-grabbing, which motivates audience members to carefully process the narrative message presented along with the visual. With greater attention and motivation, the narrative readers were more likely to experience story characters’ emotions and internalize their goals (Dunn & McLaughlin, 2019). Through the lens of social identity theory (Tajfel, 1974), these narrative readers might subsequently become less fixed on the goals associated with the social groups to which they belonged and less worried about being excluded from the social groups. As a result, stigma, which is a mechanism that people use to protect themselves from being excluded from their preferred social groups, might decrease. Notably, the effect of combining narrative and visual on reducing stigma was direct, instead of being indirect through disgust (which was hypothesized).

The interaction effect between individual (versus collective) narrative and presence (versus absence) of the visual on civic behavioral outcomes via anger can be explained following the similar understanding of the visual’s role. Specifically, the indirect effect of individual narrative on policy support and donation intention via anger was revealed only when the individual narrative was shown to participants with the visual. The two mediation models without integrating narrativity showed different results in terms of the relationship between exposure to

the individual (versus collective) narrative and anger, implying the weakness or instability of this link. And the moderated mediation models indicated that the visual might reinforce the advantages for the individual narrative of eliciting anger, which ultimately predicted prosocial behavioral outcomes.

When it comes to the nonsignificant impact of adding the visual on other emotional responses, cognitive responses, or outcome variables, it is possible that reading the text diluted participants' reactions to the visual, since their responses and thoughts were all measured after viewing both text and visual. According to the theory of constructed emotion (Barrett, 2017), an emotion is a grouping of mental instances that are highly variable depending on specific contexts. Therefore, seeing a visual of menstrual blood on one's clothes (without being labeled as period poverty) only and seeing the same visual with a narrative should lead to different reactions to and interpretations about the person featured in the visual. One of the differences, as revealed in the pilot and main studies, was the decrease in disgust among participants. Probably, the visuals out of context (i.e., the stimuli in the pilot study) were hard to interpret or led participants to think about uncleanness, while the simultaneous presentation of a visual and a narrative (in the main study) was likely to motivate participants to reflect on the issue of period poverty. If the reflection was self-involved, as outlined above, might elicit empathic feeling, which would not occur when a visual was shown alone. Additionally, the nonsignificant effect of visual placement (visual placed before or after the text) was contradictory to the hypotheses, too. One plausible reason is that participants might not always view the visual and text in the order as their assigned condition. For instance, a participant assigned to the condition showing visual after text might scroll the screen down to the bottom before reading the text, which is not uncommon among media users in today's digital landscape.

### **The moderating role of gender**

The current study revealed gender differences (women versus non-women) in processing period poverty messaging. Generally, there were stronger relationships (a) between the message and cognitive responses and (b) between the message-induced cognitive/emotional responses and persuasive outcomes among non-women participants. This finding makes intuitive sense, since non-women participants might be less familiar with period poverty than women participants before participating in this study. Thus, the message that non-women participants viewed should exert greater influence on their thoughts about the issue, whereas women participants' responses to period poverty may be influenced by other information they encountered prior to viewing the stimuli of the current study.

One unexpected finding revealed in the multigroup analyses was the positive association between perceived threat to freedom and attributing causal responsibility to societal actors among women participants, a relationship that was not found among non-women participants. In theory, once an individual feels their freedom threatened, they will try to restore the freedom by adopting a wide range of strategies, such as performing the restricted act (Brehm, 1966) and derogating the source of the threat (Rains, 2013). However, the stimuli used for the current study did not clarify the restricted act or the source of threat, making it difficult to assume what led women participants to attribute causal responsibility to societal actors as a means of restoring their freedom. One possibility was that women participants perceived the threat to their freedom related to individual behavior change, so they engaged in societal attribution, which could be a means of eliminating threat. This process only occurred among women participants, but not among non-women participants, probably because period-related issues were interpreted as more relevant to women's life and daily behaviors. Overall, the varying levels of influence of period poverty messaging based on participants' gender identity suggest the importance of considering

audience factors (e.g., prior knowledge, familiarity, attitudes) in designing messages about gendered issues.

### **Theoretical implications**

Findings from the present study add to the narrative persuasion literature by revealing the nonsignificant difference between narrative and nonnarrative messages in the context of period poverty, an underdiscussed and relatively novel topic. Indeed, inconclusive findings still exist when it comes to whether, when, and why narratives are effective and persuasive (Xu, 2003; Zebregs et al., 2015). Along this line, the current study helped reveal the underlying mechanisms of narrative impact from the perspective of emotion psychology, in particular. Anger mediated the impact of narrative (versus nonnative) messages on persuasive outcomes, demonstrating the emotion's approach tendency and prosocial nature. In a similar vein, compassion was found to mediate the impact of individual (versus collective) on persuasive outcomes. Although emotions were not explicitly included in earlier persuasive theories (e.g., Slater and Rouner's (2002) Extended Elaboration Likelihood Model), the current study demonstrates the importance of considering emotions in narrative persuasion theory refinement and development.

Interestingly, the current study suggested similar roles of anger and compassion in facilitating pro-social behaviors in the context of period poverty, supporting the argument that both anger and compassion are pro-social emotions (Lu, 2018). Moreover, the similarity between anger and compassion indicates the possibility of empathic anger, a relatively complex emotion combining compassion and anger (Vitaglione & Barnett, 2003). How anger and compassion induced by messages work jointly, or serially (from the perspective of emotional flow), to motivate pro-social outcomes can be a fruitful direction for future research.

Another theoretical contribution also relates to narrative persuasive, but more

specifically, concerns narrative focus (individual versus collective narrative). Findings from this study not only provided support for the theoretical premises of the exemplification theory, identified victim effect, and compassion fade, but offered new insights to understand the advantages for individual narrative. That is, the relative effectiveness of an individual narrative may result from its greater perceived narrativity, which enhances transportive and emotional experiences, compared to a collective narrative (Kinnebrock & Bilandzic, 2006).

Furthermore, the present research implies the positive effect of showing participants a disgusting visual of menstrual blood together with a narrative. The visual appeared to motivate participants to process the narrative, therefore strengthening the role of narrative in reducing stigma. Meanwhile, participants' feeling of disgust after seeing the visual might be lowered by reading the narrative. Taken together, the potential undesirable effect of disgust appeal (i.e., stigmatization) may be offset by narrative messages which can reduce stigma. Yet, the role of disgust appeal in facilitating message processing still held. Theoretically, this study presents a starting point to examine how disgust appeal and narrative messaging may work together to achieve prosocial outcomes.

### **Practical implications**

The findings of this dissertation also offer practical implications for designing and disseminating persuasive messages around period poverty. First, given the notable effectiveness of the individual narrative, telling stories about one single individual who's experiencing period poverty helps enhance favorable outcomes. As such, practitioners may be encouraged to use individual narratives in period poverty messaging to promote actions. Second, when practitioners aim to reduce stigma toward people experiencing period poverty, they may consider using a narrative with an image of menstrual blood that can elicit a moderate level of disgust.

Importantly, it is necessary to test target audience members' feeling of disgust upon exposure to the image before using it, because different levels of arousal may generate different outcomes (Lang, 2006).

In terms of audience characteristics, although the findings did not offer much gender difference except the varying strengths of certain relationships, it would be helpful to learn about target audience members' prior knowledge of, familiarity with, and attitudes toward period poverty, in order to create the most effective messages. This implication is based on the assumption that the gender difference in period poverty messaging may result from different levels of familiarity with menstruation.

### **Limitations and future work**

Several limitations should be acknowledged for the purpose of accurate interpretation of the findings. First, I did not find any statistically significant impact of visual placement: The visual placed before or after the text did not matter. As outlined above, this non-significance may be caused by participants' media consumption habit, such that those assigned to the visual after text condition might still see the image first out of curiosity or they wanted to check how much they were asked to read. Future research should ensure that participants assigned to read the text first and then see the image really follow this order.

Second, in data analysis, I categorized participants into two gender groups, women and non-women. I did so to make the quantitative analysis possible, but I acknowledged the lack of gender nuances without using the gender information as participants had reported in the survey. As such, future work should try to increase the sub-sample size of gender minorities and gender non-binary individuals, so that their responses could be quantitatively analyzed, too. Third, the sample of this study included U.S. adults only, with more White, elderly, and well-educated

participants than the general population, which limited the generalizability of the findings. Future research should increase the representativeness of samples.

Forth, although participants in the pilot study reported their feelings of disgust after viewing each of the images of menstrual blood, I did not have a condition only showing menstrual blood without any text. Therefore, I could not directly compare the visual only condition with other conditions, and I could only hypothetically discuss why the visual + narrative condition led to lower stigma than the control condition. If the visual only condition existed, I would have confirmatively known whether adding a narrative reduced the level of disgust evoked by the visual. Fifth, although the current investigation revealed the noticeable role of emotions in processing period poverty messages, I did not specify the targets of emotions. Future work clarifying the targets of discrete emotions can further unpack the underlying mechanisms of message effects in the context of period poverty.

In spite of these limitations, this study provided interesting insights into narrative persuasion and disgust appeal scholarship related to a gender issue. It also opened many doors for future research. For instance, narrative focus was identified as a message feature affecting perceived narrativity, being one of the few studies that tested message-level antecedents of narrativity. Therefore, future work in the arena of message effects can continue exploring what message features or characteristics may affect perceived narrativity, which in turn, would predict attitude and behavior change. Additionally, when measuring participants' emotional responses in the current study, I did not specify the target of certain emotions. For example, anger could be a feeling toward the message source, the story protagonist, or the societal actors causing the issue. Though difficult, future research that clarifies the levels of emotions toward different entities could help uncover the underlying mechanisms of message effects even more clearly.

## **Conclusion**

Both narratives and visuals can be effective messaging strategies to evoke pro-social outcomes. In the context of period poverty, an underdiscussed yet important issue, narrative messages (especially an individual narrative) and a visual of menstrual blood enhanced audience members' intentions to engage in pro-social behaviors. Stronger emotional responses (anger and compassion) helped explain the effects. The strength of the effects, however, varied in people with different genders. The findings, together, contributed to multiple lines of media effects research and provided practical implications for the individuals and organizations aiming to end period poverty.



## References

- Aarøe, L. (2011). Investigating frame strength: The case of episodic and thematic frames. *Political Communication*, 28(2), 207-226. <https://doi.org/10.1080/10584609.2011.568041>
- Akaike, H. (1974). A new look at the statistical model identification. *IEEE Transactions on Automatic Control*, 19(6), 716-723. <https://doi.org/10.1109/TAC.1974.1100705>
- Appel, M., Gnambs, T., Richter, T., & Green, M. C. (2015). The transportation scale—short form (TS–SF). *Media Psychology*, 18(2), 243-266. <https://doi.org/10.1080/15213269.2014.987400>
- Barrett, L. F. (2017). The theory of constructed emotion: an active inference account of interoception and categorization. *Social Cognitive and Affective Neuroscience*, 12(1), 1-23. <https://doi.org/10.1093/scan/nsw154>
- Bartsch, A., Oliver, M. B., Nitsch, C., & Scherr, S. (2018). Inspired by the Paralympics: Effects of empathy on audience interest in para-sports and on the destigmatization of persons with disabilities. *Communication Research*, 45(4), 525-553. <https://doi.org/10.1177/0093650215626984>
- Bilandzic, H., Kinnebrock, S., & Klingler, M. (2020). The emotional effects of science narratives: A theoretical framework. *Media and Communication*, 8(1), 151-163. <https://doi.org/10.17645/mac.v8i1.2602>
- Boukes, M. (2022). Episodic and thematic framing effects on the attribution of responsibility: The effects of personalized and contextualized news on perceptions of individual and political responsibility for causing the economic crisis. *The International Journal of Press/Politics*, 27(2), 374-395. <https://doi.org/10.1177/1940161220985241>
- Braddock, K., & Dillard, J. P. (2016). Meta-analytic evidence for the persuasive effect of narratives on beliefs, attitudes, intentions, and behaviors. *Communication Monographs*,

- 83(4), 446-467. <https://doi.org/10.1080/03637751.2015.1128555>
- Bramwell, R. (2001). Blood and milk: Constructions of female bodily fluids in Western society. *Women & Health, 34*(4), 85–96. [https://doi.org/10.1300/j013v34n04\\_06](https://doi.org/10.1300/j013v34n04_06).
- Brebner, J. (2003). Gender and emotions. *Personality and Individual Differences, 34*(3), 387-394. [https://doi.org/10.1016/S0191-8869\(02\)00059-4](https://doi.org/10.1016/S0191-8869(02)00059-4)
- Brehm, J. W. (1966). *A theory of psychological reactance*. Oxford, England: Academic Press.
- Brehm, S. S., & Brehm, J. W. (1981). *Psychological reactance: A theory of freedom and control*. New York, NY: Academic Press.
- Cardoso, L. F., Scolese, A. M., Hamidaddin, A., & Gupta, J. (2021). Period poverty and mental health implications among college-aged women in the United States. *BMC Women's Health, 21*(1), 1-7. <https://doi.org/10.1186/s12905-020-01149-5>
- Christov-Moore, L., Simpson, E. A., Coudé, G., Grigaityte, K., Jacoboni, M., & Ferrari, P. F. (2014). Empathy: Gender effects in brain and behavior. *Neuroscience & Biobehavioral Reviews, 46*, 604-627. <https://doi.org/10.1016/j.neubiorev.2014.09.001>
- Clayton, R. B., Leshner, G., Bolls, P. D., & Thorson, E. (2017). Discard the smoking cues—keep the disgust: An investigation of tobacco smokers' motivated processing of anti-tobacco commercials. *Health Communication, 32*(11), 1319–1330. <https://doi.org/10.1080/10410236.2016.1220042>.
- Cohen, J. (2001). Defining identification: A theoretical look at the identification of audiences with media characters. *Mass Communication and Society, 4*(3), 245–264. [https://doi.org/10.1207/S15327825MCS0403\\_01](https://doi.org/10.1207/S15327825MCS0403_01)
- Dahlstrom, M. F., Niederdeppe, J., Gao, L., & Zhu, X. (2017). Operational and conceptual trends in narrative persuasion research: Comparing health-and non-health-related contexts. *International Journal of Communication, 11*, 4865-4885. <https://ijoc.org/index.php/ijoc/article/view/6629/2202>

- Dal Cin, S., Zanna, M. P., & Fong, G. T. (2004). Narrative persuasion and overcoming resistance. In E. S. Knowles (Ed.), *Resistance and persuasion* (pp. 175–191). Erlbaum.
- Darwin, C. (1965). *The expressions of the emotions in man and animals*. Chicago: University of Chicago Press (Original work published in 1872).
- Dawydiak, E. J., Stafford, H. E., Stevenson, J. L., & Jones, B. C. (2020). Pathogen disgust predicts stigmatization of individuals with mental health conditions. *Evolutionary Psychological Science*, 6, 60-63. <https://doi.org/10.1007/s40806-019-00208-x>
- de Graaf, A., Sanders, J., & Hoeken, H. (2016). Characteristics of narrative interventions and health effects: A review of the content, form, and context of narratives in health-related narrative persuasion research. *Review of Communication Research*, 4, 88-131. <https://doi.org/10.12840/issn.2255-4165.2016.04.01.011>
- Dillard, J. P., Plotnick, C. A., Godbold, L. C., Freimuth, V. S., & Edgar, T. (1996). The multiple affective outcomes of AIDS PSAs: Fear appeals do more than scare people. *Communication Research*, 23(1), 44-72. <https://doi.org/10.1177/009365096023001002>
- Dillard, J. P., & Shen, L. (2005). On the nature of reactance and its role in persuasive health communication. *Communication Monographs*, 72(2), 144-168. <https://doi.org/10.1080/03637750500111815>
- Dillard, J. P., & Shen, L. (2018). Threat appeals as multi-emotion messages: An argument structure model of fear and disgust. *Human Communication Research*, 44(2), 103-126. <https://doi.org/10.1093/hcr/hqx002>
- Dillard, J. P., Tian, X., Cruz, S. M., Smith, R. A., & Shen, L. (2023). Persuasive messages, social norms, and reactance: A study of masking behavior during a COVID-19 campus health campaign. *Health Communication*, 38(7), 1338-1348. <https://doi.org/10.1080/10410236.2021.2007579>
- Dunn, J., & McLaughlin, B. (2019). Counter-stereotyped protagonists and stereotyped supporting

- casts: Identification with black characters and symbolic racism. *Communication Research Reports*, 36(4), 309–319. <https://doi.org/10.1080/08824096.2019.1660870>
- Fadnis, D. (2017). Feminist activists protest tax on sanitary pads: attempts to normalize conversations about menstruation in India using hashtag activism. *Feminist Media Studies*, 17(6), 1111-1114. <https://doi.org/10.1080/14680777.2017.1380430>
- Faul, F., Erdfelder, E., Lang, A.-G. & Buchner, A. (2007). G\*Power 3: A flexible statistical power analysis program for the social, behavioral, and biomedical sciences. *Behavior Research Methods*, 39, 175-191. <https://doi.org/10.3758/BF03193146>
- Goetz, J. L., Keltner, D., & Simon-Thomas, E. (2010). Compassion: An evolutionary analysis and empirical review. *Psychological Bulletin*, 136(3), 351–374. <https://doi.org/10.1037/a0018807>
- Goffman, E. (1963). Embarrassment and social organization. In N. J. Smelser & W. T. Smelser (Eds.), *Personality and social systems* (pp. 541–548). John Wiley & Sons Inc.
- Grabe, M. E., Kleemans, M., Bas, O., Myrick, J. G., & Kim, M. (2017). Putting a human face on cold, hard facts: Effects of personalizing social issues on perceptions of issue importance. *International Journal of Communication*, 11, 23. <https://ijoc.org/index.php/ijoc/article/view/4824/1943>
- Green, M. C. (2006). Narratives and cancer communication. *Journal of Communication*, 56, S163-S183. <https://doi.org/10.1111/j.1460-2466.2006.00288.x>
- Green, M. C., & Brock, T. C. (2000). The role of transportation in the persuasiveness of public narratives. *Journal of Personality and Social Psychology*, 79(5), 701–721. <https://doi.org/10.1037//0022-3514.79.5.701>
- Hamby, A., Brinberg, D., & Jaccard, J. (2018). A conceptual framework of narrative persuasion. *Journal of Media Psychology*, 30(3), 113–124. <https://doi.org/10.1027/1864-1105/a000187Hayes>

- Hair, J. F., Black, W. C., Babin, B. J., & Anderson, R. E. (2010). *Multivariate data analysis*. Prentice Hall.
- Hayes, A. F. (2018). *Introduction to mediation, moderation, and conditional process analysis: A regression-based approach* (2nd ed.). The Guilford Press.
- Heley, K., Kennedy-Hendricks, A., Niederdeppe, J., & Barry, C. L. (2020). Reducing health related stigma through narrative messages. *Health Communication, 35*(7), 849-860.  
<https://doi.org/10.1080/10410236.2019.1598614>
- Herz, R. S. (2012). *That's disgusting: Unraveling the mysteries of repulsion*. New York, NY: W.W. Norton.
- Hu, L., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling: A Multidisciplinary Journal, 6*(1), 1–55. <https://doi.org/10.1080/10705519909540118>
- Iyengar, S. (1991). *Is anyone responsible? How television frames political issues*. Chicago, IL: University of Chicago Press.
- Johnson, M. E. (2019). Menstrual justice. *U. C. Davis Law Review, 53*, 1-79.  
[https://scholarworks.law.ubalt.edu/all\\_fac/1089/](https://scholarworks.law.ubalt.edu/all_fac/1089/)
- Johnston-Robledo, I., & Chrisler, J. C. (2020). The menstrual mark: Menstruation as social stigma. In C. Bobel, I. T. Winkler, B. Fahs, K. A. Hasson, E. A. Kissling, & T. Roberts (Eds.), *The Palgrave handbook of critical menstruation studies* (pp. 181-199). Palgrave Macmillan.
- Kim, S. J., & Niederdeppe, J. (2014). Emotional expressions in antismoking television advertisements: Consequences of anger and sadness framing on pathways to persuasion. *Journal of Health Communication, 19*(6), 692-709.  
<https://doi.org/10.1080/10810730.2013.837550>
- Kinnebrock, S., & Bilandzic, H. (2006). *How to make a story work: Introducing the concept of*

*narrativity into narrative persuasion*. Paper presented at the International Communication Association, Dresden, Germany.

- Kishiyama, M. M., & Yonelinas, A. P. (2005). Stimulus novelty effects on recognition memory: Behavioral properties and neuroanatomical substrates. In R. R. Hunt & J. B. Worthen (Eds.), *Distinctiveness and memory* (pp. 381–404). New York, NY: Oxford University Press.
- Konrath, S. H., O'Brien, E. H., & Hsing, C. (2011). Changes in dispositional empathy in American college students over time: A meta-analysis. *Personality and Social Psychology Review, 15*(2), 180-198. <https://doi.org/10.1177/1088868310377395>
- Lang, A. (2006). Using the limited capacity model of motivated mediated message processing to design effective cancer communication messages. *Journal of Communication, 56*, S57-S80. <https://doi.org/10.1111/j.1460-2466.2006.00283.x>
- Lang, A., Kurita, S., Gao, Y., & Rubenking, B. (2013). Measuring television message complexity as available processing resources: Dimensions of information and cognitive load. *Media Psychology, 16*(2), 129-153. <https://doi.org/10.1080/15213269.2013.764707>
- Lazarus, R. S. (1991). *Emotion and adaptation*. Oxford University Press.
- Lee, J. (1994). Menarche and the (hetero)sexualization of the female body. *Gender and Society, 8*, 343–362. <https://doi.org/10.1177/089124394008003004>
- Leshner, G., Bolls, P., & Thomas, E. (2009). Scare ‘em or disgust ‘em: The effects of graphic and health promotion messages. *Health Communication, 24*(5), 447–458. <https://doi.org/10.1080/10410230903023493>
- Leshner, G., Bolls, P., & Wise, K. (2011). Motivated processing of fear appeal and disgust images in televised anti-tobacco ads. *Journal of Media Psychology: Theories, Methods, and Applications, 23*(2), 77–89. <https://psycnet.apa.org/doi/10.1027/1864-1105/a000037>
- Leshner, G., Clayton, R. B., Bolls, P. D., & Bhandari, M. (2018). Deceived, disgusted, and

- defensive: Motivated processing of anti-tobacco advertisements. *Health Communication*, 33(10), 1223-1232. <https://doi.org/10.1080/10410236.2017.1350908>
- Link, B. G., Cullen, F. T., Struening, E., Shrout, P. E., & Dohrenwend, B. P. (1989). A modified labeling theory approach to mental disorders: An empirical assessment. *American Sociological Review*, 54(3), 400-423. <https://doi.org/10.2307/2095613>
- Lu, Hang. (2018). *Compassion and anger as emotional frames, dynamic processes, and incidental cues in prosocial communication*. [Doctoral dissertation, Cornell University]. Cornell Theses and Dissertations
- Lu, H., & Schuldt, J. P. (2016). Compassion for climate change victims and support for mitigation policy. *Journal of Environmental Psychology*, 45, 192-200. <https://doi.org/10.1016/j.jenvp.2016.01.007>
- Ma, H., Gottfredson O'Shea, N., Kieu, T., Rohde, J. A., Hall, M. G., Brewer, N. T., & Noar, S. M. (2023). Examining the longitudinal relationship between perceived and actual message effectiveness: A randomized trial. *Health Communication*. Advance online publication. <https://doi.org/10.1080/10410236.2023.2222459>
- Menstrual Equity For All Act of 2021, H.R.3614, 117<sup>th</sup> Cong. (2021). <https://www.congress.gov/bill/117th-congress/house-bill/3614/text>
- Michel, J., Mettler, A., Schönenberger, S., & Gunz, D. (2022). Period poverty: Why it should be everybody's business. *Journal of Global Health Reports*, 6, e2022009. <https://doi.org/10.29392/001c.32436>
- Miller, O. (2021). *How does period poverty have a negative effect on teenage girls?* UNICEF. <https://gdc.unicef.org/resource/how-does-period-poverty-have-negative-effect-teenage-girls>
- Moyer-Gusé, E., & Nabi, R. L. (2010). Explaining the effects of narrative in an entertainment television program: Overcoming resistance to persuasion. *Human Communication Research*, 36(1), 26-52. <https://doi.org/10.1111/j.1468-2958.2009.01367.x>

- Myrick, J. G. (2023). The effects and implications of consuming multiple science narratives on different types of audience engagement. In F. Shen & H. H. Edwards (Eds.), *Narratives in public communication* (pp. 58-84). Routledge.
- Nabi, R. L. (1999). A cognitive-functional model for the effects of discrete negative emotions on information processing, attitude change, and recall. *Communication Theory*, 9(3), 292-320. <https://doi.org/10.1111/j.1468-2885.1999.tb00172.x>
- Nabi, R. L. (2002). The theoretical versus the lay meaning of disgust: Implications for emotion research. *Cognition & Emotion*, 16(5), 695–703.  
<https://doi.org/10.1080/02699930143000437>.
- Nelson-Field, K., Riebe, E., & Newstead, K. (2013). The emotions that drive viral video. *Australasian Marketing Journal*, 21, 205–211.  
<https://doi.org/10.1016/j.ausmj.2013.07.003>.
- Newhagen, J. E., & Reeves, B. (1992). The evening's bad news: Effects of compelling negative television news images on memory. *Journal of Communication*, 42(2), 25-41.  
<https://doi.org/10.1111/j.1460-2466.1992.tb00776.x>
- Niederdeppe, J., Kim, H. K., Lundell, H., Fazili, F., & Frazier, B. (2012). Beyond counterarguing: Simple elaboration, complex integration, and counterelaboration in response to variations in narrative focus and sidedness. *Journal of Communication*, 62(5), 758-777.  
<https://doi.org/10.1111/j.1460-2466.2012.01671.x>
- Niederdeppe, J., Shapiro, M. A., & Porticella, N. (2011). Attributions of responsibility for obesity: Narrative communication reduces reactive counterarguing among liberals. *Human Communication Research*, 37(3), 295-323.  
<https://doi.org/10.1111/j.1468-2958.2011.01409.x>
- Oatley, K. (2002). Emotions and the story worlds of fiction. In M. C. Green, J. J. Strange, & T. C. Brock (Eds.), *Narrative impact: Social and cognitive foundations* (pp. 39–69). Mahwah,



NJ: Erlbaum.

- O'Keefe, D. J. (2003). Message properties, mediating states, and manipulation checks: Claims, evidence, and data analysis in experimental persuasive message effects research. *Communication Theory*, *13*(3), 251-274.  
<https://doi.org/10.1111/j.1468-2885.2003.tb00292.x>
- Oliver, M. B., Dillard, J. P., Bae, K., & Tamul, D. J. (2012). The effect of narrative news format on empathy for stigmatized groups. *Journalism & Mass Communication Quarterly*, *89*(2), 205-224. <https://doi.org/10.1177/1077699012439020>
- Ostfeld, M., & Mutz, D. (2014). Revisiting the effects of case reports in the news. *Political Communication*, *31*(1), 53-72. <https://doi.org/10.1080/10584609.2013.799106>
- Oveis, C., Horberg, E. J., & Keltner, D. (2010). Compassion, pride, and social intuitions of self-other similarity. *Journal of personality and social psychology*, *98*(4), 618-630.  
<https://psycnet.apa.org/doi/10.1037/a0017628>
- Parker, R., & Aggleton, P. (2003). HIV and AIDS-related stigma and discrimination: A conceptual framework and implications for action. *Social Science & Medicine*, *57*, 13-24. [https://doi.org/10.1016/S0277-9536\(02\)00304-0](https://doi.org/10.1016/S0277-9536(02)00304-0)
- Plan International (2021). *Periods in a pandemic: On year on in 2021*.  
<https://www.plan.org.au/wp-content/uploads/2021/05/PIAP-One-Year-On.pdf>
- Polletta, F., DoCarmo, T., Ward, K. M., & Callahan, J. (2021). Personal storytelling in professionalized social movements. *Mobilization*, *26*(1), 65-86.  
<https://doi.org/10.17813/1086-671X-26-1-65>
- Polletta, F., & Redman, N. (2020). When do stories change our minds? Narrative persuasion about social problems. *Sociology Compass*, *14*(4), e12778.  
<https://doi.org/10.1111/soc4.12778>
- Pycroft, H. (2022). *Period poverty: The statistics around the world*. ActionAid. <https://www.act>

- ionaid.org.uk/blog/2022/05/18/period-poverty-statistics-around-world#footnote2\_6tca5te
- Raftos, M., Jackson, D., & Mannix, J. (1998). Idealised versus tainted femininity: Discourses of the menstrual experience in Australian magazines that target young women. *Nursing Inquiry*, 5, 174–186. <https://doi.org/10.1046/j.1440-1800.1998.530174.x>.
- Rains, S. A. (2013). The nature of psychological reactance revisited: A meta-analytic review. *Human Communication Research*, 39, 47–73. <http://dx.doi.org/10.1111/j.1468-2958.2012.01443.x>
- Ratcliff, C. L. (2021). Characterizing reactance in communication research: A review of conceptual and operational approaches. *Communication Research*, 48(7), 1033–1058. <https://doi.org/10.1177/0093650219872126>
- Ratcliff, C. L., & Sun, Y. (2020). Overcoming resistance through narratives: Findings from a meta-analytic review. *Human Communication Research*, 46(4), 412–443. <https://doi.org/10.1093/hcr/hqz017>
- Ren, Y., & Shen, F. (2022). Effects of narratives and behavioral involvement on adolescents' attitudes toward gaming disorder. *Health Communication*, 37(6), 657–667. <https://doi.org/10.1080/10410236.2020.1862397>
- Reutter, L. I., Stewart, M. J., Veenstra, G., Love, R., Raphael, D., & Makwarimba, E. (2009). “Who do they think we are, anyway?”: Perceptions of and responses to poverty stigma. *Qualitative Health Research*, 19(3), 297–311. <https://doi.org/10.1177/1049732308330246>
- Roberts, T. A., Goldenberg, J. L., Power, C., & Pyszczynski, T. (2002). “Feminine protection”: The effects of menstruation on attitudes towards women. *Psychology of Women Quarterly*, 26(2), 131–139. <https://doi.org/10.1111/1471-6402.00051>
- Rozin, P., Haidt, J., & McCauley, C. (2008). Disgust. In M. Lewis, J. Haviland, & L. F. Barrett (Eds.), *Handbook of emotions* (3rd ed., pp. 757–776). New York, NY: Guilford Press.
- Rubeking, B. (2019). Emotion, attitudes, norms and sources: Exploring sharing intent of

- disgusting online videos. *Computers in Human Behavior*, 96, 63-71.  
<https://doi.org/10.1016/j.chb.2019.02.011>
- Rubenking, B., & Lang, A. (2014). Captivated and grossed out: An examination of processing core and sociomoral disgusts in entertainment media. *Journal of Communication*, 64(3), 543-565. <https://doi.org/10.1111/jcom.12094>
- Scherer, K. R., Schorr, A., & Johnstone, T. (Eds.). (2001). *Appraisal processes in emotion*. New York: Oxford University Press.
- Seo, K. (2020). Meta-analysis on visual persuasion—does adding images to texts influence persuasion. *Athens Journal of Mass Media and Communications*, 6(3), 177-190.  
<https://www.athensjournals.gr/media/2020-6-3-3-Seo.pdf>
- Shen, F., Sheer, V. C., & Li, R. (2015). Impact of narratives on persuasion in health communication: A meta-analysis. *Journal of advertising*, 44(2), 105-113.  
<https://doi.org/10.1080/00913367.2015.1018467>
- Shimp, T. A., & Stuart, E. W. (2004). The role of disgust as an emotional mediator of advertising effects. *Journal of Advertising*, 33(1), 43-53.  
<https://doi.org/10.1080/00913367.2004.10639150>
- Skurka, C., Niederdeppe, J., & Winett, L. (2020). There's more to the story: Both individual and collective policy narratives can increase support for community-level action. *International Journal of Communication*, 14, 4160-4179.  
<https://ijoc.org/index.php/ijoc/article/view/14537/3175>
- Slater, M. D., & Rouner, D. (2002). Entertainment—education and elaboration likelihood: Understanding the processing of narrative persuasion. *Communication Theory*, 12(2), 173-191. <https://doi.org/10.1111/j.1468-2885.2002.tb00265.x>
- Small, D. A., Loewenstein, G., & Slovic, P. (2007). Sympathy and callousness: The impact of deliberative thought on donations to identifiable and statistical victims. *Organizational*

*Behavior and Human Decision Processes*, 102, 143–153.

<https://doi.org/10.1016/j.obhdp.2006.01.005>

Smith, R. A. (2007). Language of the lost: An explication of stigma communication.

*Communication Theory*, 17(4), 462-485.

<https://doi.org/10.1111/j.1468-2885.2007.00307.x>

Smith, R. A., Zhu, X., Martin, M. A., Myrick, J. G., Lennon, R. P., Small, M. L., Van Scoy, L. J.,

& Data4Action Research Group. (2023). Longitudinal study of an emerging COVID-19 stigma: Media exposure, danger appraisal, and stress. *Stigma and Health*, 8(1), 12–20.

<https://doi.org/10.1037/sah0000359>

Sopory, P., & Dillard, J. P. (2002). The persuasive effects of metaphor: A meta - analysis.

*Human Communication Research*, 28(3), 382-419.

<https://doi.org/10.1111/j.1468-2958.2002.tb00813.x>

Stone, M. (1979). Comments on model selection criteria of Akaike and Schwarz. *Journal of the Royal Statistical Society. Series B (Methodological)*, 41(2), 276-278.

<https://www.jstor.org/stable/2985044>

Strange, J. J. (2002). How fictional tales wag real-world beliefs: Models and mechanisms of narrative influence. In M. C. Green, J. J. Strange, & T. C. Brock (Eds.), *Narrative impact: Social and cognitive foundations* (pp. 263–286). Mahwah, NJ: Erlbaum.

Tabachnick, B. G., & Fidell, L. S. (2018). *Using multivariate statistics*. Boston, MA: Pearson.

Tajfel, H. (1974). Social identity and intergroup behavior. *Social Science Information*, 13(2), 65–93. <https://doi.org/10.1177/053901847401300204>

Tal-Or, N., & Cohen, J. (2010). Understanding audience involvement: Conceptualizing and manipulating identification and transportation. *Poetics*, 38(4), 402-418.

<https://doi.org/10.1016/j.poetic.2010.05.004>

Toronchuk, J. A., & Ellis, G. R. (2007). Disgust: Sensory affect or primary emotional system?

*Cognition & Emotion*, 21, 1799–1818. <https://doi.org/10.1080/02699930701298515>

UN Women (2019). *Infographic: End the stigma. Period.*

<https://www.unwomen.org/en/digital-library/multimedia/2019/10/infographic-periods>

Västfjäll, D., Slovic, P., Mayorga, M., & Peters, E. (2014). Compassion fade: Affect and charity are greatest for a single child in need. *PLOS ONE*, 9, e100115.

<https://doi.org/10.1371/journal.pone.0100115>

Van Eijk, A. M., Sivakami, M., Thakkar, M. B., Bauman, A., Laserson, K. F., Coates, S., & Phillips-Howard, P. A. (2016). Menstrual hygiene management among adolescent girls in India: A systematic review and meta-analysis. *BMJ Open*, 6(3), e010290.

<https://doi.org/10.1136/bmjopen-2015-010290>

Vitaglione, G. D., & Barnett, M. A. (2003). Assessing a new dimension of empathy: Empathic anger as a predictor of helping and punishing desires. *Motivation and Emotion*, 27, 301-325. <https://doi.org/10.1023/A:1026231622102>

Vora, S. (2020). The realities of period poverty: How homelessness shapes women's lived experiences of menstruation. In C. Bobel, I. T. Winkler, B. Fahs, K. A. Hasson, E. A. Kissling, & T. Roberts (Eds.), *The Palgrave handbook of critical menstruation studies* (pp. 31-47). Palgrave Macmillan.

Wald, D. M., Johnston, E. W., Wellman, N., & Harlow, J. (2021). How does personalization in news stories influence intentions to help with drought? Assessing the influence of state empathy and its antecedents. *Frontiers in Communication*, 5, 588978.

<https://doi.org/10.3389/fcomm.2020.588978>

Weiner, B. (2006). *Social motivation, justice, and the moral emotions: An attributional approach*. Mahwah, NJ: Lawrence Erlbaum.

Weiner, B. (2010). Attribution theory. In P. Peterson, E. Baker, & B. McGraw (Eds.),

*International encyclopedia of education* (Vol. 6, pp. 558–563). Elsevier.

- Weiner, B., Perry, R. P., & Magnusson, J. (1988). An attributional analysis of reactions to stigmas. *Journal of Personality and Social Psychology*, *55*(5), 738-748.  
<https://psycnet.apa.org/doi/10.1037/0022-3514.55.5.738>
- White, T. L., Cunningham, C., & Herz, R. S. (2018). Individual differences and the “selfish” connection between empathy and disgust. *The American Journal of Psychology*, *131*(4), 439-450. <https://doi.org/10.5406/amerjpsyc.131.4.0439>
- Woller, K. M., Buboltz, W. C., & Loveland, J. M. (2007). Psychological reactance: Examination across age, ethnicity, and gender. *The American Journal of Psychology*, *120*(1), 15-24.  
<https://doi.org/10.2307/20445379>
- Xu, J. (2023). A meta-analysis comparing the effectiveness of narrative vs. statistical evidence: Health vs. non-health contexts. *Health Communication*, *38*(14), 3113–3123.  
<https://doi.org/10.1080/10410236.2022.2137750>
- Zebregs, S., van den Putte, B., Neijens, P., & de Graaf, A. (2015). The differential impact of statistical and narrative evidence on beliefs, attitude, and intention: A meta-analysis. *Health Communication*, *30*(3), 282–289.  
<https://doi.org/10.1080/10410236.2013.842528>
- Zhou, S., & Niederdeppe, J. (2017). The promises and pitfalls of personalization in narratives to promote social change. *Communication Monographs*, *84*(3), 319-342.  
<https://doi.org/10.1080/03637751.2016.1246348>
- Zhuang, J., & Guidry, A. (2022). Does storytelling reduce stigma? A meta-analytic view of narrative persuasion on stigma reduction. *Basic and Applied Social Psychology*, *44*(1), 25-37. <https://doi.org/10.1080/01973533.2022.2039657>
- Zillmann, D., & Brosius, H.-B. (2000). *Exemplification in communication: The influence of case reports on the perception of issues*. Mahwah, NJ: Erlbaum.

## Appendix A

### Stimulus Material for Main Study

#### Collective narrative + no visual

##### Silent Struggle: Their Shared Experience of Period Poverty

Amidst the challenge of financial hardship, many families living in poverty grapple with the weight of not being able to earn enough to make ends meet. Balancing on the precipice of unreliable social services from the state, a pause in housing benefits and increased food insecurity have thrust these families into uncertain times. The pressure to make rent payments forces some people into high-interest payday loans, while the most basic necessities of sustenance and shelter hinge on the kindness of friends and family.

With all the bills to deal with, the first thing that falls by the wayside for those who menstruate is their capacity to afford an adequate supply of menstrual products, a struggle emblematic of what experts term "period poverty."

*Living with period poverty, many menstruators have to ration their period products.*

Living with period poverty, many menstruators have to ration their period products. They push sanitary pads to their limits, sometimes enduring up to 20 hours of use when the recommended limit is a mere fraction of that. In extreme cases, they resort to makeshift solutions, repurposing a contraceptive diaphragm to manage the flow, or enduring the discomfort of free bleeding. Red stains are often seen on their jeans and pants, running down the seams.

*Red stains are often seen on their jeans and pants, running down the seams.*

During their menstrual period, those experiencing period poverty spend more time at home, worried about going out and people's judgmental reactions to their smell and stains. Their struggle remains hidden, veiled in shame and a deeply ingrained societal taboo surrounding menstruation. Rarely do they confide in anyone about their plight. When groceries are scarce, extended family members take charge. When children lack winter clothing, there is help at hand. But when menstrual products run dry, their plight remains a secret, known to none, and hence, resolved by none. When offered financial assistance, menstruators in the throes of period poverty must weigh a \$10 packet of menstrual products against the prospect of putting food on the table.

*In the eyes of individuals experiencing period poverty, the injustice of this situation is glaring.*

In the eyes of individuals experiencing period poverty, the injustice of the situation is glaring. They wonder why something as fundamental as menstrual products should be a burden. They hope for a future where taxes don't add even more to the costs of tampons and pads. Their aspiration is simple: better access. "They should be cheaper, or even free," one group of low-income menstruators posted online recently, "readily available for anyone who needs them."



#### Individual + no visual

##### Silent Struggle: Single Mother Faces Period Poverty Alone

In the midst of financial hardship, Michelle, a single mother of a toddler daughter, grapples with the weight of providing for her family. Even though she works full-time as a waitress, she makes so little that she still qualifies for social services. However, a pause in housing benefits has left her in limbo, awaiting a reapplication process plagued by months-long delays. The pressure to make timely rent payments has forced Michelle into high-interest payday loans, while the most basic necessities of sustenance and shelter hinge on the kindness of friends and family.

With all the bills Michelle has to deal with, the first thing that falls by the wayside is her ability to afford an adequate supply of menstrual products, a struggle emblematic of what experts term "period poverty."

*Living with period poverty, Michelle has to ration her period products.*

Living with period poverty, Michelle has to ration her period products. She pushes sanitary pads to their limits, sometimes enduring up to 20 hours of use when the recommended limit is a mere fraction of that. In extreme cases, she resorts to makeshift solutions, repurposing a contraceptive diaphragm to manage the flow, or enduring the discomfort of free bleeding. Later, when Michelle throws away her old jeans, she notices red stains running down the seam.

*When Michelle throws away her old jeans, she notices red stains running down the seam.*

When she's on her period, Michelle finds herself spending more time at home, worried about going out and people's judgmental reactions to the smell and stains. Her struggle often remains hidden, veiled in shame and a deeply ingrained societal taboo surrounding menstruation. Rarely does she confide in anyone about her plight. When groceries are scarce, extended family members take charge. When her daughter lacks winter clothing, there is help at hand. But when menstrual products run dry, Michelle's plight remains a secret, known to none, and hence, resolved by none. When offered financial assistance, Michelle's instinct is to redirect it towards her child's needs, caught in the dilemma between a \$10 packet of menstrual products and putting food on the table.

*In Michelle's eyes, the injustice of this situation is glaring.*

In Michelle's eyes, the injustice of this situation is glaring. She wonders why something as fundamental as menstrual products should be a burden for any person. She wonders why some foods are not taxed but her tampons and pads are. Her aspiration is simple: better access. "They should be cheaper, or even free," she asserts, "readily available for anyone who needs them."



Nonnarrative + no visual

## Period Poverty: A Silent Struggle

For people facing mounting bills and increases in the costs of everyday goods, one of the first things that falls by the wayside is personal care products. This is especially true for people who menstruate. The inability to afford an adequate supply of menstrual products is a struggle emblematic of what experts term "period poverty." This is a lack of sufficient menstrual products and education about menstruation. Although it is often seen as a problem confined to low-income countries, recent surveys have exposed startling rates of period poverty in the richest countries in the world, too.

According to one study, two-thirds of low-income women said that they did not have the resources to buy menstrual products at some point in the last year. One-fifth of women say they struggle to afford period products each month.

*Living with period poverty, many menstruators have to ration their period products.*

Living with period poverty, many menstruators have to ration their period products. They push sanitary pads to their limits, sometimes enduring up to 20 hours of use when the recommended duration is a mere fraction of that. In extreme cases, they resort to makeshift solutions, repurposing a contraceptive diaphragm to manage the flow, or, enduring the discomfort of free bleeding. It is not uncommon for menstruating individuals to have jeans with red stains down the seams.

*It is not uncommon for menstruating individuals to have jeans with red stains down the seams.*

Period poverty also takes a toll on mental and emotional well-being. Because of period poverty, many menstruators deal with loneliness. They worry about going out in public while on their period. Compared to those who have never experienced it, research shows that women who experience period poverty every month report high rates of severe depression, followed by those experiencing it in the past year. That is, more frequent experiences with period poverty are linked to more severe forms of depression. Additionally, menstruators miss days of school or work because they can't access the products they need. One out of every 10 menstruating youth misses school each month due to a lack of access to menstrual products and resources. Additionally, shame prevents menstruators from talking about the issue with others. Many keep their problem a secret out of an ingrained belief that periods are too taboo to talk about.

*Advocates have emphasized the need for better access to menstrual products.*

Advocates have emphasized the need for better access to menstrual products. This could happen through local shelters, food banks, or healthcare providers. Public health advocates have also called for getting rid of the tampon tax, making menstrual products much more affordable.



## Collective narrative + visual after text

### Silent Struggle: Their Shared Experience of Period Poverty

Amidst the challenge of financial hardship, many families living in poverty grapple with the weight of not being able to earn enough to make ends meet. Balancing on the precipice of unreliable social services from the state, a pause in housing benefits and increased food insecurity have thrust these families into uncertain times. The pressure to make rent payments forces some people into high-interest payday loans, while the most basic necessities of sustenance and shelter hinge on the kindness of friends and family.

With all the bills to deal with, the first thing that falls by the wayside for those who menstruate is their capacity to afford an adequate supply of menstrual products, a struggle emblematic of what experts term "period poverty."

*Living with period poverty, many menstruators have to ration their period products.*

Living with period poverty, many menstruators have to ration their period products. They push sanitary pads to their limits, sometimes enduring up to 20 hours of use when the recommended limit is a mere fraction of that. In extreme cases, they resort to makeshift solutions, repurposing a contraceptive diaphragm to manage the flow, or, enduring the discomfort of free bleeding. Red stains are often seen on their jeans and pants, running down the seams.

*Red stains are often seen on their jeans and pants, running down the seams.*

During their menstrual period, those experiencing period poverty spend more time at home, worried about going out and people's judgmental reactions to their smell and stains. Their struggle remains hidden, veiled in shame and a deeply ingrained societal taboo surrounding menstruation. Rarely do they confide in anyone about their plight. When groceries are scarce, extended family members take charge. When children lack winter clothing, there is help at hand. But when menstrual products run dry, their plight remains a secret, known to none, and hence, resolved by none. When offered financial assistance, menstruators in the throes of period poverty must weigh a \$10 packet of menstrual products against the prospect of putting food on the table.

*In the eyes of individuals experiencing period poverty, the injustice of this situation is glaring.*

In the eyes of individuals experiencing period poverty, the injustice of the situation is glaring. They wonder why something as fundamental as menstrual products should be a burden. They hope for a future where taxes don't add even more to the costs of tampons and pads. Their aspiration is simple: better access. "They should be cheaper, or even free," one group of low-income menstruators posted online recently, "readily available for anyone who needs them."



### Silent Struggle: Their Shared Experience of Period Poverty

Amidst the challenge of financial hardship, many families living in poverty grapple with the weight of not being able to earn enough to make ends meet. Balancing on the precipice of unreliable social services from the state, a pause in housing benefits and increased food insecurity have thrust these families into uncertain times. The pressure to make rent payments forces some people into high-interest payday loans, while the most basic necessities of sustenance and shelter hinge on the kindness of friends and family.

With all the bills to deal with, the first thing that falls by the wayside for those who menstruate is their capacity to afford an adequate supply of menstrual products, a struggle emblematic of what experts term "period poverty."

*Living with period poverty, many menstruators have to ration their period products.*

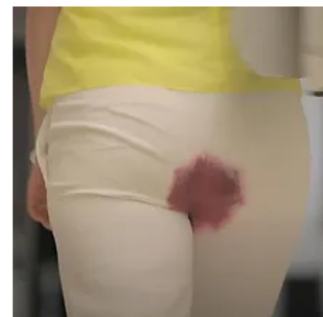
Living with period poverty, many menstruators have to ration their period products. They push sanitary pads to their limits, sometimes enduring up to 20 hours of use when the recommended limit is a mere fraction of that. In extreme cases, they resort to makeshift solutions, repurposing a contraceptive diaphragm to manage the flow, or, enduring the discomfort of free bleeding. Red stains are often seen on their jeans and pants, running down the seams.

*Red stains are often seen on their jeans and pants, running down the seams.*

During their menstrual period, those experiencing period poverty spend more time at home, worried about going out and people's judgmental reactions to their smell and stains. Their struggle remains hidden, veiled in shame and a deeply ingrained societal taboo surrounding menstruation. Rarely do they confide in anyone about their plight. When groceries are scarce, extended family members take charge. When children lack winter clothing, there is help at hand. But when menstrual products run dry, their plight remains a secret, known to none, and hence, resolved by none. When offered financial assistance, menstruators in the throes of period poverty must weigh a \$10 packet of menstrual products against the prospect of putting food on the table.

*In the eyes of individuals experiencing period poverty, the injustice of this situation is glaring.*

In the eyes of individuals experiencing period poverty, the injustice of the situation is glaring. They wonder why something as fundamental as menstrual products should be a burden. They hope for a future where taxes don't add even more to the costs of tampons and pads. Their aspiration is simple: better access. "They should be cheaper, or even free," one group of low-income menstruators posted online recently, "readily available for anyone who needs them."



## Collective narrative + visual before text

## Silent Struggle: Their Shared Experience of Period Poverty



Amidst the challenge of financial hardship, many families living in poverty grapple with the weight of not being able to earn enough to make ends meet. Balancing on the precipice of unreliable social services from the state, a pause in housing benefits and increased food insecurity have thrust these families into uncertain times. The pressure to make rent payments forces some people into high-interest payday loans, while the most basic necessities of sustenance and shelter hinge on the kindness of friends and family.

With all the bills to deal with, the first thing that falls by the wayside for those who menstruate is their capacity to afford an adequate supply of menstrual products, a struggle emblematic of what experts term "period poverty."

*Living with period poverty, many menstruators have to ration their period products.*

Living with period poverty, many menstruators have to ration their period products. They push sanitary pads to their limits, sometimes enduring up to 20 hours of use when the recommended limit is a mere fraction of that. In extreme cases, they resort to makeshift solutions, repurposing a contraceptive diaphragm to manage the flow, or, enduring the discomfort of free bleeding. Red stains are often seen on their jeans and pants, running down the seams.

*Red stains are often seen on their jeans and pants, running down the seams.*

During their menstrual period, those experiencing period poverty spend more time at home, worried about going out and people's judgmental reactions to their smell and stains. Their struggle remains hidden, veiled in shame and a deeply ingrained societal taboo surrounding menstruation. Rarely do they confide in anyone about their plight. When groceries are scarce, extended family members take charge. When children lack winter clothing, there is help at hand. But when menstrual products run dry, their plight remains a secret, known to none, and hence, resolved by none. When offered financial assistance, menstruators in the throes of period poverty must weigh a \$10 packet of menstrual products against the prospect of putting food on the table.

*In the eyes of individuals experiencing period poverty, the injustice of this situation is glaring.*

In the eyes of individuals experiencing period poverty, the injustice of the situation is glaring. They wonder why something as fundamental as menstrual products should be a burden. They hope for a future where taxes don't add even more to the costs of tampons and pads. Their aspiration is simple: better access. "They should be cheaper, or even free," one group of low-income menstruators posted online recently, "readily available for anyone who needs them."



## Silent Struggle: Their Shared Experience of Period Poverty



Amidst the challenge of financial hardship, many families living in poverty grapple with the weight of not being able to earn enough to make ends meet. Balancing on the precipice of unreliable social services from the state, a pause in housing benefits and increased food insecurity have thrust these families into uncertain times. The pressure to make rent payments forces some people into high-interest payday loans, while the most basic necessities of sustenance and shelter hinge on the kindness of friends and family.

With all the bills to deal with, the first thing that falls by the wayside for those who menstruate is their capacity to afford an adequate supply of menstrual products, a struggle emblematic of what experts term "period poverty."

*Living with period poverty, many menstruators have to ration their period products.*

Living with period poverty, many menstruators have to ration their period products. They push sanitary pads to their limits, sometimes enduring up to 20 hours of use when the recommended limit is a mere fraction of that. In extreme cases, they resort to makeshift solutions, repurposing a contraceptive diaphragm to manage the flow, or, enduring the discomfort of free bleeding. Red stains are often seen on their jeans and pants, running down the seams.

*Red stains are often seen on their jeans and pants, running down the seams.*

During their menstrual period, those experiencing period poverty spend more time at home, worried about going out and people's judgmental reactions to their smell and stains. Their struggle remains hidden, veiled in shame and a deeply ingrained societal taboo surrounding menstruation. Rarely do they confide in anyone about their plight. When groceries are scarce, extended family members take charge. When children lack winter clothing, there is help at hand. But when menstrual products run dry, their plight remains a secret, known to none, and hence, resolved by none. When offered financial assistance, menstruators in the throes of period poverty must weigh a \$10 packet of menstrual products against the prospect of putting food on the table.

*In the eyes of individuals experiencing period poverty, the injustice of this situation is glaring.*

In the eyes of individuals experiencing period poverty, the injustice of the situation is glaring. They wonder why something as fundamental as menstrual products should be a burden. They hope for a future where taxes don't add even more to the costs of tampons and pads. Their aspiration is simple: better access. "They should be cheaper, or even free," one group of low-income menstruators posted online recently, "readily available for anyone who needs them."



## Individual narrative + visual after text

## Silent Struggle: Single Mother Faces Period Poverty Alone

In the midst of financial hardship, Michelle, a single mother of a toddler daughter, grapples with the weight of providing for her family. Even though she works full-time as a waitress, she makes so little that she still qualifies for social services. However, a pause in housing benefits has left her in limbo, awaiting a reapplication process plagued by months-long delays. The pressure to make timely rent payments has forced Michelle into high-interest payday loans, while the most basic necessities of sustenance and shelter hinge on the kindness of friends and family.

With all the bills Michelle has to deal with, the first thing that falls by the wayside is her ability to afford an adequate supply of menstrual products, a struggle emblematic of what experts term "period poverty."

*Living with period poverty, Michelle has to ration her period products.*

Living with period poverty, Michelle has to ration her period products. She pushes sanitary pads to their limits, sometimes enduring up to 20 hours of use when the recommended limit is a mere fraction of that. In extreme cases, she resorts to makeshift solutions, repurposing a contraceptive diaphragm to manage the flow, or enduring the discomfort of free bleeding. Later, when Michelle throws away her old jeans, she notices red stains running down the seam.

*When Michelle throws away her old jeans, she notices red stains running down the seam.*

When she's on her period, Michelle finds herself spending more time at home, worried about going out and people's judgmental reactions to the smell and stains. Her struggle often remains hidden, veiled in shame and a deeply ingrained societal taboo surrounding menstruation. Rarely does she confide in anyone about her plight. When groceries are scarce, extended family members take charge. When her daughter lacks winter clothing, there is help at hand. But when menstrual products run dry, Michelle's plight remains a secret, known to none, and hence, resolved by none. When offered financial assistance, Michelle's instinct is to redirect it towards her child's needs, caught in the dilemma between a \$10 packet of menstrual products and putting food on the table.

*In Michelle's eyes, the injustice of this situation is glaring.*

In Michelle's eyes, the injustice of this situation is glaring. She wonders why something as fundamental as menstrual products should be a burden for any person. She wonders why some foods are not taxed but her tampons and pads are. Her aspiration is simple: better access. "They should be cheaper, or even free," she asserts, "readily available for anyone who needs them."



## Silent Struggle: Single Mother Faces Period Poverty Alone

In the midst of financial hardship, Michelle, a single mother of a toddler daughter, grapples with the weight of providing for her family. Even though she works full-time as a waitress, she makes so little that she still qualifies for social services. However, a pause in housing benefits has left her in limbo, awaiting a reapplication process plagued by months-long delays. The pressure to make timely rent payments has forced Michelle into high-interest payday loans, while the most basic necessities of sustenance and shelter hinge on the kindness of friends and family.

With all the bills Michelle has to deal with, the first thing that falls by the wayside is her ability to afford an adequate supply of menstrual products, a struggle emblematic of what experts term "period poverty."

*Living with period poverty, Michelle has to ration her period products.*

Living with period poverty, Michelle has to ration her period products. She pushes sanitary pads to their limits, sometimes enduring up to 20 hours of use when the recommended limit is a mere fraction of that. In extreme cases, she resorts to makeshift solutions, repurposing a contraceptive diaphragm to manage the flow, or enduring the discomfort of free bleeding. Later, when Michelle throws away her old jeans, she notices red stains running down the seam.

*When Michelle throws away her old jeans, she notices red stains running down the seam.*

When she's on her period, Michelle finds herself spending more time at home, worried about going out and people's judgmental reactions to the smell and stains. Her struggle often remains hidden, veiled in shame and a deeply ingrained societal taboo surrounding menstruation. Rarely does she confide in anyone about her plight. When groceries are scarce, extended family members take charge. When her daughter lacks winter clothing, there is help at hand. But when menstrual products run dry, Michelle's plight remains a secret, known to none, and hence, resolved by none. When offered financial assistance, Michelle's instinct is to redirect it towards her child's needs, caught in the dilemma between a \$10 packet of menstrual products and putting food on the table.

*In Michelle's eyes, the injustice of this situation is glaring.*

In Michelle's eyes, the injustice of this situation is glaring. She wonders why something as fundamental as menstrual products should be a burden for any person. She wonders why some foods are not taxed but her tampons and pads are. Her aspiration is simple: better access. "They should be cheaper, or even free," she asserts, "readily available for anyone who needs them."



## Individual narrative + visual before text

## Silent Struggle: Single Mother Faces Period Poverty Alone



In the midst of financial hardship, Michelle, a single mother of a toddler daughter, grapples with the weight of providing for her family. Even though she works full-time as a waitress, she makes so little that she still qualifies for social services. However, a pause in housing benefits has left her in limbo, awaiting a reapplication process plagued by months-long delays. The pressure to make timely rent payments has forced Michelle into high-interest payday loans, while the most basic necessities of sustenance and shelter hinge on the kindness of friends and family.

With all the bills Michelle has to deal with, the first thing that falls by the wayside is her ability to afford an adequate supply of menstrual products, a struggle emblematic of what experts term "period poverty."

*Living with period poverty, Michelle has to ration her period products.*

Living with period poverty, Michelle has to ration her period products. She pushes sanitary pads to their limits, sometimes enduring up to 20 hours of use when the recommended limit is a mere fraction of that. In extreme cases, she resorts to makeshift solutions, repurposing a contraceptive diaphragm to manage the flow, or enduring the discomfort of free bleeding. Later, when Michelle throws away her old jeans, she notices red stains running down the seam.

*When Michelle throws away her old jeans, she notices red stains running down the seam.*

When she's on her period, Michelle finds herself spending more time at home, worried about going out and people's judgmental reactions to the smell and stains. Her struggle often remains hidden, veiled in shame and a deeply ingrained societal taboo surrounding menstruation. Rarely does she confide in anyone about her plight. When groceries are scarce, extended family members take charge. When her daughter lacks winter clothing, there is help at hand. But when menstrual products run dry, Michelle's plight remains a secret, known to none, and hence, resolved by none. When offered financial assistance, Michelle's instinct is to redirect it towards her child's needs, caught in the dilemma between a \$10 packet of menstrual products and putting food on the table.

*In Michelle's eyes, the injustice of this situation is glaring.*

In Michelle's eyes, the injustice of this situation is glaring. She wonders why something as fundamental as menstrual products should be a burden for any person. She wonders why some foods are not taxed but her tampons and pads are. Her aspiration is simple: better access. "They should be cheaper, or even free," she asserts, "readily available for anyone who needs them."



## Silent Struggle: Single Mother Faces Period Poverty Alone



In the midst of financial hardship, Michelle, a single mother of a toddler daughter, grapples with the weight of providing for her family. Even though she works full-time as a waitress, she makes so little that she still qualifies for social services. However, a pause in housing benefits has left her in limbo, awaiting a reapplication process plagued by months-long delays. The pressure to make timely rent payments has forced Michelle into high-interest payday loans, while the most basic necessities of sustenance and shelter hinge on the kindness of friends and family.

With all the bills Michelle has to deal with, the first thing that falls by the wayside is her ability to afford an adequate supply of menstrual products, a struggle emblematic of what experts term "period poverty."

*Living with period poverty, Michelle has to ration her period products.*

Living with period poverty, Michelle has to ration her period products. She pushes sanitary pads to their limits, sometimes enduring up to 20 hours of use when the recommended limit is a mere fraction of that. In extreme cases, she resorts to makeshift solutions, repurposing a contraceptive diaphragm to manage the flow, or enduring the discomfort of free bleeding. Later, when Michelle throws away her old jeans, she notices red stains running down the seam.

*When Michelle throws away her old jeans, she notices red stains running down the seam.*

When she's on her period, Michelle finds herself spending more time at home, worried about going out and people's judgmental reactions to the smell and stains. Her struggle often remains hidden, veiled in shame and a deeply ingrained societal taboo surrounding menstruation. Rarely does she confide in anyone about her plight. When groceries are scarce, extended family members take charge. When her daughter lacks winter clothing, there is help at hand. But when menstrual products run dry, Michelle's plight remains a secret, known to none, and hence, resolved by none. When offered financial assistance, Michelle's instinct is to redirect it towards her child's needs, caught in the dilemma between a \$10 packet of menstrual products and putting food on the table.

*In Michelle's eyes, the injustice of this situation is glaring.*

In Michelle's eyes, the injustice of this situation is glaring. She wonders why something as fundamental as menstrual products should be a burden for any person. She wonders why some foods are not taxed but her tampons and pads are. Her aspiration is simple: better access. "They should be cheaper, or even free," she asserts, "readily available for anyone who needs them."



## Nonnarrative + visual after text

### Period Poverty: A Silent Struggle

For people facing mounting bills and increases in the costs of everyday goods, one of the first things that falls by the wayside is personal care products. This is especially true for people who menstruate. The inability to afford an adequate supply of menstrual products is a struggle emblematic of what experts term "period poverty." This is a lack of sufficient menstrual products and education about menstruation. Although it is often seen as a problem confined to low-income countries, recent surveys have exposed startling rates of period poverty in the richest countries in the world, too.

According to one study, two-thirds of low-income women said that they did not have the resources to buy menstrual products at some point in the last year. One-fifth of women say they struggle to afford period products each month.

*Living with period poverty, many menstruators have to ration their period products.*

Living with period poverty, many menstruators have to ration their period products. They push sanitary pads to their limits, sometimes enduring up to 20 hours of use when the recommended duration is a mere fraction of that. In extreme cases, they resort to makeshift solutions, repurposing a contraceptive diaphragm to manage the flow, or, enduring the discomfort of free bleeding. It is not uncommon for menstruating individuals to have jeans with red stains down the seams.

*It is not uncommon for menstruating individuals to have jeans with red stains down the seams.*

Period poverty also takes a toll on mental and emotional well-being. Because of period poverty, many menstruators deal with loneliness. They worry about going out in public while on their period. Compared to those who have never experienced it, research shows that women who experienced period poverty every month report high rates of severe depression, followed by those who experienced it in the past year. That is, more frequent experiences with period poverty are linked to more severe forms of depression. Additionally, menstruators miss days of school or work because they can't access the products they need. One out of every 10 menstruating youth misses school each month due to a lack of access to menstrual products and resources. Additionally, shame prevents menstruators from talking about the issue with others. Many keep their problem a secret out of an ingrained belief that periods are too taboo to talk about.

*Advocates have emphasized the need for better access to menstrual products.*

Advocates have emphasized the need for better access to menstrual products. This could happen through local shelters, food banks, or healthcare providers. Public health advocates have also called for getting rid of the tampon tax, making menstrual products much more affordable.



### Period Poverty: A Silent Struggle

For people facing mounting bills and increases in the costs of everyday goods, one of the first things that falls by the wayside is personal care products. This is especially true for people who menstruate. The inability to afford an adequate supply of menstrual products is a struggle emblematic of what experts term "period poverty." This is a lack of sufficient menstrual products and education about menstruation. Although it is often seen as a problem confined to low-income countries, recent surveys have exposed startling rates of period poverty in the richest countries in the world, too.

According to one study, two-thirds of low-income women said that they did not have the resources to buy menstrual products at some point in the last year. One-fifth of women say they struggle to afford period products each month.

*Living with period poverty, many menstruators have to ration their period products.*

Living with period poverty, many menstruators have to ration their period products. They push sanitary pads to their limits, sometimes enduring up to 20 hours of use when the recommended duration is a mere fraction of that. In extreme cases, they resort to makeshift solutions, repurposing a contraceptive diaphragm to manage the flow, or, enduring the discomfort of free bleeding. It is not uncommon for menstruating individuals to have jeans with red stains down the seams.

*It is not uncommon for menstruating individuals to have jeans with red stains down the seams.*

Period poverty also takes a toll on mental and emotional well-being. Because of period poverty, many menstruators deal with loneliness. They worry about going out in public while on their period. Compared to those who have never experienced it, research shows that women who experienced period poverty every month report high rates of severe depression, followed by those who experienced it in the past year. That is, more frequent experiences with period poverty are linked to more severe forms of depression. Additionally, menstruators miss days of school or work because they can't access the products they need. One out of every 10 menstruating youth misses school each month due to a lack of access to menstrual products and resources. Additionally, shame prevents menstruators from talking about the issue with others. Many keep their problem a secret out of an ingrained belief that periods are too taboo to talk about.

*Advocates have emphasized the need for better access to menstrual products.*

Advocates have emphasized the need for better access to menstrual products. This could happen through local shelters, food banks, or healthcare providers. Public health advocates have also called for getting rid of the tampon tax, making menstrual products much more affordable.



## Nonnarrative + visual before text

## Period Poverty: A Silent Struggle



For people facing mounting bills and increases in the costs of everyday goods, one of the first things that falls by the wayside is personal care products. This is especially true for people who menstruate. The inability to afford an adequate supply of menstrual products is a struggle emblematic of what experts term "period poverty." This is a lack of sufficient menstrual products and education about menstruation. Although it is often seen as a problem confined to low-income countries, recent surveys have exposed startling rates of period poverty in the richest countries in the world, too.

According to one study, two-thirds of low-income women said that they did not have the resources to buy menstrual products at some point in the last year. One-fifth of women say they struggle to afford period products each month.

*Living with period poverty, many menstruators have to ration their period products.*

Living with period poverty, many menstruators have to ration their period products. They push sanitary pads to their limits, sometimes enduring up to 20 hours of use when the recommended duration is a mere fraction of that. In extreme cases, they resort to makeshift solutions, repurposing a contraceptive diaphragm to manage the flow, or, enduring the discomfort of free bleeding. It is not uncommon for menstruating individuals to have jeans with red stains down the seams.

*It is not uncommon for menstruating individuals to have jeans with red stains down the seams.*

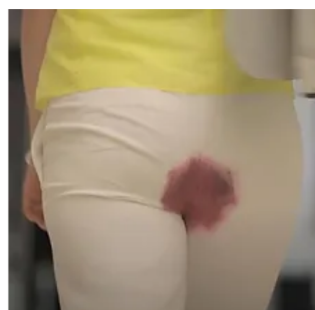
Period poverty also takes a toll on mental and emotional well-being. Because of period poverty, many menstruators deal with loneliness. They worry about going out in public while on their period. Compared to those who have never experienced it, research shows that women who experienced period poverty every month report high rates of severe depression, followed by those who experienced it in the past year. That is, more frequent experiences with period poverty are linked to more severe forms of depression. Additionally, menstruators miss days of school or work because they can't access the products they need. One out of every 10 menstruating youth misses school each month due to a lack of access to menstrual products and resources. Additionally, shame prevents menstruators from talking about the issue with others. Many keep their problem a secret out of an ingrained belief that periods are too taboo to talk about.

*Advocates have emphasized the need for better access to menstrual products.*

Advocates have emphasized the need for better access to menstrual products. This could happen through local shelters, food banks, or healthcare providers. Public health advocates have also called for getting rid of the tampon tax, making menstrual products much more affordable.



## Period Poverty: A Silent Struggle



For people facing mounting bills and increases in the costs of everyday goods, one of the first things that falls by the wayside is personal care products. This is especially true for people who menstruate. The inability to afford an adequate supply of menstrual products is a struggle emblematic of what experts term "period poverty." This is a lack of sufficient menstrual products and education about menstruation. Although it is often seen as a problem confined to low-income countries, recent surveys have exposed startling rates of period poverty in the richest countries in the world, too.

According to one study, two-thirds of low-income women said that they did not have the resources to buy menstrual products at some point in the last year. One-fifth of women say they struggle to afford period products each month.

*Living with period poverty, many menstruators have to ration their period products.*

Living with period poverty, many menstruators have to ration their period products. They push sanitary pads to their limits, sometimes enduring up to 20 hours of use when the recommended duration is a mere fraction of that. In extreme cases, they resort to makeshift solutions, repurposing a contraceptive diaphragm to manage the flow, or, enduring the discomfort of free bleeding. It is not uncommon for menstruating individuals to have jeans with red stains down the seams.

*It is not uncommon for menstruating individuals to have jeans with red stains down the seams.*

Period poverty also takes a toll on mental and emotional well-being. Because of period poverty, many menstruators deal with loneliness. They worry about going out in public while on their period. Compared to those who have never experienced it, research shows that women who experienced period poverty every month report high rates of severe depression, followed by those who experienced it in the past year. That is, more frequent experiences with period poverty are linked to more severe forms of depression. Additionally, menstruators miss days of school or work because they can't access the products they need. One out of every 10 menstruating youth misses school each month due to a lack of access to menstrual products and resources. Additionally, shame prevents menstruators from talking about the issue with others. Many keep their problem a secret out of an ingrained belief that periods are too taboo to talk about.

*Advocates have emphasized the need for better access to menstrual products.*

Advocates have emphasized the need for better access to menstrual products. This could happen through local shelters, food banks, or healthcare providers. Public health advocates have also called for getting rid of the tampon tax, making menstrual products much more affordable.



Appendix B

Stimulus Material (Images) for Pilot Study

<p>1.</p> 	<p>2.</p> 
<p>3.</p> 	<p>4.</p> 
<p>5.</p>	<p>6.</p>



7.



8.



9.



10.





11.



12.



## Appendix C

### Questionnaire for Main Study

[Screening: Information]

Before you participate in this study, we need to make sure you are eligible.

If you are not eligible, you will be directed to the end of the study and will not be paid.

[Screening: Age question]

What is your current age (in years)?

[Study information]

[Consent questions]

1. I would like to participate in the study. No/Yes

2. I agree to carefully read the text (such as instruction, message, questions, etc.) and to thoughtfully answer the questions. If I do not, I will accept the consequences. Yes/No

[Instruction and stimulus] (for the experimental conditions)

- Before the stimulus:

On the following page, we will show you a blog post. Please read it carefully as we will be asking you questions about it afterward.

Once you click the button below, the blog post will appear. You will not be able to advance to the page after the post until at least 60 seconds have passed. After that minute is up, you will see the “next” button appear and you can click on it when you are ready to answer questions about the blog post.

- Stimulus

- After the stimulus:

Now, please answer some questions about the blog post you just read.

[Instruction] (for the control condition)

Please click the “next” button to proceed.

We will now have you answer some questions about your thoughts on an issue, period poverty.

Period poverty refers to a lack of sufficient menstrual products and education.

[Attention and manipulation check] (experimental conditions only)

1. What issue is described in the blog post?

Climate change

Summer vacation

Period poverty

Immigration

Education

American monuments

2. Please rate your agreement with the following statements about the blog post. (1 = strongly disagree, 7 = strongly agree)

There is a story plot in the blog post.

The blog post is written in the way of telling someone’s story.

The blog post is based on a story.

[Emotions] (experimental conditions only)

While reading the blog post, how much did you feel each of the following emotions? (1 = not at all, 7 = a great deal)

Compassionate

Softhearted

Tender

Sad

Dreary

Sorrow

Disgusting

Sick

Grossed out

Angry

Outraged

Infuriated

[Narrative engagement: Identification and transportation] (experimental conditions only)

Thinking about [Michelle featured in the blog post/people experiencing period poverty, as discussed in the blog post], please rate your agreement with the following statements. (1 = strongly disagree, 7 = strongly agree)

I think I understood [Michelle/them] well.

I understood the experience of period poverty the way [Michelle/they] understood it.

While reading, I felt like [Michelle/they] felt.

During reading, I could really “get insider” [Michelle’s head/their heads].

I tend to understand why [Michelle/they] did what she did.

Thinking about [Michelle featured in the blog post/people experiencing period poverty, as discussed in the blog post], please rate your agreement with the following statements. (1 = strongly disagree, 7 = strongly agree)

I could picture myself in the scene of the events described in the blog post.

I was mentally involved in the blog post while reading it.

While reading the blog post, I wanted to learn how it ended.

The blog post affected me emotionally.

While reading the blog post, I had a vivid image of [Michelle/people experiencing period poverty].

[Message resistance: Counterarguing and perceived threat to freedom] (experimental conditions only)

Please rate your agreement with the following statements. (1 = strongly disagree, 7 = strongly agree)

I found myself actively disagreeing with the author.

I was looking for flaws in the author's arguments.

It was easy to agree with the arguments made in the message.

I found myself actively agreeing with the author's points.

Please rate your agreement with the following statements. (1 = strongly disagree, 7 = strongly agree)

The blog post threatened my freedom.

The blog post tried to make a decision for me.

The blog post tried to manipulate me.

The blog post tried to pressure me.

[Policy support]

How much do you support the following policies? (1 = strongly oppose, 7 = strongly support)

Allowing federal grant funds to be used to provide free menstrual products in schools

Incentivizing colleges and universities to provide free menstrual products

Ensuring access to free menstrual products for incarcerated individuals

Allowing homeless shelter federal grant funds to be used to purchase menstrual products

Requiring Medicaid to cover menstrual products

Directing large employers to provide employees with free menstrual products in the workplace

Requiring all public federal buildings to provide free menstrual products in restrooms

Removing taxes on menstrual products

## [Intention to donate]

Please rate your agreement with the following statements. (1 = strongly disagree, 7 = strongly agree)

In the next six months, I intend to donate money to organizations combating period poverty.

In the next six months, I will donate money to organizations combating period poverty.

In the next six months, I will try to donate money to organizations combating period poverty.

## [Stigma]

Thinking about people experiencing period poverty, please rate your agreement with the following statements. (1 = strongly disagree, 7 = strongly agree)

Most people would willingly accept a person experiencing period poverty as a close friend.

Most people believe that a person experiencing period poverty is just as intelligent as the average person.

Most people believe that a person experiencing period poverty is just as trustworthy as the average citizen.

Most people would accept a person experiencing period poverty as a teacher of young children in a public school.

Most people feel that experiencing period poverty is a sign of personal failure.

Most people would not hire a person experiencing period poverty to take care of their children.

Most people think less of a person experiencing period poverty.

Most employers will hire a person experiencing period poverty, if the person is qualified for the job.

Most employers will pass over the application of a person experiencing period poverty, in favor of another applicant.

Most people in my community would treat a person experiencing period poverty as they would treat anyone.

Most people would be reluctant to date a person experiencing period poverty.

Once they know a person is experiencing period poverty, most people will take the person's opinions less seriously.

[Attribution of causal responsibility]

How much responsibility do you think each of the following groups has for causing the problem of period poverty. (1 = not at all, 7 = a great deal)

The menstrual product industry

People who are experiencing period poverty

Policy makers

Others (Please specify)

[Information recognition] (for the individual narrative conditions)

Below is a list of information that we pulled from a variety of blog posts. Please select the ones you recall actually appearing in the blog post we showed you today.

Living with period poverty, Michelle has to ration her period products.

Period poverty only occurs in relatively underdeveloped countries.

Michelle's plight remains a secret, known to none, and hence, resolved by none.

It is fine if a woman wears a single tampon or pad for one day.

The pressure to make timely rent payments has forced Michelle into high-interest payday loans.

When Michelle throws away her old jeans, she notices red stains running down the seam.

Individuals can overcome the difficulty of period poverty if they work harder.

[Information recognition] (for the collective narrative conditions)

Below is a list of information that we pulled from a variety of blog posts. Please select the ones you recall actually appearing in the blog post we showed you today.

Living with period poverty, many menstruators have to ration their period products.

Period poverty only occurs in relatively underdeveloped countries.

Their struggle remains hidden, veiled in shame and a deeply ingrained societal taboo surrounding menstruation.

It is fine if a woman wears a single tampon or pad for one day.

The pressure to make rent payments forces some people into high-interest payday loans.

Red stains are often seen on their jeans and pants, running down the seams.

Individuals can overcome the difficulty of period poverty if they work harder.

[Information recognition] (for the nonnarrative conditions)

Below is a list of information that we pulled from a variety of blog posts. Please select the ones you recall actually appearing in the blog post we showed you today.

Living with period poverty, many menstruators have to ration their period products.

Period poverty only occurs in relatively underdeveloped countries.

Many keep their problem a secret out of an ingrained belief that periods are too taboo to talk about.

It is fine if a woman wears a single tampon or pad for one day.

For people facing mounting bills and increases in the costs of everyday goods, one of the first things that falls by the way side is personal care products.

It is not uncommon for menstruating individuals to have jeans with red stains down the seams.

Individuals can overcome the difficulty of period poverty if they work harder.

[Demographics]



You are almost done! We just have a few additional questions before the end of the survey.

Are you Hispanic, Latino/a/x, or of Spanish origin?

No, not of Hispanic, Latino/a/x, or Spanish origin

Yes, Mexican American, Chicano

Yes, Puerto Rican

Yes, Cuban

Yes, another Hispanic, Latino/a/x, or Spanish origin\_\_\_\_\_

What race or races do you consider yourself to be?

American Indian, Native American, or Alaska Native

Asian or Asian American

Black or African American

Hispanic or Latino/a/x

Native Hawaiian or Other Pacific Islander

White or Caucasian

Not listed\_\_\_\_\_

What is the highest level of school or the highest degree you have completed?

Less than a high school diploma

High school graduate or equivalent

Some college, no degree

Associate degree

Bachelor's degree

Master's degree

Doctorate

Please indicate your household income (per year, before tax):

Less than \$20,000

\$20,000 to \$34,999

\$35,000 to \$49,999

\$50,000 to \$74,999

\$75,000 to \$99,999

Over \$100,000

What is your current gender identity?

Female/Woman

Male/Men

Trans male/trans man

Trans female/trans woman

Non-binary

Not listed, please state \_\_\_\_\_

Generally speaking, what political party are you affiliated with?

Republican

Democratic

Independent

Other, please state \_\_\_\_\_

Please indicate how familiar you are with menstruation/periods. 0 = not familiar at all, 100 = extremely familiar

[Open-ended feedback]

Is there anything else you'd like to share with us about your experience in this study?

## Appendix D

### Nonsignificant Results of Separate Mediation Models

Unstandardized path coefficients and standard errors (in parentheses) are reported. CI = confidence interval.

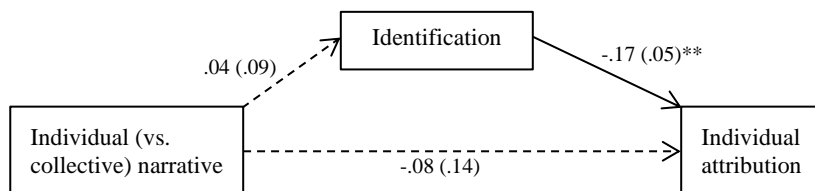


Figure **A1**: Indirect effect between individual (versus collective) narrative and attribution of causal responsibility to individuals through identification. The indirect effect is not significant:  $b = -.01$ , 95% CI =  $[-.04 - .03]$ . \*\*  $p < .01$ .

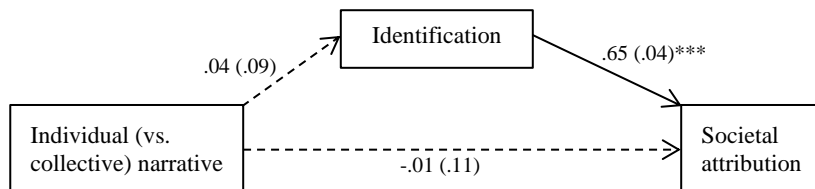


Figure **A2**: Indirect effect between individual (versus collective) narrative and attribution of causal responsibility to societal actors through identification. The indirect effect is not significant:  $b = .02$ , 95% CI =  $[-.09 - .15]$ . \*\*\*  $p < .001$ .

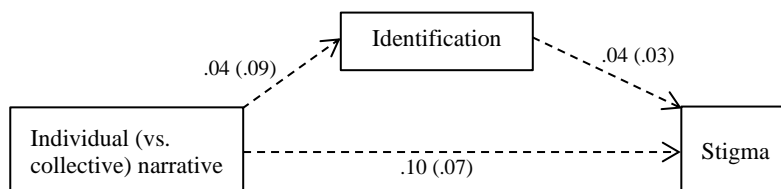


Figure **A3**: Indirect effect between individual (versus collective) narrative and stigma through identification. The indirect effect is not significant:  $b = .00$ , 95% CI =  $[-.01 - .01]$ .

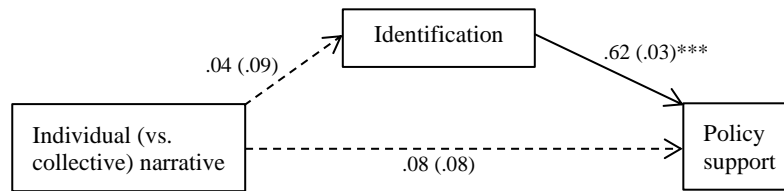


Figure A4: Indirect effect between individual (versus collective) narrative and policy support through identification. The indirect effect is not significant:  $b = .02$ , 95% CI = [-.09 - .14]. \*\*\*  $p < .001$ .

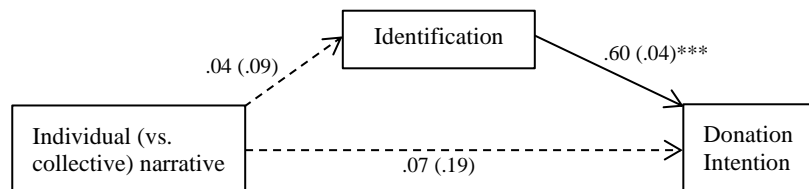


Figure A5: Indirect effect between individual (versus collective) narrative and donation intention through identification. The indirect effect is not significant:  $b = .02$ , 95% CI = [-.09 - .14]. \*\*\*  $p < .001$ .

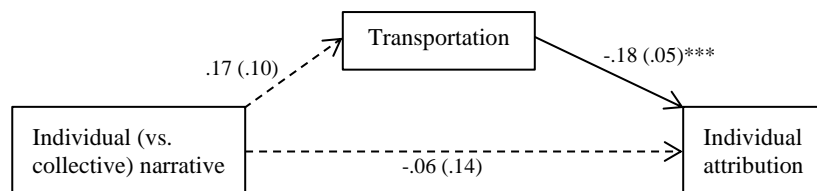


Figure A6: Indirect effect between individual (versus collective) narrative and attribution of causal responsibility to individuals through transportation. The indirect effect is not significant:  $b = -.03$ , 95% CI = [-.07 - .01]. \*\*\*  $p < .001$ .

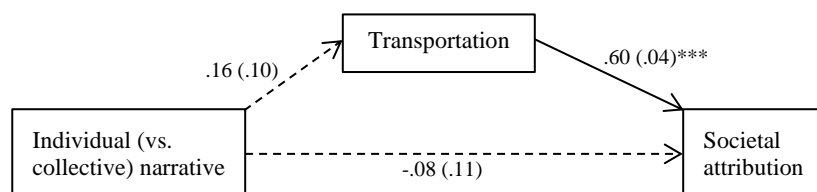


Figure A7: Indirect effect between individual (versus collective) narrative and attribution of causal responsibility to societal actors through transportation. The indirect effect is not significant:  $b =$

.10, 95% CI = [-.02 - .22]. \*\*\*  $p < .001$ .

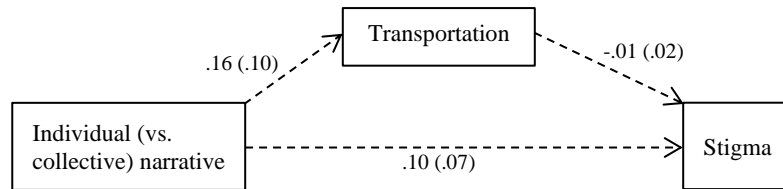


Figure A8: Indirect effect between individual (versus collective) narrative and attribution of causal responsibility to stigma through transportation. The indirect effect is not significant:  $b = -.00$ , 95% CI = [-.02 - .01].

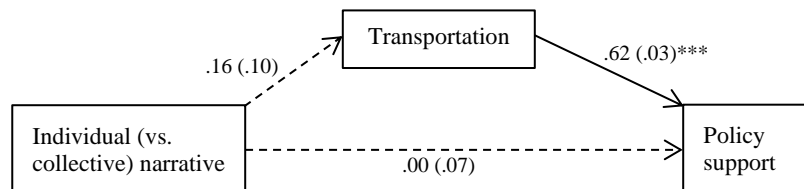


Figure A9: Indirect effect between individual (versus collective) narrative and attribution of causal responsibility to policy support through transportation. The indirect effect is not significant:  $b = .10$ , 95% CI = [-.02 - .23]. \*\*\*  $p < .001$ .

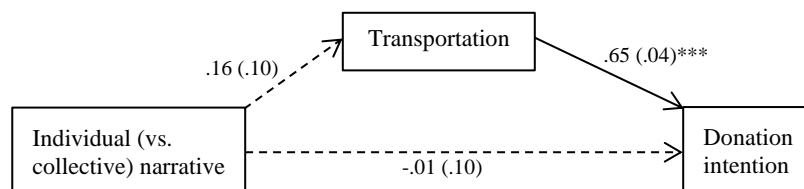


Figure A10: Indirect effect between individual (versus collective) narrative and attribution of causal responsibility to donation intention through transportation. The indirect effect is not significant:  $b = .11$ , 95% CI = [-.03 - .25]. \*\*\*  $p < .001$ .

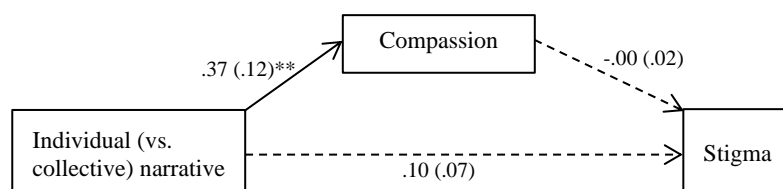


Figure A11: Indirect effect between individual (versus collective) narrative and stigma through

compassion. The indirect effect is not significant:  $b = -.00$ , 95% CI =  $[-.02 - .02]$ .  $*** p < .01$ .

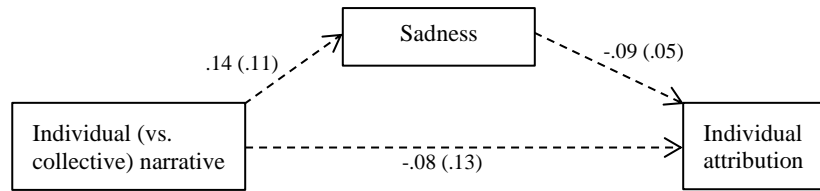


Figure A12: Indirect effect between individual (versus collective) narrative and attribution of causal responsibility to individuals through sadness. The indirect effect is not significant:  $b = -.01$ , 95% CI =  $[-.04 - .01]$ .

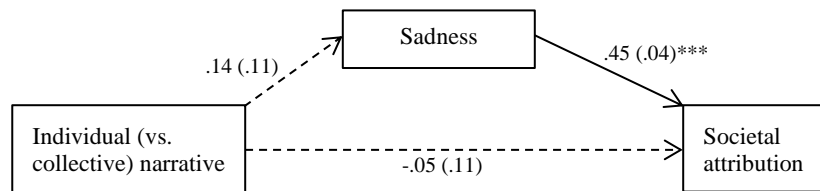


Figure A13: Indirect effect between individual (versus collective) narrative and attribution of causal responsibility to societal actors through sadness. The indirect effect is not significant:  $b = .06$ , 95% CI =  $[-.03 - .16]$ .  $*** p < .001$ .

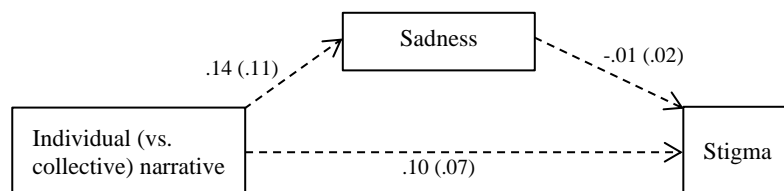


Figure A14: Indirect effect between individual (versus collective) narrative and stigma through sadness. The indirect effect is not significant:  $b = -.00$ , 95% CI =  $[-.01 - .01]$ .

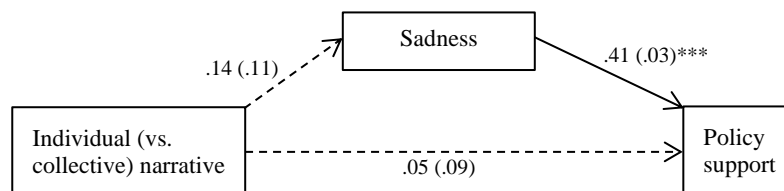


Figure A15: Indirect effect between individual (versus collective) narrative and policy support through sadness. The indirect effect is not significant:  $b = .06$ , 95% CI =  $[-.03 - .15]$ .  $*** p < .001$ .

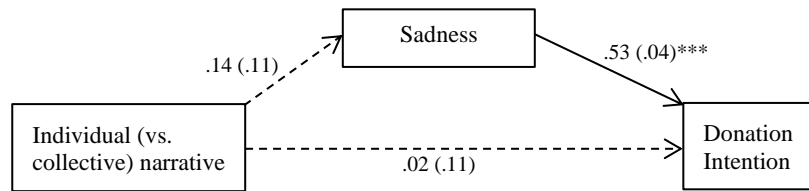


Figure 16: Indirect effect between individual (versus collective) narrative and donation intention through sadness. The indirect effect is not significant:  $b = .07$ , 95% CI = [-.04 - .19]. \*\*\*  $p < .001$ .

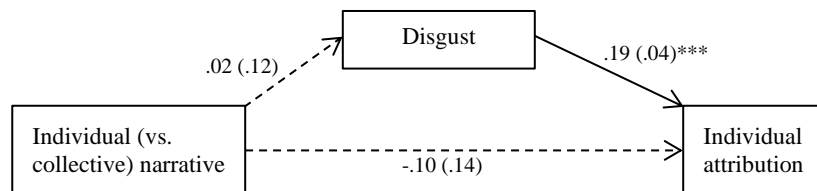


Figure A17: Indirect effect between individual (versus collective) narrative and attribution of causal responsibility to individuals through disgust. The indirect effect is not significant:  $b = .00$ , 95% CI = [-.04 - .06]. \*\*\*  $p < .001$ .

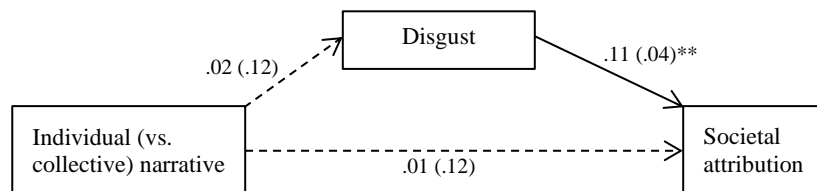


Figure A18: Indirect effect between individual (versus collective) narrative and attribution of causal responsibility to societal actors through disgust. The indirect effect is not significant:  $b = .00$ , 95% CI = [-.03 - .03]. \*\*  $p < .01$ .

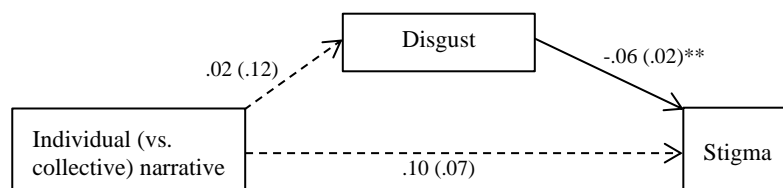


Figure A19: Indirect effect between individual (versus collective) narrative and stigma through disgust. The indirect effect is not significant:  $b = -.00$ , 95% CI = [-.02 - .02]. \*\*  $p < .01$ .

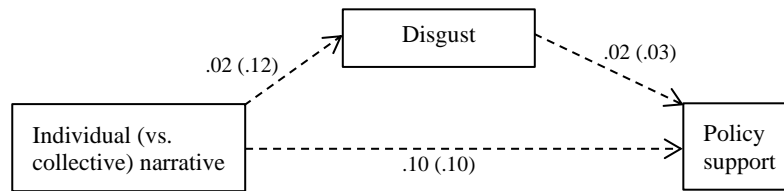


Figure A20: Indirect effect between individual (versus collective) narrative and policy support through disgust. The indirect effect is not significant:  $b = .00$ , 95% CI =  $[-.01 - .01]$ .

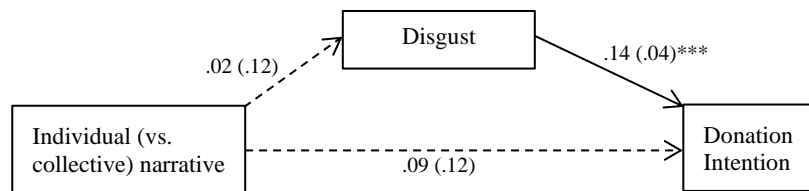


Figure A21: Indirect effect between individual (versus collective) narrative and donation intention through disgust. The indirect effect is not significant:  $b = .00$ , 95% CI =  $[-.03 - .04]$ . \*\*\*  $p < .001$ .

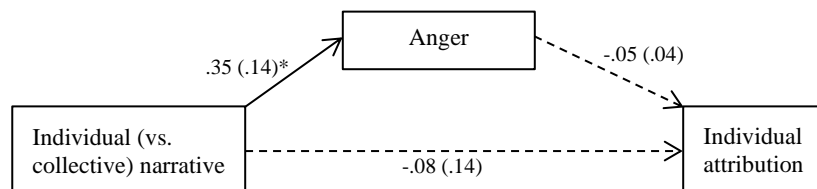


Figure A22: Indirect effect between individual (versus collective) narrative and attribution of causal responsibility to individuals through anger. The indirect effect is not significant:  $b = -.02$ , 95% CI =  $[-.05 - .01]$ . \*  $p < .05$ .

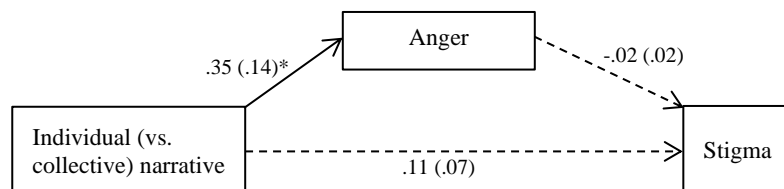


Figure A23: Indirect effect between individual (versus collective) narrative and stigma through anger. The indirect effect is not significant:  $b = -.01$ , 95% CI =  $[-.03 - .01]$ . \*  $p < .05$ .



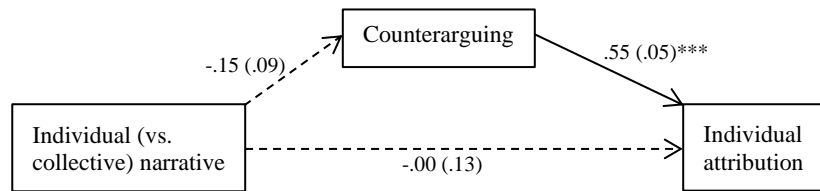


Figure A24: Indirect effect between individual (versus collective) narrative and attribution of causal responsibility to individuals through counterarguing. The indirect effect is not significant:  $b = -.08$ , 95% CI =  $[-.18 - .01]$ . \*\*\*  $p < .001$ .

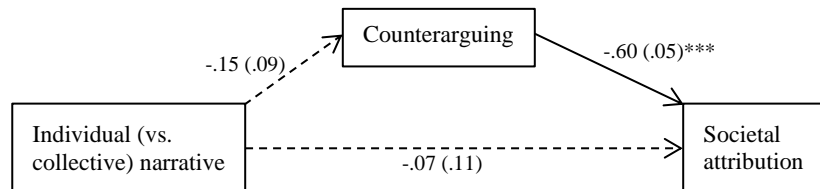


Figure A25: Indirect effect between individual (versus collective) narrative and attribution of causal responsibility to societal actors through counterarguing. The indirect effect is not significant:  $b = .09$ , 95% CI =  $[-.01 - .20]$ . \*\*\*  $p < .001$ .

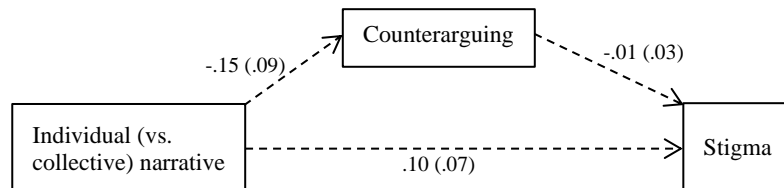


Figure A26: Indirect effect between individual (versus collective) narrative and stigma through counterarguing. The indirect effect is not significant:  $b = .00$ , 95% CI =  $[-.01 - .01]$ .

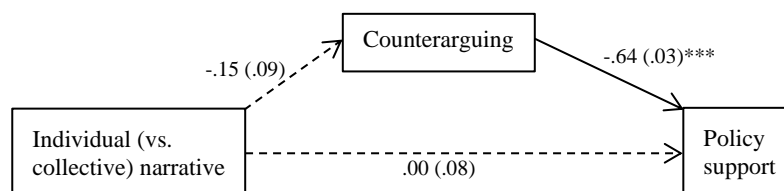


Figure A27: Indirect effect between individual (versus collective) narrative and policy support through counterarguing. The indirect effect is not significant:  $b = .10$ , 95% CI =  $[-.01 - .22]$ . \*\*\*  $p < .001$ .

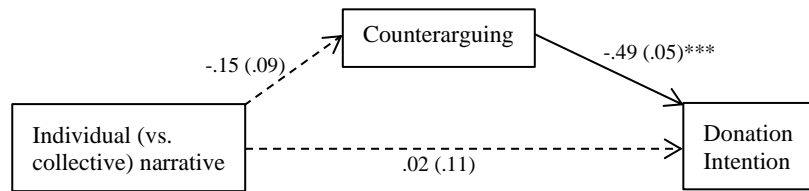


Figure A28: Indirect effect between individual (versus collective) narrative and donation intention through counterarguing. The indirect effect is not significant:  $b = .07$ , 95% CI = [-.01 - .17]. \*\*\*  $p < .001$ .

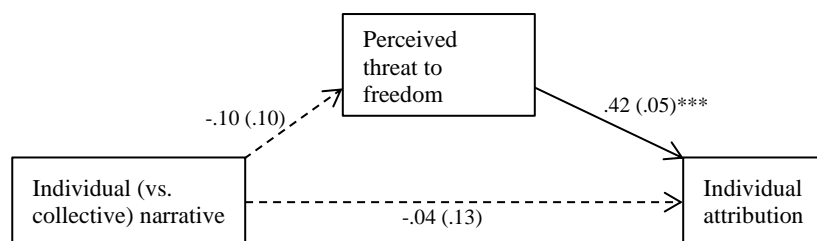


Figure A29: Indirect effect between individual (versus collective) narrative and attribution of causal responsibility to individuals through perceived threat to freedom. The indirect effect is not significant:  $b = -.04$ , 95% CI = [-.13 - .03]. \*\*\*  $p < .001$ .

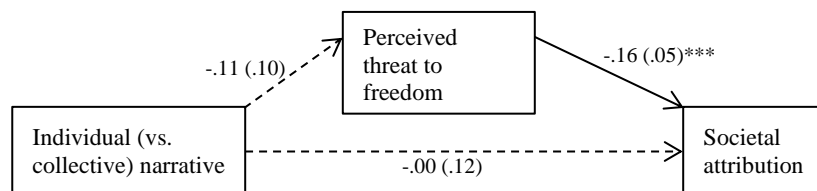


Figure A30: Indirect effect between individual (versus collective) narrative and attribution of causal responsibility to societal actors through perceived threat to freedom. The indirect effect is not significant:  $b = .02$ , 95% CI = [-.01 - .06]. \*\*\*  $p < .001$ .

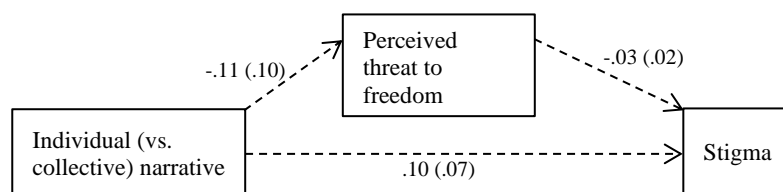


Figure A31: Indirect effect between individual (versus collective) narrative and stigma through perceived threat to freedom. The indirect effect is not significant:  $b = .00$ , 95% CI = [-.00 - .02].

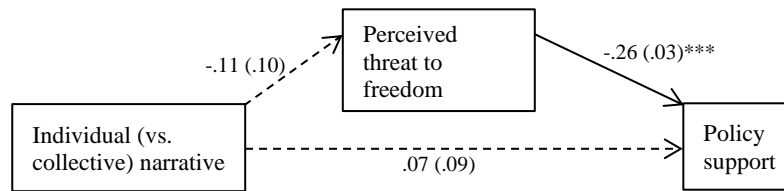


Figure **A32**: Indirect effect between individual (versus collective) narrative and policy support through perceived threat to freedom. The indirect effect is not significant:  $b = .03$ , 95% CI =  $[-.02 - .09]$ . \*\*\*  $p < .001$ .

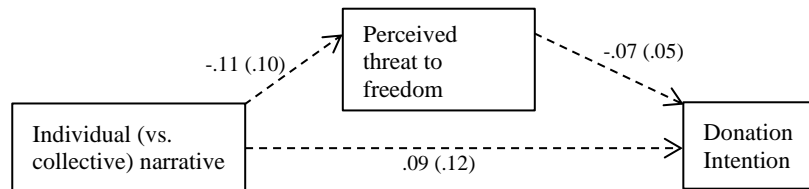


Figure **A33**: Indirect effect between individual (versus collective) narrative and donation intention through perceived threat to freedom. The indirect effect is not significant:  $b = .01$ , 95% CI =  $[-.01 - .04]$ .

## VITA (ABBREVIATED)

### Yin Yang

#### Education

Ph.D. Mass Communications, Pennsylvania State University (August 2020 – May 2024)

M.A. Communication, Marquette University (August 2018 – May 2020)

B.A. Media Production, East China Normal University (September 2014 – June 2018)

#### Publications

- Cheng, Z., **Yang, Y.**, & Gil de Zúñiga, H. (2023). Second screening and trust in professional and alternative media: The mediating role of media efficacy. *Human Communication Research*. Advance online publication. <https://doi.org/10.1093/hcr/hqad053>
- Ma, X., **Yang, Y.**, Lin, T., Zhang, Y., & Zheng, E. (2023). Cross-sectional and longitudinal relationships among loneliness, purpose in life, and protective behaviors in older adults before and during the early stage of COVID-19. *Journal of Gerontology: Psychological Sciences*, 78(12), 2037-2044. <https://doi.org/10.1093/geronb/gbad117>
- Yang, Y.**, & Yin, Z. (2023). When appearance social comparison benefits women's body satisfaction: Examining the effects of viewing lean sports. *Mass Communication and Society*, 26(6), 1062-1083. <https://doi.org/10.1080/15205436.2023.2227620>
- Skurka, C., Myrick, J., & **Yang, Y.** (2023). Fanning the flames or burning out? Testing competing hypotheses about repeated exposure to threatening messages in the context of climate change. *Climatic Change*, 176(5), 52. <https://doi.org/10.1007/s10584-023-03539-8>
- Ma, X., **Yang, Y.**, & Chen, L. (2023). Predicting personal intention to help mitigate the effects of climate change: Using the Extended Parallel Process Model from personal and collective perspectives in China. *Environmental Communication*, 17(4), 353-369. <https://doi.org/10.1080/17524032.2023.2181134>
- Yang, Y.**, Ma, X., & Myrick, J. G. (2023). Social media exposure, interpersonal network, and tampon use intention: A multigroup comparison based on network structure. *Journal of Health Psychology*, 28(4), 343-355. <https://doi.org/10.1177%2F13591053221120332>
- Yang, Y.**, & Kim, Y. (2023). Integrating the theory of planned behavior and bonding social capital to examine Chinese women's tampon use intentions. *Health Communication*, 38(3), 575-584. <https://doi.org/10.1080/10410236.2021.1962586>
- Myrick, J. G., & **Yang, Y.** (2022). Social cognitive theory. In E. Y. Ho, C. L. Bylund, & J. van Weert (Eds.), *The International encyclopedia of health communication*. Wiley. <https://doi.org/10.1002/9781119678816.iehc0666>
- Yang, Y.** (2022). Review of the book Environmental activism, social media, and protest in China: Becoming activists over wild public networks, by Elizabeth Brunner. *Mass Communication and Society*, 25(2), 308-309. <https://doi.org/10.1080/15205436.2021.1978774>
- Zhu, Y., Glowacki, E., & **Yang, Y.** (2021). A social ties-based approach to cancer patients' quality of life: Examining group ties and individual ties across offline and online settings. *Health Communication*, 36, 741-751. <https://doi.org/10.1080/10410236.2020.1712520>