

EXPERIENCING MEANING IN THE MISFORTUNE OF OTHERS: SCHADENFREUDE,  
JUST WORLD BELIEFS, AND MEANING IN LIFE

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By

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The undersigned, appointed by the dean of the Graduate School, have examined the thesis entitled

EXPERIENCING MEANING IN THE MISFORTUNE OF OTHERS: SCHADENFREUDE,  
JUST WORLD BELIEFS, AND MEANING IN LIFE

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## Abstract

Four studies tested the effects of the experience of schadenfreude on meaning in life, and the role of just world beliefs in this relationship. Study 1 ( $N = 967$ ) was a correlational study that showed just world beliefs are positively related to meaning in life, laying the groundwork for this program of research. Study 2a ( $N = 208$ ) was an experiment that tested the effects of schadenfreude on meaning in life, compared to the effects of a typical positive affect induction, a typical schadenfreude comparison condition (an undeserving target of misfortune), and a control condition. Study 2a showed that schadenfreude and a positive affect induction both led to higher meaning in life than comparison groups. Additionally, Study 2a showed that just world beliefs moderated the effects of schadenfreude on meaning in life. Specifically, after experiencing schadenfreude, those that did not endorse the idea of a just world showed similar meaning in life as those that did. These results suggested that the experience of schadenfreude may convey information about the extent to which the world is just, and thus enhance perceptions that life is coherent and meaningful. Study 2b ( $N = 274$ ) was designed to replicate Study 2a in a different sample. We again showed a similar pattern of moderation of condition effects on meaning in life by just world beliefs, but results were marginally significant. Study 3 ( $N = 1,264$ ) replicated and extended Study 2 findings by manipulating both just world beliefs, and schadenfreude. Study 3 showed, for individuals that were lower on just world beliefs after experiencing a just world threat, schadenfreude bolstered meaning in life in a manner consistent with the pattern uncovered in Study 2. Ultimately, this research demonstrated that just world beliefs help individuals make sense of the world, and thereby facilitate a sense that life is meaningful. When such beliefs are lacking, momentary experiences, such as schadenfreude, can foster a sense of meaning. Implications and future directions are discussed.

## **Experiencing Meaning in the Misfortune of Others: Schadenfreude, Just World Beliefs, and Meaning in Life**

Often, when life feels good, life also feels meaningful. Numerous studies have identified a consistent and robust link between feelings of positive mood or positive affect and meaning in life (see Halusic & King, 2013, for a review). Most importantly, experimental evidence (reviewed below) shows that positive mood inductions lead, causally, to higher meaning in life. These results challenge key assumptions in the science of well-being. Contemporary scholarship on psychological well-being often regards positive affect and meaning in life quite differently. Drawing on a distinction largely rooted in philosophy (see Kashdan, Biswas-Diener, & King, 2008), positive affect has often been considered emblematic of *hedonic well-being*, defined as, feeling good (without regard for the source of those pleasant feelings). In contrast, meaning in life is typically included under the rubric of *eudaimonic well-being*, well-being that emerges out of the actualization of one's potential or morally virtuous actions. Hedonic well-being is often portrayed as relatively easy to attain, while eudaimonic well-being is viewed as a relatively rarer, superior type of well-being (Ward & King, 2016). Eudaimonic well-being is considered by some to be the pinnacle of human functioning (see Ward & King, 2016; Biswas-Diener, Kashdan & King, 2009; see also Phillips, De Freitas & Mott, Gruber & Knobe, 2017). As a result, eudaimonic well-being is treated as a more precious form of happiness.

Although the distinction between hedonic and eudaimonic well-being remains controversial, the preceding illustrates the current state of well-being science: There are thought to be two distinct types of happiness. These include well-being that may result from sources that are amoral or morally ambiguous (i.e., hedonic well-being) and morally pure and superior well-being (i.e., eudaimonic well-being). The question then follows: Given that positive affect leads

to higher meaning in life, does it matter *where* positive affect comes from? Is meaning in life enhanced by any positive experience or is it better if positive feelings spring from morally pure (versus morally ambiguous or even guilty) pleasures? Furthermore, does the answer to that question depend on who you are (i.e., personality)?

The present studies address these questions with focus on a potentially guilty pleasure: Positive feelings that result from the misfortune of another, or *schadenfreude*. Do such positive feelings enhance the experience of meaning in life? *Schadenfreude* is an excellent context for exploring these issues, not only because it is a positive emotion, but also because it emerges when a person is seen as receiving his or her “just desserts.” This aspect of *schadenfreude* suggests that it is a feeling evoked by observations of a just world in which outcomes are fair (as explored in more detail below). Prior to presenting the specifics of the studies, we first review the definitions of meaning in life and *schadenfreude* and consider how they may be linked. Then we review a possible moderator of the effects of *schadenfreude* on meaning in life, namely just world beliefs.

### **Meaning in Life**

King and colleagues (King, Hicks, Krull, & Del Gaiso, 2006) defined meaning in life as follows: “Lives may be experienced as meaningful when they are felt to have a significance beyond the trivial or momentary, to have purpose, or to have a coherence that transcends chaos.” Thus, a meaningful life is one that is experienced as significant, purposeful, and coherent. Significance is a belief that one’s life matters to the social world. Purpose refers to the sense that there is a reason for being alive and engaging in goal-directed behavior. The last facet, coherence, reflects a perception that the world is patterned, predictable, and ultimately, makes sense.

Research supports the idea that meaning in life is an important aspect of well-being. Self-reported meaning in life is associated with a wide variety of positive outcomes. Meaning in life is correlated with higher well-being (Steger & Kashdan, 2007), lower suicidal ideation (Heisel & Flett, 2016), and low rates of psychological disorders (Mascaro & Rosen, 2005). Longitudinal research has shown that meaning in life predicts higher lifetime earnings (Hill, Turiano, Moreczek & Burrow, 2016). In the physical domain, meaning in life is associated with lower risk of stroke (Kim, Sun, Park & Peterson, 2013), and lower risk of mortality (Boyle, Barnes, Buchman, & Bennett, 2009; Krause, 2009).

Previous correlational research has identified a wide variety of predictors of meaning in life, including religiosity (Steger & Frazier, 2005; Oishi & Diener, 2014), extraversion (King et al., 2006), social relatedness (Hicks & King, 2009), intuitive information processing (Heintzelman & King, 2016; see also Ward & King, 2017) and socioeconomic status (Ward & King, 2016). Past experimental research has revealed a number of variables that cause individuals to experience their lives as more meaningful, including reminders of social relationships (Hicks & King, 2009), counterfactual thinking about one's life (Heintzelman, Christopher, Trent & King, 2013; Kray et al., 2010), patterned presentation of stimuli (Heintzelman, Trent & King, 2013), processing fluency (Trent, Lavelock & King, 2013); and, of course, positive affect (see Halusic & King, 2013 for a review).

As noted above, induced positive affect leads to higher levels of meaning in life. For example, priming positive mood related concepts and positive affect inductions have been shown to lead to higher meaning in life (King, et al., 2006). Such results have been found for a variety of mood inductions, including writing about personal experiences or imagining positive experiences, listening to “happy” music, or simply looking at the “comics” (e.g., Hicks & King,

2008, 2009; Hicks, Trent, Davis, & King, 2012; Ward & King, 2016). Thus, it seems that if something puts people in a good mood it is likely to also make life feel more meaningful. A focus of the present studies is whether the positive feelings that emerge from the misfortune of another person (i.e., schadenfreude) might also lead to higher meaning in life.

### **Schadenfreude**

Heider (1958) proposed that given positive attitudes towards a target, one responds with sorrow at that target's misfortune; however, given negative attitudes towards the same target, one responds with pleasure at their misfortune. In making this distinction, Heider (1958) captured the essence of schadenfreude, defined as the experience of pleasure at the misfortune of another (e.g., van Dijk et al., 2008). For example, if someone cuts you off in traffic, and then gets pulled over by the police, the pleasure you might experience would accurately be referred to as schadenfreude.

Most often, the experience of schadenfreude requires that a target is deserving of their misfortune (e.g., Feather et al., 2001; van Dijk et al., 2005). Such deservingness may manifest in various forms: The target of misfortune may be a dislikable person (e.g., Hareli & Weiner, 2002), a close competitor (e.g., Brambilla & Riva, 2017), a high achiever or an individual toward whom the participant experiences envy (e.g., Smith et al., 1996; van Dijk, et al., 2006); or, more generally, an individual that presents a self-relevant threat (e.g., van Dijk, van Koningsbruggen, Ouwerkerk & Wesseling, 2011).

Schadenfreude inductions typically involve exposing participants to a vignette about a target (for instance, a player on a rival football team, e.g., Hoogland, et al., 2015) that experiences a misfortune (e.g., a physical injury). Subsequently, schadenfreude is measured by collecting participant ratings of emotion items, including pleasure, amusement, and satisfaction

at the misfortune (e.g., James et al., 2014; Hoogland et al., 2015; Pietraszkiewicz & Wojciszke, 2014); as well as via evaluative items measuring laughter at, lack of empathy with, and dislike for the target (e.g., van Dijk et al., 2006).

Typically, ratings of *schadenfreude* are measured after exposure to information about a misfortune suffered by a target that varies on one of three dimensions: Ingroup vs. outgroup, high vs. low envy, or deserving vs. undeserving (see Smith et al., 2009). Frequently, ingroup vs. outgroup distinctions are operationalized by placing the target on a sporting team that is either supported by or a rival to the participant (e.g., Hoogland et al., 2015; Wayne et al., 2003). For high vs. low envy, the target is typically characterized as possessing superior (vs. average) characteristics to the participant in some self-relevant domain, such as intelligence (van Dijk et al., 2011), academic performance (e.g., Smith et al., 1996), or proficiency on tasks from which participants can make money (e.g., Shamay-Tsoory et al., 2009). Lastly, deservingness is considered the strongest factor that elicits *schadenfreude* (see Smith et al., 2009), and is typically manipulated by whether or not a target put high vs. low effort into an achievement before suffering a subsequent failure (e.g., Feather & Sherman, 2002; Feather & Nairn, 2005), by making the target kind or hostile (e.g., Porter, Bahnwer, Woodsworth, & Black, 2014), or by varying the extent to which the target is a hypocrite (e.g., Powell & Smith, 2013). Other factors on which the target of misfortune may be varied include whether or not they are a competitor (e.g., Brambilla & Riva, 2017) and whether they are liked or disliked by the participant (e.g., Pietraszkiewicz & Wojciszke, 2014).

Most previous research has examined the feeling of *schadenfreude* as an outcome of manipulations such as those reviewed above. Additionally, past research has identified moderators of the effect of *schadenfreude* inductions on feelings of *schadenfreude*. For example,

greater schadenfreude is predicted by variables such as low self-esteem (van Dijk et al., 2011), and high scores on so-called “dark” personality traits (i.e., narcissism, Machiavellianism, and psychopathy; Porter, Bhanwer, Woodworth, & Black, 2013; James et al., 2014; as well as sadism, Schump & Lafrenière, 2016).

Comparatively less research has examined outcomes predicted *by* schadenfreude. At least one study suggests that the experience of schadenfreude may be associated with well-being benefits. In that study, schadenfreude led to greater satisfaction of basic needs (i.e., perceptions of control, belongingness and “meaningful existence”), enhanced self-view, and higher self-esteem (Brambilla & Riva, 2017). These relationships were found to be largely explained by downward social comparison. This research provides preliminary support for the prediction that schadenfreude will lead to higher meaning in life.

Beyond the fact that it feels good, there are conceptual reasons to expect schadenfreude to facilitate the sense that life is meaningful. Balance theory proposed that cognitive consistency is a central motive in human cognition regarding relationships between the self, others, and objects/events (Heider, 1958). When these three units (i.e., the self, other, and an object/event) are in balance, the individual perceives these relationships as harmonious. Examples of balanced states would include when an individual likes another and witnesses them experience a positive outcome (three positive elements), or dislikes another and witnesses them experience a negative outcome (one positive element and two negative elements). When these units are experienced as unbalanced, the individual may experience stress and be motivated toward attitude change. For instance, if an individual dislikes another but witnesses them experience a positive outcome (two positive elements and one negative element), they may adjust their attitude towards that individual, resulting in more a favorable evaluation of that person.

Recent work has situated schadenfreude in the context of balance theory (Pietraszkiewicz & Wojciszke, 2014). This research applied elements of balance theory to demonstrate the means by which the emotional experience of pleasure at the misfortune of a disliked target may be thought of as a balanced state of cognitive units between a perceiver, target, and an outcome. Within this model of affect balance, emotion (schadenfreude, specifically) functions to make sense of the world. If the feeling of schadenfreude also feels meaningful, then these findings map neatly on to the meaning-as-information approach to meaning in life (e.g., Heintzelman & King, 2014). This approach suggests that the feeling of meaning provides information about the extent to which experiences make sense. As such, these findings imply one of the potential mechanisms by which feelings of schadenfreude may facilitate a sense that life is coherent and meaningful, namely because schadenfreude makes sense of experience.

Indeed, schadenfreude may be especially likely to enhance meaning in life because it is an affective experience that indicates that outcomes are fair and bad things happen to bad people (in other words, that outcomes make sense). Such perceptions are likely to be related to the sense that outcomes make sense and therefore that life is meaningful. In addition, the sense-making aspect of schadenfreude suggests that a key individual difference variable may play an important role in the relationship between schadenfreude and meaning in life, namely belief that the world is just.

### **Just World Beliefs**

Just world beliefs refer to individual differences in the extent to which individuals believe that people reap what they sow. Lerner (1980) defined just world beliefs as a belief that people get what they deserve for outcomes both positive and negative. Much previous research has shown that just world beliefs predict negative outcomes, like victim blaming and

endorsement of strong punitive punishment (see Hafer & Begue, 2005 for a review). However, despite its links to negative outcomes, previous research has also linked just world beliefs to a number of well-being benefits (Dalbert, 1999). As such, just world beliefs may be particularly well suited to facilitate a sense that the world is stable, patterned, and ultimately coherent, even as they may also be associated with less than optimal outcomes, such as victim blaming.

While believing that the world is just may not be an accurate interpretation of reality, previous research has suggested that these beliefs may function as a positive illusion that facilitates healthy psychological functioning, especially for individuals that are socially disadvantaged (Laurin, Fitzsimons, & Kay, 2011). In past research, just world beliefs have been shown to facilitate long-term goal pursuit (Hafer, 2000; Laurin et al., 2011), life satisfaction (Lipkus, Dalbert & Siegler, 1996), optimism (Littrell & Beck, 1999), lower anxiety and depression (Fatima & Suhail, 2010; Ritter, Benson, & Snyder, 1990), greater engagement in adaptive health behaviors (e.g., less alcohol consumption and smoking, and better diet and exercise; Lucas et al., 2010), and greater subjective well-being (i.e., high life satisfaction and positive affect, and low negative affect; Dzuka & Dalbert, 2006). Just world beliefs are also associated with adaptive psychological adjustment in the context of adversity, including greater stress resilience in the workplace (Sutton et al., 2008), better psychological adjustment after negative life events in old age (Nasser, Doumit & Carifio, 2011), and stable levels of life satisfaction following natural disasters (Seker, 2016).

Importantly, studies have also linked just world beliefs to the experience of meaning in life. For example, just world beliefs have been shown to positively correlate with purpose in life (Bègue & Bastounis, 2003). Additionally, just world beliefs are often conceptualized as a system justifying ideology (e.g., Jost & Hunyday, 2005), and system justification (measured with

items such as, “I find society to be fair,” and, “Everyone has a fair shot at wealth and happiness”) has also been shown to be positively related to purpose in life (Rankin, Jost & Wakslak, 2009). Moreover, in a sample of cancer survivors, restored belief in a just world was positively associated with ratings of life’s meaningfulness (measured using the Perceived Personal Meanings Scale; Park et al., 2008).

In addition to being linked to meaning in life, just world beliefs have also been found to play a role in schadenfreude. At least one previous study has examined the effects of just world beliefs on the experience of schadenfreude. In that study, threats to just world beliefs intensified experiences of schadenfreude (Pietraszkiewicz, 2013). Participants were randomly assigned to read an article either threatening or maintaining a belief that the world is just. Those exposed to the just world threatening stimuli spent more time reading stories that evoked schadenfreude (an implicit measure of schadenfreude). These results imply that schadenfreude may perform a bolstering function by restoring a perception that the world makes sense after worldview beliefs have been threatened. These results suggest that observing a deserving target receiving their comeuppance may be interpreted as poetic justice, or a just world in action. Thus, it may be that the experience of schadenfreude demonstrates that the world is fair even for those who do not endorse the idea of a just world. In other words, it may be that just world beliefs moderate the relationship of schadenfreude to meaning in life.

### **Moderation of Schadenfreude Effects on Meaning in Life**

Clearly, there are reasons to expect schadenfreude and just world beliefs to relate to meaning in life. In the present studies, we were interested in examining not only whether schadenfreude leads to meaning in life or whether just world beliefs are associated with meaning in life, but also whether just world beliefs might *moderate* the association between

schadenfreude and meaning in life. The rationale for this idea comes from numerous studies of the ways that various sources of meaning in life moderate the association between positive affect and meaning in life.

As already reviewed, positive affect is positively associated with meaning in life and positive affect inductions lead to higher meaning in life. A number of studies have placed positive affect in the context of other, presumably more durable sources of meaning in life. These studies show a consistent pattern: When other more durable variables associated with meaning in life, such as religious commitment (King & Hicks, 2008), social relatedness (King & Hicks, 2009; Hicks, Schlegel, & King, 2010), and financial resources (Ward & King, 2016), are lacking, positive affect bolsters the feeling that life is meaningful. Among those high in religiosity, social relatedness, or financial resources, meaning in life is high across levels of positive affect. However, for those low on these sources of meaning in life, positive affect is positively related to meaning in life: At high levels of positive affect, those low on religiosity, social relatedness and financial resources endorse levels of meaning in life equal to those that are high on these more durable sources of meaning in life. The top panel of Figure 1 shows the typical pattern identified in past research. Thus, positive affect appears to serve a compensatory function, bolstering meaning in life in the absence of more enduring sources of meaning (Halusic & King, 2013).

The present studies examined whether positive feelings of schadenfreude might serve to compensate for low levels of another potential source of meaning in life, just world beliefs. There are at least two ways to think about what this moderation might look like: One informed by the hedonic approach to well-being, and the other informed by the eudaimonic interpretation

of well-being. Figure 1 shows hypothetical results consistent with each of these alternative predictions.

First, from the hedonic perspective, the source of positive affect is irrelevant. If the person feels good, however that might have happened, those good feelings should lead to higher meaning in life. As such, we would expect a main effect of condition on meaning in life. In addition, in this case, we might expect schadenfreude to function similarly to the way that positive affect has functioned in past studies (as reviewed above). Thus, we might expect the results shown in the top panel of Figure 1. These results would indicate that, like other positive feelings, schadenfreude compensates for low levels of more enduring sources of meaning in life (in this case just world beliefs). As such, at low levels of just world beliefs, we would expect those in the schadenfreude condition to report higher meaning in life than those in the comparison conditions, because schadenfreude demonstrates that the world is just for those that are otherwise lacking in such beliefs.

Second, from the eudaimonic perspective, the moral quality of the source of positive feelings should matter to meaning in life. Accordingly, positive feelings that come from the suffering of another person should not enhance meaning in life because they are not morally pure. Thus, we would not expect a main effect of condition on meaning in life. Still, from this perspective, we might expect a main effect of just world beliefs, and moderation. Specifically, we might expect that the schadenfreude condition would boost meaning in life for those high in just world beliefs because the experience of schadenfreude is consistent with the belief that the world is just. The graph at the bottom of Figure 1 illustrates what might be expected based on this perspective.

## **Overview and Predictions**

The present studies addressed two main research questions. First, does schadenfreude lead to higher meaning in life? Second, is the association between schadenfreude and meaning in life moderated by just world beliefs? Three studies addressed these questions. Study 1 was a correlational study seeking to replicate the positive correlation between meaning in life and just world beliefs and explored the robustness of this relationship controlling for various plausible third variables. Study 2a was an experiment in which participants were randomly assigned read either a vignette describing a deserving target of a misfortune (schadenfreude), an undeserving target of a misfortune (a fairly typical comparison condition for schadenfreude experiments), a passage designed to induce positive affect, or a control passage. We predicted that the schadenfreude and positive affect conditions will lead to higher positive mood and meaning in life than the other conditions. Additionally, we expected just world beliefs to moderate these condition effects such that schadenfreude will demonstrate a bolstering function for participants that are low on just world beliefs. Study 2b sought to replicate Study 2a in a local community sample. Lastly, Study 3 probed our predictions using a manipulation of just world beliefs. In this study, we predicted that schadenfreude would be especially likely to enhance meaning in life among individuals who had experienced a threat to just world beliefs.

### **Study 1**

#### **Overview and Predictions**

Prior to testing our central predictions, we conducted Study 1 to lay the foundation for the experimental studies. This study was designed to replicate previous findings linking just world beliefs to ratings of purpose in life (Bègue & Bastounis, 2003) and life's meaningfulness (Park et al., 2008). The scales used to measure meaning in life in these previous studies were limited in a

number of ways. First, Bègue and Bastounis (2003) used the Purpose in Life scale (Crumbaugh & Maholick, 1964), which has been shown to be contaminated by positive affect (MacGregor & Little, 1998). Second, Park and colleagues (Park et al., 2008) used the Perceived Personal Meanings Scale, which has been shown to demonstrate less than satisfactory construct validity (Brandstätter, Baumann, Borasio, & Fegg, 2012). In contrast, Study 1 extended on these previous findings by employing the best contemporary measure of meaning in life, the presence of meaning subscale from the Meaning in Life Questionnaire (MLQ-P; Steger, Frazier, Oishi, & Kaller, 2006). The MLQ-P is the most widely used measure of meaning in life, and has shown strong convergent and discriminant validity (Brandstätter et al., 2012; Steger et al., 2006). Study 1 enabled us to examine whether the relationship between just world beliefs and meaning in life holds when using a more valid measure of meaning in life. In addition, Study 1 sought to probe the relationship between meaning in life and just world beliefs controlling for numerous third variables that might explain that relationship. Previous research has identified a number of factors that are positively related to both meaning in life and just world beliefs, including: faith in intuition (Heintzelman & King, 2016; Fargas, 1995), religiosity (Park, Edmondson & Hale-Smith, 2013; Dalbert, Lipkus, Sallay, & Goch, 2001; Kaplan, 2012), life satisfaction (Steger & Kashdan, 2007; Lipkus, Dalbert & Siegler, 1996), and positive mood (King et al., 2006; Dzuka & Dalbert, 2006). We expected that just world beliefs and meaning in life would show a positive relationship that would persist when controlling for these variables.

### **Method**

***Participants.*** Undergraduate students ( $N=967$ ) from a large Midwestern university completed an online questionnaire for partial fulfillment of research participation requirements for General Psychology. The sample was 63% women, 86.2% White/European American, 7.2%

Black/African American, 2.9% Asian; 2.4% Hispanic/Latino(a), 0.2% Native American, and 1.2% selected “other.” Ages ranged from 18-43,  $M(SD)=18.59(1.50)$ . Median income was \$81,000-\$150,000.

**Measures.** All responses were measured on a Likert scale from 1 (*strongly disagree/not at all*) to 7 (*strongly agree/very much*). Reliabilities for all measures are shown on the diagonal of Table 1. Meaning in life was measured using the 5-item MLQ-P (sample item: “I understand my life’s meaning),  $M(SD)=4.88(1.37)$ . To measure just world beliefs, we administered the 6-item General Belief in a Just World Scale (Dalbert, Montada, & Schmitt, 1987; sample item: “I am confident that justice always prevails over injustice”),  $M(SD)=4.88(1.37)$ .

For well-being, we measured life satisfaction using the 5-item Satisfaction with Life Scale (SWLS; Diener, Emmons, Larsen, & Griffin, 1985; sample item: “So far I have gotten the most important things I want in life”),  $M(SD)=4.61(1.29)$ . To measure positive and negative affect, participants were asked to rate how much they felt a number of mood descriptors. For positive affect, participants rated 9 descriptors including, “cheerful, pleased, happy, and enjoyment/fun,”  $M(SD)=4.16(0.91)$ . For negative affect, participants rated 12 descriptors, such as “sluggish, bored, depressed, anxious, and unhappy,”  $M(SD)=2.57(0.92)$ .

Additionally, participants completed the faith in intuition subscale of the Rational Experiential Inventory (Pacini & Epstein, 1999; sample item: “I believe in trusting my hunches”),  $M(SD)=4.68(1.09)$ . Lastly, 2 items were administered from the Revised Intrinsic/Extrinsic Religious Orientation scale (Gorsuch & McPherson, 1989; sample item: “My whole approach to life is based on my religion”) to measure intrinsic religiosity,  $M(SD)=3.14(2.01)$ .

## Results

Correlations among measures are shown in Table 1. As can be seen, just world beliefs and meaning in life were positively correlated, as expected. Meaning in life was positively and significantly related to life satisfaction, faith in intuition, intrinsic religiosity, and positive affect; and was negatively correlated with negative affect. Just world beliefs were significantly positively correlated with life satisfaction, faith in intuition, intrinsic religiosity and positive affect and unrelated to negative affect.

With the exception of negative affect, meaning in life and just world beliefs demonstrated a positive relationship with each covariate. As such, we next examined partial correlations for meaning in life and just world beliefs, controlling for each third variable. Results are shown in the bottom row of Table 1. As can be seen, although controlling for life satisfaction and positive affect substantially weakened the association between just world beliefs and meaning in life, none of the covariates fully wiped out the association.

## Brief Discussion

Study 1 replicated previous research that had established a preliminary link between meaning in life and just world beliefs, using an optimal measure of meaning in life. Moreover, we found that the association between meaning in life and just world beliefs remained significant controlling for a variety of possible third variables. Continuing to probe the relationship between just world beliefs and meaning in life is a promising area for future research. For the present purposes, these data add to our confidence in the relationship between meaning in life and just world beliefs. The established relationship between meaning in life and just world beliefs lays the groundwork for the experimental procedures used in Studies 2 and 3.

## Study 2a

### Overview

Study 2a tested two predictions. First, we predicted that a schadenfreude induction would lead to higher meaning in life. Second, we predicted that this link would be moderated by just world beliefs. Participants first completed a measure of just world beliefs, then were randomly assigned to one of four conditions (schadenfreude, an undeserving target of misfortune, a positive affect induction, or a control passage). We predicted that the schadenfreude and positive mood conditions would lead to higher meaning in life. Second, we predicted that the main effects of schadenfreude would be moderated by just world beliefs in a manner in keeping with the hedonic prediction. Specifically, we expected those with high just world beliefs to endorse high levels of meaning in life regardless of condition. In contrast, for those low in just world beliefs, schadenfreude would serve a compensatory function. Individuals low on just world beliefs would report higher meaning in life following an experience of schadenfreude.

### Method

#### Participants and Procedure

208 Amazon Mechanical Turk workers agreed to complete an online survey for \$1.00. Participants were 47.8% women, age  $M(SD)=35.61(10.51)$ , 75.9% White/European-American, 9.5% Black/African-American, 8.3% Asian, 4.1% Hispanic/Latino(a), 1.2% Native American and 1% other. Median income was \$35,001-\$50,000 and incomes ranged from under \$15,000 to over \$151,001. Modal education was “some college” and 87.8% of participants had completed some college or more.

Participants were randomly assigned to 1 of 4 conditions in which they read a vignette about an experience at a coffee shop.<sup>1</sup> A full description of these materials can be found in Appendix A. In the first condition ( $n=53$ ), the vignette was designed to induce schadenfreude. Previous research has identified several key elements that have been demonstrated to increase the schadenfreude elicited by a given situation: Namely, deservingness of the misfortune, hostility or self-threat toward the participant, and relevance/familiarity with the domain of the event (van Dijk et al. 2005; van Dijk et al., 2006; van Dijk, Goslinga & Ouwerkerk, 2008). As such, these elements were worked into the passages.

For the underserving condition ( $n=51$ ), a passage was designed to mirror the schadenfreude vignettes, but eliminated the aforementioned elements that were included to boost schadenfreude. So, the same event occurred, but the target did not deserve the misfortune, and there was no self-threat present for the participant. Similar undeserving passages have often been used as comparison conditions in previous research employing schadenfreude manipulations (e.g., Porter et al., 2014; Pietraszkiewicz & Wojciszke, 2014). The inclusion of this condition would allow us to examine the success of our manipulation, as well as test for effects of high vs. low schadenfreude on meaning in life.

Next, a vignette was designed to induce positive affect ( $n=52$ ). The inclusion of a positive affect condition would allow us to directly address whether the relationship between positive affect and meaning in life depends on the moral quality of the source of one's happiness. Lastly, a control condition was included in order to establish a baseline measure of meaning in life. Participants in the control condition ( $n=53$ ) simply read a brief passage describing statistics about American coffee consumption.

In addition, the schadenfreude manipulation check and meaning in life measure were counterbalanced so that approximately half of the sample completed meaning in life measures immediately after reading the vignette ( $n = 93$ ) and the other half completed schadenfreude measures immediately after the vignette ( $n = 115$ ). We took this step because we were concerned that rating schadenfreude (necessary as a manipulation check for the central manipulation of the study), might dampen effects on meaning in life. There are two reasons for this concern. First, because effects of the vignette might be expected to be relatively weak, the effects might wear off shortly after reading. Second, we were concerned that rating schadenfreude might lead participants to be aware of the potentially morally questionable origins of their feelings. They might feel guilty and this feeling might interfere with schadenfreude's capacity to instill meaning in life.

### **Measures**

All ratings were made on a 7-point Likert scale ranging from 1 (strongly disagree/not at all) to 7 (strongly agree/very much). Before participants were randomly assigned to a condition, they completed a variety of premeasured covariates. Among these measures were the 10-item Rosenberg Self-Esteem Scale (Rosenberg, 1965; sample item, "I feel that I have a number of good qualities"),  $M(SD)=5.05(1.31)$ ,  $\alpha=.93$ ; and, the 5-item Satisfaction with Life Scale (SWLS; Diener, Emmons, Larsen & Griffin, 1985; sample item, "So far, I have gotten the most important things I want in life"),  $M(SD)=4.16(1.75)$ ,  $\alpha=.94$ . Participants also completed the same measure of just world beliefs as in Study 1,  $M(SD)=4.00(1.34)$ ,  $\alpha=.89$ . Immediately after reading the passage, participants completed measures of meaning in life and a schadenfreude manipulation check in counterbalanced order. Meaning in life was measured using the MLQ-P, as in Study 1,  $M(SD)=4.53(1.57)$ ,  $\alpha=.95$ .

We included both cognitive and emotion-based measures of schadenfreude. First, schadenfreude was measured using 5 cognitive evaluative items adapted from van Dijk, Koningsbruggen, Ouwerkerk & Wesseling (2011; sample items: “I enjoyed what happened to the man in the passage;” “Reading this passage, I couldn’t resist smiling a little;” “The man deserved what happened to him;” “I actually laughed a bit while reading this passage;” and “I disliked the man described in the passage”),  $M(SD)=3.56(1.77)$ ,  $\alpha=.91$ .<sup>2</sup>

Lastly, to measure positive and negative affect, participants rated a number of mood descriptors: For positive affect participants indicated how much they were feeling happy, cheerful, and enjoyment/fun,  $M(SD)=3.77(1.98)$ ,  $\alpha=.96$ ; and, for negative affect, they rated anxious, frustrated, nervous, and worried,  $M(SD)=2.17(1.34)$ ,  $\alpha=.87$ .<sup>3</sup>

## Results

### Preliminary Analyses

Table 2 shows the correlations among all measures, collapsed across conditions. As expected, meaning in life was positively related to schadenfreude, positive affect and just world beliefs and was negatively related to negative affect. Likewise, just world beliefs were positively related to schadenfreude and positive affect, and negatively associated with negative affect.

Did the manipulation work as intended? A one-way analysis of variance showed that condition significantly affected the experience of schadenfreude,  $F(3, 204)=89.00$ ,  $p<.001$ ,  $\eta^2=.58$ . The top panel of Figure 2 shows the means for each condition on schadenfreude. The schadenfreude condition reported significantly higher levels of this feeling, than all other conditions,  $p<.05$ , Bonferroni corrected.

Likewise, as can be seen in the middle panel of Figure 2, condition significantly affected positive affect,  $F(2, 207)=25.70$ ,  $p<.001$   $\eta^2=.27$ . In this case, both the schadenfreude and positive affect conditions were significantly higher on positive mood than all other conditions

(Bonferroni corrected), but did not differ from each other. Finally, shown in the bottom panel of Figure 2, condition also affected negative affect,  $F(3, 204)=7.99, p<.001, \eta^2=.11$ . In this case, the schadenfreude condition  $M(SD) = 2.54(1.46)$  differed from both the positive affect condition  $M(SD)=1.63(1.16)$ , and control condition  $M(SD) = 1.87(1.34)$ . These analyses indicate that schadenfreude, like the positive affect induction, led participants to feel good. Unlike the positive affect induction, more negative affect was tied up in the experience of schadenfreude. Thus, the experience of schadenfreude was not purely about experiencing good mood in the absence of negative feelings. Rather, the emotional experience of schadenfreude was more complex, and involved elevated levels of both positive and negative affect.

### **Meaning in Life**

We had predicted that meaning in life would be higher in the schadenfreude and positive affect conditions compared to the other conditions. To test this prediction, a planned contrast was computed. As predicted, the schadenfreude and positive affect conditions (weighted +0.5) were higher on meaning in life than the undeserving and control conditions (weighted -0.5),  $t(204)= 2.24, p = .026, d = 0.31$ . The means on meaning in life for each condition are shown in Figure 3.

Recall that the meaning in life and schadenfreude manipulation check were administered in counterbalanced order due to concerns that the manipulation check might dampen effects on meaning in life. As suspected, a significant condition X order interaction for meaning in life was found,  $F(3, 200)=3.58, p=.015, \eta^2=.05$ , showing that, in the schadenfreude condition, meaning in life was higher when it was rated before schadenfreude  $M(SD) = 5.12(1.13)$ , than when it was rated after,  $M(SD) = 4.49(1.67)$ . As such, subsequent analyses examined each order separately.

In order to test for moderation of the effect of schadenfreude on meaning in life by just world beliefs, we first computed dummy codes representing the schadenfreude condition (schadenfreude = 1, other = 0), undeserving condition (undeserving = 1, other = 0) and positive affect condition (positive affect = 1, other = 0), leaving the control condition as the baseline. These dummy variables were used to compute interaction terms with mean-centered just world beliefs. Within each order, meaning in life was regressed, hierarchically, on the main effects of the condition dummies and just world beliefs on the first step, followed by the two-way interactions on the second step, within each order. Note that we did not expect just world beliefs to interact with any condition other than the schadenfreude condition and, in fact, in all analyses, just world beliefs did not interact with any other condition to predict meaning in life. As such, the analyses below tested only the just world belief by schadenfreude interaction on the second step.

Among those who rated schadenfreude first, results showed only main effects were significant,  $\Delta R^2 = .16$ ,  $p = .001$ . Specifically, the dummy for the positive affect condition ( $\beta = .28$ ,  $p = .016$ ) and just world beliefs ( $\beta = .40$ ,  $p = .027$ ) both contributed significantly. Entered on the second step ( $\Delta R^2 = .006$ ,  $p = .88$ ), the just world beliefs X schadenfreude interaction was not significant,  $\beta = -.03$ ,  $p = .79$ .

For those that rated meaning in life first, results supported predictions inspired by the hedonic approach to well-being. On the first step,  $\Delta R^2 = .35$ ,  $p < .001$ , there were significant main effects for just world beliefs,  $\beta = .63$ ,  $p < .001$ , and the schadenfreude condition dummy,  $\beta = .20$ ,  $p = .041$  (the main effects for underserving,  $\beta = -.02$ ,  $p = .85$ , and positive affect conditions,  $\beta = -.05$ ,  $p = .68$ , were not significant). On the second step,  $\Delta R^2 = .03$ ,  $p = .041$ , main effects were qualified by a significant just world belief X schadenfreude condition interaction,  $\beta = -.20$ ,

$p=.041$ . Controlling for positive and negative affect ( $\Delta R^2=.12$ ,  $p=.003$ ), main effects ( $\Delta R^2=.25$ ,  $p<.001$ ) for schadenfreude condition,  $\beta=.20$ ,  $p=.042$ , and just world beliefs  $\beta=.59$ , were qualified by the predicted interaction,  $\beta=-.22$ ,  $p=.028$ . Probing this interaction, we calculated the association between just world beliefs and meaning in life at each level of the schadenfreude dummy variable. Although just world beliefs were positively related to meaning in life in both conditions, this association was higher among those not in the schadenfreude condition,  $\beta=.60$ ,  $p<.001$  than in the schadenfreude condition,  $\beta=.31$ ,  $p=.13$ , for the difference,  $z = 5.76$ ,  $p<.001$ .

Figure 4 shows generated regression lines for those  $\pm 1 SD$  from the mean on just world beliefs. As can be seen in Figure 4, just world beliefs were related to meaning, and especially in conditions unrelated to schadenfreude. The effect of the manipulation was particularly strong for those low on just world beliefs in the schadenfreude condition. These results suggest that schadenfreude may perform a similar meaning function as just world beliefs for those that are otherwise relatively low on the belief that the world is just.

### **Brief Discussion**

The finding that a morally ambiguous source of positive affect (i.e., schadenfreude) and a morally pure source of positive affect (the positive affect induction) led to similar levels of meaning in life has important implications for the debate over eudaimonic vs. hedonic wellbeing. These results imply that the relationship between happiness and meaning does not rely on the moral quality of the source of happiness.

Further, those low on just world beliefs demonstrated similar levels of meaning in life as those high on just world beliefs after experiencing schadenfreude. This pattern of moderation suggests that schadenfreude confers similar benefits to meaning in life as those that otherwise believe in a just world. As such, the experience of schadenfreude may be similar to witnessing

poetic justice. In this way schadenfreude may perform a meaning bolstering function by boosting meaning in life for those that were low on just world beliefs. Additionally, controlling for mood did not wipe out these effects, suggesting that the relationship between schadenfreude and meaning is more than simply feeling good. Rather, these findings suggest that schadenfreude is meaningful, not simply due the feelings it inspires, but also because it arises out of perceptions that the world is just.

Notably, there were order effects for meaning in life, such that meaning in life was lower when it was not rated immediately following the manipulation. There are at least two potential reasons for this effect. First, it could be that the effects of condition on meaning in life were rather brief and expired after a short period of time. Second, it could be that rating schadenfreude items before meaning in life may have made people feel guilty about taking pleasure in the misfortune of another. In any case, we decided to measure meaning in life first in subsequent studies.

## **Study 2b**

### **Overview**

Study 2b was designed to replicate the results of Study 2a with a local community sample and a different recruitment methodology. We employed a similar design to Study 2a. Because Study 2a had already shown the similar effects of positive affect and schadenfreude inductions, we did not include a positive affect group in Study 2b. Additionally, as noted above, based on the results of Study 2a, instead of counterbalancing meaning in life with schadenfreude ratings, we exclusively measured meaning in life first and schadenfreude second. Again, we expected the experience of schadenfreude to lead to higher levels of meaning in life compared to the other conditions, and for just world beliefs to moderate this effect.

## Method

**Participants.** 274 participants were recruited from various locations around campus to participate in a 5-minute person-on-the-street survey. Participants were 66.2% women, 81.2% White/European American, 12.8% Black/African American, 3% Hispanic/Latino(a), 2.3% Asian, and 0.8% indicated “other.” Age  $M(SD) = 20.01(2.43)$  ranged from 18-48.

**Measures and Procedure.** Before reading 1 of the 3 vignettes (the same schadenfreude, undeserving, or control), participants completed the 6-item Belief in a Just World Questionnaire administered in Study 1 and 2a,  $M(SD) = 3.92(1.08)$ ,  $\alpha = .79$ . Additionally, participants responded to a single item indicating how happy they currently felt,  $M(SD) = 4.96(1.25)$ .

Directly after, participants were randomly assigned to condition. For each condition, the vignettes were exactly the same as those for the schadenfreude ( $n=96$ ), undeserving ( $n=89$ ), and control ( $n=89$ ) conditions in Study 2a.

After reading the vignette, participants completed the same measures of meaning in life,  $M(SD) = 4.92(1.23)$ ,  $\alpha = .85$ , and schadenfreude,  $M(SD) = 3.48(1.74)$ ,  $\alpha = .90$ , as in Study 2a. Next, participants completed measures of positive and negative affect by rating how much they currently felt guilty, frustrated, sad, happy, amused, satisfied, and pleased. For positive affect,  $M(SD) = 2.95(1.74)$ ,  $\alpha = .92$ , and for negative affect,  $M(SD) = 2.46(1.35)$ ,  $\alpha = .65$ . At the end of the survey, participants completed demographic measures and were debriefed.

## Results

### Preliminary Analyses

Correlations collapsed across conditions are shown in Table 3. Meaning in life was positively related to just world beliefs. However, unlike in Studies 1 and 2, meaning in life was unrelated to positive affect, negative affect, and schadenfreude. Just world beliefs were

positively related to positive affect, and unrelated to all other variables. To ensure random assignment was successful, we conducted a one-way analysis of variance on pre-measured happiness and found no differences between conditions,  $F(2, 225) = 1.84, p = .16, \eta^2 = .02$ . We next examined whether or not the manipulation worked as intended. As expected, condition affected schadenfreude ratings,  $F(2, 163) = 152.90, p < .001, \eta^2 = 0.65$ . The schadenfreude condition,  $M(SD) = 4.85(1.11)$  was significantly higher on schadenfreude than the control,  $M(SD) = 3.40(0.75)$  and undeserving,  $M(SD) = 1.94(0.99)$  conditions,  $p < .05$ , Bonferroni corrected (the control condition was also significantly higher than the undeserving condition).

As in Study 2a, condition significantly affected positive affect,  $F(2, 212) = 57.45, p < .001, \eta^2 = .35$ . The schadenfreude condition led to higher positive affect  $M(SD) = 4.29(1.76)$ , than the undeserving  $M(SD) = 1.96(1.28)$ , and control conditions  $M(SD) = 2.39(1.22)$ ,  $p < .05$ , Bonferroni corrected. Condition also affected negative affect,  $F(2, 211) = 24.09, p < .001, \eta^2 = .19$ . The undeserving condition was significantly higher on negative affect  $M(SD) = 3.26(1.41)$ , than the schadenfreude  $M(SD) = 2.43(1.24)$ , and control  $M(SD) = 1.79(1.01)$  conditions (Bonferroni corrected,  $p < .05$ ).

### **Meaning in Life**

Contrary to predictions, condition did not affect meaning in life,  $F(2, 272) = 1.40, p = .25, \eta^2 = .01$ . Surprisingly, meaning in life was slightly higher in the *undeserving* condition,  $M(SD) = 5.08(1.30)$  than in the schadenfreude,  $M(SD) = 4.92(1.24)$  and control,  $M(SD) = 4.77(1.13)$  conditions.

To continue to probe the potential effects of schadenfreude on meaning in life, exploratory analyses were conducted, dropping the undeserving condition and focusing only on the control and schadenfreude groups. These exploratory analyses tested for the predicted effects

controlling for the covariates included in the study. First, just world beliefs were mean-centered, and a dummy code was created representing the schadenfreude condition (1= schadenfreude, 0 = control). Meaning in life was hierarchically regressed on mean-centered just world beliefs,  $\beta = .23, p = .04$ , positive affect,  $\beta = -.03, p = .81$ , negative affect,  $\beta = -.19, p = .04$ , pre-manipulation happiness,  $\beta = .21, p = .03$ , and schadenfreude condition,  $\beta = .07, p = .56$ , on the first step,  $\Delta R^2 = .16, p = .002$ . On the second step,  $\Delta R^2 = .02, p = .09$ , the just world beliefs X schadenfreude condition interaction term contributed marginally,  $\beta = -.23, p = .09$ . Within the control condition, the association between just world beliefs and meaning in life was  $\beta = .29, p = .006$ ; in the schadenfreude condition,  $\beta = .14, p = .18, z = 1.05, p = .15$ . Figure 5 shows generated regression lines for those  $\pm 1 SD$  from the mean on just world beliefs. As can be seen in the figure, the pattern of moderation looks similar to that found in Study 2a. Specifically, those low on just world beliefs showed bolstered meaning in life after experiencing schadenfreude. Although these results are not statistically significant, the pattern that emerged is similar to that found in Study 2a.

### Brief Discussion

Although Study 2b replicated the positive relationship between just world beliefs and MIL found in Study 1, results failed to support predictions. In this community sample, Schadenfreude failed to lead to higher MIL and there was no straightforward evidence for moderation by just world beliefs. However, exploratory analyses found marginal support for moderation of condition effects by just world beliefs. Of course, caution is warranted in the interpretation of this finding because this was a marginal effect uncovered by exploratory analyses, and we had no a priori predictions regarding mood in this model. Nevertheless, the pattern of moderation found in Study 2b was similar to that from Study 2a.

There was a methodological difference between Study 2a and 2b that might have contributed to these divergent results. For Study 2a, participants were able to participate online, in whatever location they wished, allowing participants a much greater level of privacy. In contrast, participants in Study 2b completed the study in public settings. Because Study 2b was completed in a much less private setting than Study 2a, participants may have been more aware of the morally questionable sources of any positive feelings they experienced in the schadenfreude condition. This awareness could have made them feel guilty, and obscured condition effects on meaning in life. Additionally, the more public nature of Study 2b may have contributed greater motivation to engage in socially desirable responding. This difference in setting may have also contributed to the absence of a relationship between positive affect and meaning in life. Despite the mixed results offered by Study 2b, we next tested the hypothesized relationships using a different method. Study 3 returned to the online format for study administration in order to ensure participants could complete the study in a private setting. Additionally, instead of relying on an individual difference measure of just world beliefs, Study 3 sought to build on Study 2 by manipulating just world beliefs.

### **Study 3**

Study 3 was designed to replicate and extend the findings from Study 2. Specifically, the purpose of this study was to further test the role of just world beliefs in the relationship between schadenfreude and meaning in life by using an experimental manipulation of just world beliefs. Thus, in Study 3, we determined to manipulate just world beliefs, before exposing participants to schadenfreude. Participants were randomly assigned to read a news article designed to induce just world belief threat (hereafter “threat”), just world belief maintenance or control; and, then randomly assigned to read a vignette designed to induce schadenfreude vs. a control vignette.

After the manipulation, we measured meaning in life. This procedure resulted in a 3 (threat vs. just world maintenance vs. control) X 2 (schadenfreude vs. control) between-participant experimental design. Our main prediction involved the threat + schadenfreude and true control groups (i.e., the just world control + no schadenfreude control). In line with the Study 2 findings, we predicted that compared to the true control, schadenfreude would lead to higher meaning in life, especially for those who had experienced a just world belief threat. That is, we expected that a threat to just world beliefs would function similarly to low levels of individual differences in just world beliefs. We made no a priori predictions regarding the other conditions.

### **Method**

A sample of 1,264 participants was recruited to participate in an online study on Amazon Mechanical Turk, in exchange for \$0.50. Participants were 59.5% women, 74.3% White/European-American, 9.1% Black/African-American, 8.0% Asian, 6.5% Hispanic/Latino(a), 0.7% Native American and 1.4% other. Age,  $M(SD)=38.67(13.25)$ , ranged from 19-74. Median income was \$50,001-\$75,000 and incomes ranged from under \$15,000 to over \$151,001. Modal education was a Bachelor's Degree.

**Materials and Procedure.** Participants were told we were interested in the ways individuals recall information conveyed in different types of passages. They were told they would first be reading a news article, followed by a vignette, and then would be asked to answer questions about the passages. Participants were then randomly assigned to read a news story, adapted from Pietraszkiewicz (2013), about a student, Emily. The article was designed to either threaten ( $n= 423$ ) or maintain ( $n = 427$ ) just world beliefs, or convey control information ( $n =414$ ). The passages are presented in Appendix B. After reading the article, participants completed a manipulation check (i.e., "How much do you think Emily deserved what happened

to her;” and, “How fair do you think the events described in the article were?”),  $M(SD) = 4.22(2.27)$ , inter-item  $r = .84$ , in addition to a single face-valid item measuring just world beliefs (i.e., “Do you think the world is a just place?”),  $M(SD) = 3.73(1.63)$ .

Next, participants were randomly assigned to read the same vignette designed to evoke *schadenfreude* ( $n = 622$ ) from Study 2, or the same control passage ( $n = 642$ ) from Study 2. Immediately following the passage, participants completed the same measures of meaning in life,  $M(SD) = 4.86(1.43)$ ,  $\alpha = .94$ , positive affect,  $M(SD) = 4.30(1.60)$ ,  $\alpha = .94$ , negative affect,  $M(SD) = 1.92(1.27)$ ,  $\alpha = .90$ , and *schadenfreude*,  $M(SD) = 4.47(1.43)$ ,  $\alpha = .86$ , as in Study 2. In order to maintain the realism of the cover story, participants finally responded to 3 items testing their memory of the passages. However, we had no predictions regarding these items, and did not include them in any analyses.

## Results

### Preliminary Analyses

Table 4 shows the correlations among measures, collapsed across conditions. The manipulation check indicated that the just world threat worked as intended,  $F(2, 1207) = 991.87$ ,  $p < .001$ ,  $\eta^2 = .62$ . The outcomes described in the article were rated as significantly less just for Emily in the threat condition,  $M(SD) = 1.72(1.26)$ , than in the maintaining,  $M(SD) = 5.44(1.75)$ , and just world control,  $M(SD) = 5.56(1.09)$  conditions,  $p < .05$ , Bonferroni corrected (the maintaining and control conditions did not differ). Additionally, condition affected just world beliefs,  $F(2, 1205) = 29.15$ ,  $p < .001$ ,  $\eta^2 = .05$ . Just world beliefs were significantly lower in the threat condition  $M(SD) = 3.25(1.54)$  than in the maintaining  $M(SD) = 3.90(1.62)$  and control conditions  $M(SD) = 4.05(1.61)$ ,  $p < .05$ , Bonferroni corrected (the maintaining and control

conditions did not differ). Additionally, the schadenfreude vignette led to higher schadenfreude than the control vignette,  $t(1148) = 28.11, p < .001, d = 1.66$ .

With regard to mood, for positive affect, there was no evidence of effects for either the just world manipulation,  $F(2,1193) = 0.43, p = .65, \eta^2 = .00$ , or the schadenfreude manipulation,  $F(1,1193) = 0.74, p = .39, \eta^2 = .00$ , and no evidence for a just world condition X schadenfreude condition interaction,  $F(2,1193) = 0.70, p = .50, \eta^2 = .05$ . Likewise, for negative affect, there was no effect of the just world manipulation,  $F(2,1193) = 0.32, p = .72, \eta^2 = .00$ , schadenfreude manipulation,  $F(2,1193) = 0.18, p = .68, \eta^2 = .00$ , and no interaction,  $F(2,1193) = 0.01, p = .99, \eta^2 = .00$ .

### **Meaning in Life**

Did the manipulation affect perceptions of meaning in life? While meaning in life was highest in the threat condition, and in all cases, meaning was higher after experiencing schadenfreude vs. control, the effects of the just world manipulation,  $F(2,1194) = 1.84, p = .16, \eta^2 = .00$ , and the schadenfreude manipulation,  $F(1,1194) = 0.82, p = .36, \eta^2 = .00$ , were non-significant. In contrast to predictions, there was no evidence for a just world threat X schadenfreude condition interaction,  $F(2,1194) = 0.24, p = .79, \eta^2 = .00$ . Means for each condition are shown in Table 5. Because the just world maintaining and control conditions were very similar on just world beliefs and meaning in life, we collapsed across these cells for subsequent analyses.

One possible explanation for the lack of significant results is that the manipulations may not have affected all participants similarly. Did schadenfreude lead to higher meaning in life among those whose just world beliefs were lowered by the manipulation? To address this question, we used the just world beliefs manipulation check item. Because that item was affected

by condition, we first mean-centered within condition, to reduce multicollinearity between condition and this variable. We computed dummy codes representing the threat condition (1= threat, 0 = just world maintain + just world control), and the schadenfreude condition (1= schadenfreude, 0 = control). These variables were then used to compute interaction terms.

We regressed meaning in life hierarchically on mean-centered just world beliefs, and the condition dummies on the first step, their two-way interactions on the second step, and their three-way interaction on the third step. For the first step,  $\Delta R^2 = .05$ ,  $p < .001$ , the main effects for just world beliefs ( $\beta = .22$ ,  $p < .001$ ), and the threat dummy ( $\beta = .06$ ,  $p = .049$ ) were significant (the schadenfreude dummy was not significant,  $\beta = .03$ ,  $p = .29$ ). On the second step,  $\Delta R^2 = .001$ ,  $p = .63$ , the two-way interactions were non-significant for just world beliefs X threat,  $\beta = -.04$ ,  $p = .22$ , the just world beliefs X schadenfreude,  $\beta = .02$ ,  $p = .68$ , and threat x schadenfreude condition,  $\beta = .01$ ,  $p = .88$ . On the third step, all effects were qualified by a significant three-way interaction for just world belief X threat X schadenfreude condition,  $\Delta R^2 = .01$ ,  $p < .001$ ,  $\beta = -.10$ ,  $p < .001$ . Controlling for mood did not wipe out these effects (for the main effects of positive affect,  $\beta = .46$ ,  $p < .001$ , negative affect,  $\beta = -.22$ ,  $p < .001$ , and the three-way interaction,  $\beta = -.15$ ,  $p < .001$ ).

We decomposed this three-way interaction by hierarchically regressing meaning in life on the main effects for just world beliefs, schadenfreude, and the just world beliefs X schadenfreude condition separately for the just world threat vs. just world control conditions. Within the threat condition (i.e., participants exposed to an unfair outcome), on the first step,  $\Delta R^2 = .03$ ,  $p = .002$ , a significant main effect for just world beliefs,  $\beta = .17$ ,  $p < .001$  (the main effect for schadenfreude condition was not significant,  $\beta = .04$ ,  $p = .48$ ) was qualified by a significant just world belief X schadenfreude condition interaction, on the second step,  $\Delta R^2 = .02$ ,  $p = .002$ ,

$\beta = -.20, p = .002$ . Within the just world control conditions, a significant main effect for just world beliefs,  $\Delta R^2 = .06, p < .001, \beta = .24, p < .001$  (for the schadenfreude condition,  $\beta = .03, p = .47$ ) was qualified by a significant just world belief X schadenfreude condition interaction,  $\beta = .13, p = .008$  on the second step,  $\Delta R^2 = .01, p = .008$ . Notably, the interaction terms had opposite signs.

Figure 6 presents a graph of the three-way interaction. Note that the only “flat” line in Figure 6 is that for the group who experienced just world threat and schadenfreude. In this group, meaning in life was relatively high across levels of just world beliefs. Relative to the other groups, in this cell, among those low in just world beliefs, schadenfreude appears to have boosted meaning in life.

Because Figure 6 may render it difficult to see the relevant findings, we plotted these results in three separate figures, pitting each cell against the true control group. In each figure, we plotted the generated means for individuals  $\pm 1 SD$  from the mean on the just world belief item for each experimental cell vs. the true control (i.e., the cell for just world control and schadenfreude control). Results are shown in Figures 7-9. Figure 7 shows results for the just world threat + schadenfreude cell vs. the true control condition. Figure 8 shows results for just world threat + no schadenfreude cell vs. the true control condition. Finally, Figure 9 shows results for the just world control + schadenfreude vs. true control. For comparison purposes, in the true control group, the association between the just world belief manipulation check item and meaning in life was  $\beta = .16, p = .001$ .

First, Figure 7 shows that for individuals for whom the just world threat was effective (i.e., those that were actually lower on just world beliefs after experiencing just world threat), schadenfreude bolstered meaning in life for those low on just world beliefs. Specifically, those

low on just world beliefs reported similar levels of meaning in life as those high on just world beliefs, after experiencing schadenfreude. Moreover, those low on just world beliefs were only higher on meaning in life after experiencing schadenfreude. The relationship between the manipulation check and meaning in life was  $\beta = .00$ ,  $p = .96$  (significantly weaker than in the true control,  $z = -2.38$ ,  $p = .009$ ). The figure also shows, that otherwise, just world beliefs were positively associated with meaning in life. Figure 7 provides support for the prediction that schadenfreude can situationally bolster meaning in life for those otherwise lacking more enduring beliefs that the world is just. Moreover, the pattern of moderation shown in Figure 7 is similar to that shown in Figures 4 and 5 for Study 2, and in the top panel of Figure 1 for the hedonic prediction.

Figure 8 shows that just world beliefs were positively associated with meaning in life, and that this relationship was particularly strong for individuals who had experienced just world threat (in the absence of schadenfreude). In the just world threat + control condition the association between just world beliefs and meaning in life was,  $\beta = .31$ ,  $p < .001$  (marginally higher than the true control,  $z = 1.85$ ,  $p = .06$ ). This pattern suggests that among those who were able to maintain a sense of a just world even after reading about an unfair outcome experienced higher meaning in life. Importantly, of course, these individuals did not conform with the expected response to a just world threat. This finding suggests that there may have been some individuals that so strongly believed in a just world, coming into the study, that the manipulation simply did not affect them.

Finally, Figure 9 shows that individuals who were exposed to schadenfreude (without a just world threat) reported higher meaning in life especially if they were high in just world beliefs. In this condition, the association between just world beliefs and meaning in life was,

$\beta=.33, p<.001$  (significantly higher than the true control,  $z = 2.43, p = .015$ ). This pattern of results might be taken to indicate the effects of worldview consistent information on meaning in life. In this case, schadenfreude appears to have bolstered meaning in life particularly for individuals who already believe in a just world, more in keeping with the suggested pattern in the bottom of Figure 1.

### **Brief Discussion**

The pattern of moderation uncovered in Study 3 is consistent with the findings from Study 2, and provides support for the hedonic prediction offered in the top panel of Figure 1. Specifically, those that were particularly low on just world beliefs after experiencing a just world threat reported higher meaning in life after experiencing schadenfreude than those who did not. These results also increase the evidence supporting the hypothesis that schadenfreude is an emotional experience that conveys information about the extent to which the world is just. As such, schadenfreude may be a situational source of meaning in life that can bolster perceptions of life's meaningfulness, when other, more distal and durable sources of meaning (i.e., just world beliefs) are lacking.

Individuals that remained high on just world beliefs after experiencing a just world threat showed particularly high meaning in life. This finding suggests that some individuals believed so strongly in a just world that the manipulation did not affect them. It is possible that the just world threat even had the opposite of the intended effect for these individuals, spurring them to defend their worldview in the face of a threat, rather than decrease their endorsement of a just world. However, in the absence of a baseline measure of just world beliefs, the present data cannot address this possibility. In addition, people that were especially high on just world beliefs in the absence of a just world threat also showed especially high meaning after experiencing

schadenfreude. It is possible that, for this group, the experience of schadenfreude conveyed worldview consistent information, and boosted their sense of meaning as a result. In contrast to our prediction, this finding provides some support for the eudaimonic prediction, shown in the bottom panel of Figure 1.

However, there are a number of limitations to this study that warrant attention. First, we did not find the predicted interaction for just world threat condition X schadenfreude condition. This prediction was only supported when we took into account individual differences in just world beliefs, following the manipulation. This finding suggests that the just world threat manipulation may have been effective to varying degrees for different individuals, and the condition effects on meaning in life depended on the extent to which just world beliefs were truly threatened by the manipulation. It is likely that un-measured third variables would explain why the just world threat manipulation was more effective for some than it was for others.

Meaning was bolstered for individuals low on just world beliefs after experiencing schadenfreude, only in the context of a just world threat. Individuals that were low on just world beliefs after reading control information and information designed to maintain just world beliefs did not experience a boost to their meaning in life from schadenfreude. One possibility for the absence of an effect for these participants may have been that they received information about the extent to which outcomes were just in a way that was unintended. For instance, in both comparison conditions for the just world manipulation, participants either read about the target receiving a deserved outcome or may have assumed that the outcome was deserved. As such, these conditions may have affected a belief that the world was just for the target specifically, or a domain-specific belief in a just world (e.g., the education system may be just, but otherwise the world is not generally just) in a way that our measure was not able to capture. Thus, if the

manipulation had unintended and unmeasured effects on target or domain-specific just world beliefs, these may account for the lack of evidence for moderation for those that experienced schadenfreude in the absence of a just world threat. Additionally, because this was a complicated experimental design, it is possible that the effects of the just world and schadenfreude manipulations interfered with each other. Future research should extend these findings with a more simplified design. Such interference may explain why, unlike Study 2a, the schadenfreude manipulation check was unrelated to meaning in life.

### **General Discussion**

The results of one correlational study and three experiments provided evidence that just world beliefs are positively associated with the experience of meaning in life. Additionally, Study 2 and 3 provided some support for the prediction that the experience of schadenfreude conveys information about the extent to which the world is just, and can compensate for deficits in just world beliefs by bolstering meaning when such beliefs are lacking. In this way, schadenfreude is an emotional experience that can facilitate a sense of meaning in a pinch, when other, more enduring sources of meaning (such as beliefs that the world is just) are threatened. The implications of these findings for current theory and future research on the experience of meaning in life, just world beliefs, and schadenfreude warrant discussion.

### **Emotion and Meaning**

The pattern of results demonstrated in Studies 2 and 3 fits comfortably into previous research on the role of emotion in bolstering meaning when individuals are low on other more enduring sources of meaning in life. For instance, previous research has shown that variables like income and religiosity are positively associated with meaning in life, but when these sources of meaning are lacking, positive affect can bolster perceptions of meaning (see King & Hicks,

2008; Ward & King, 2016). The present results suggest that schadenfreude may perform a similar meaning-bolstering function as positive affect, particularly when just world beliefs are lacking. However, in contrast to positive affect, schadenfreude likely does not perform a meaning-bolstering function generally. Because schadenfreude conveys information about the extent to which outcomes are just or deserved, we would not expect schadenfreude to bolster meaning for individuals low on other sources of meaning in life, such as income and religiosity. Rather, schadenfreude is an emotional experience well-suited to temporarily boosting meaning in life for individuals specifically lacking in just world beliefs, but not other stable sources of meaning, generally.

### **Meaning as Information**

The present research also fits well into the conceptual framework offered by the meaning-as-information approach to meaning in life (see Heintzelman & King, 2014). The meaning-as-information approach suggests that feeling of meaning in life conveys information about the extent to which one's environment and experiences make sense. The current findings provide support for the meaning-as-information hypothesis, in several ways.

First, this research consistently demonstrated a positive relationship between just world beliefs and meaning in life, contributing to a growing body of literature showing that secular worldview beliefs contribute to a sense of meaning. Worldviews are thought of as a framework of beliefs and values that help an individual interpret and make sense of their world (see Koltko-Rivera, 2004). That such worldview beliefs also contribute to an individual's sense of life's meaningfulness supports the notion that the feeling of meaning conveys information about the extent to which one's experiences are comprehensible.

Second, the pattern of moderation found in Studies 2 and 3 also demonstrated that the emotional experience of schadenfreude is meaningful to the extent that it helps individuals make sense of the world. Schadenfreude was particularly effective in this way for those lacking belief systems that may otherwise help them do so. Thus, these findings provide additional support for the hypothesis that the feeling of meaning indicates the extent to which the world makes sense.

### **Eudaimonic and Hedonic Well-being**

Additionally, this research is well-situated to bear on the ongoing debate regarding eudaimonic vs. hedonic wellbeing. Meaning in life is thought of as eudaimonic wellbeing, while positive affect is thought of as hedonic wellbeing. However, in Study 2a, a “value neutral” positive affect induction and a schadenfreude induction, both led to higher meaning in life than control inductions. Thus, a distinction between two categorically different types of eudaimonic and hedonic happiness may be inappropriate. Instead, it may be more useful to conceptualize hedonic and eudaimonic experiences as different predictors of well-being, rather than distinct types of well-being.

### **Just World Beliefs**

The research reported here also contributes to the body of literature on just world beliefs. As noted earlier, just world beliefs are associated with both negative (e.g., victim blaming), and positive (e.g., goal pursuit) outcomes. As an element of one’s worldview, just world beliefs may not accurately reflect reality, especially for those that experience social disadvantages. However, just world beliefs may function as a positive illusion that can both facilitate adaptive psychological functioning and contribute to antisocial behaviors.

The present research suggests that one of the adaptive functions of just world beliefs is that they help facilitate a sense that life is meaningful. In particular, just world beliefs likely help

individuals experience their reality as coherent. To believe in a just world is to believe that people get the rewards they earn and receive the punishments they deserve. Outcomes simply make more sense when they are congruent with the behaviors of the individual receiving the outcome (e.g., a criminal goes to jail, or a hard-worker receives a raise). As noted above, when outcomes make sense, research suggests that they are likely to be experienced as meaningful (see Heintzelman, Trent & King, 2013). Thus, it is an unsurprising but important implication of the current results, that one's dispositional endorsement that people get what they deserve, for both positive and negative outcomes, is linked to the extent to which one experiences their life as meaningful. While the research reported here focused on the relationship between just world beliefs and meaning in life in the context of schadenfreude, future research should be devoted to further probing the causal relationship between just world beliefs and meaning in life, as well as the factors that might underlie their association.

### **Schadenfreude**

The majority of research on schadenfreude has been dedicated to understanding the experience of schadenfreude itself, and factors that may predict greater vs. less schadenfreude elicited by an experience. Three experiments expanded on the previous literature, by examining the causal effects of schadenfreude on meaning in life.

Study 2a showed that schadenfreude led to higher meaning in life, especially for those low in just world beliefs. While Studies 2b and 3 also provided some support for the prediction that schadenfreude would lead to higher meaning for individuals low on just world beliefs, the results of these studies were more tenuous. For Study 2b, just world beliefs only showed marginally significant evidence of moderation in exploratory analyses. Study 3 also showed the same pattern, but only when taking into account an individual difference measure of just world

beliefs that was included as a manipulation check. In other words, Study 3 showed that schadenfreude was particularly meaningful when the just world threat manipulation worked as intended. Additionally, this effect only occurred when individuals were low on just world beliefs in the context of a just world threat. Individuals that were low on just world beliefs in the absence of a threat did not experience a boost to their meaning in life after schadenfreude. Based on the present data, it is unclear why this difference occurred. One possibility is that the comparison conditions included in the just world manipulation may have conveyed information about just outcomes in a manner that was unintended.

Additionally, in Studies 2a and 3, the moderational effects of just world beliefs remained when controlling for positive affect. This finding might indicate that the relationship between schadenfreude and meaning involves more than simply feeling good. Future research should consider the extent to which schadenfreude may be related to meaning in life due to the emotional aspects of this experience, or due to cognitive evaluations of justice resulting from schadenfreude. Future research should also examine other third-variables that may underlie the associations between schadenfreude and meaning, such as downward social comparison, and self-esteem.

While the role of just world beliefs in the relationship between schadenfreude and meaning in life was fairly consistent, the methodologies of each study differed in ways that may have contributed to the results of Studies 2b and 3. The unexpected findings of Study 2b may have been accounted for by the lack of privacy offered to participants while taking the study. The public nature of the setting for Study 2b may have caused participants to be more aware of the potentially guilty feelings inspired by schadenfreude, and compelled greater socially desirable responding. Second, Study 3 also involved a manipulation of just world beliefs. The

effects of the just world manipulation may have interfered with the effects of the schadenfreude manipulation. Future research should further investigate the effects of schadenfreude on meaning in life using different experimental stimuli, both in controlled laboratory settings, and in more realistic field settings.

### **Limitations**

The inferences drawn from these studies are limited in a number of ways. First, with the exception of Study 2b, these studies were limited by their reliance on Amazon Mechanical Turk samples. While Mechanical Turk samples have been shown to be more representative of the general population than student samples (see Stewart et al., 2015), the extent to which these results may generalize to other populations is unclear. Future research should test the generalizability of these results by replicating these effects with other samples drawn from different populations. Second, all manipulations were executed using written passages, which may not reflect the way schadenfreude and just world beliefs are experienced in the real world. For instance, it is likely that people experience schadenfreude in every-day life by witnessing the outcomes of people that they actually interact with or have some level of familiarity with. Nonetheless, we argue that it is a strength that the present findings were observed in spite of the fact that our manipulations may have been less realistic than the scenarios in which schadenfreude is experienced in the real world. However, our confidence in these findings could only be strengthened if they were also demonstrated in more realistic interpersonal settings.

### **Conclusion**

Ultimately, the research reported here offers some conceptual contributions to the field of psychology and the science of well-being. These results suggest that the relationship between happiness and meaning in life does not depend on the moral quality of the source of one's

happiness. This research also provides evidence that just world beliefs are positively associated with the experience of meaning, and that the feeling of schadenfreude confers similar benefits to perceptions that life is meaningful as do beliefs that the world is just.

### Footnotes

<sup>1</sup> For each condition, a vignette was created to take place either in a coffee shop ( $n=208$ ) or in traffic ( $n=189$ ). We included two settings for each condition with the intention that each scenario would lead to comparable outcomes, enabling us to collapse across cells. This design resulted in 8 vignettes representing a total of 4 conditions. However, we found that in the *undeserving* condition, the traffic setting led to significantly higher *schadenfreude* than the coffee setting,  $t(99)=3.68, p=.008$ . As such, the vignettes set in the coffee shop were more effective than those that were set in traffic, and we decided to use only the coffee setting conditions in subsequent analyses.

<sup>2</sup> Based on previous research, we included both cognitive and mood-based measures of *schadenfreude*. The mood-based items were selected from emotional measures of *schadenfreude* commonly used in previous research (e.g., Hoogland et al., 2015), and included “amused, satisfied, and pleased” after reading each passage,  $M(SD)=3.69(2.05), \alpha=.94$ . However, because these items clearly meant something different based on which condition participants were in, we determined to only conduct analyses with the cognitive *schadenfreude* measure, rather than the mood-based measure.

<sup>3</sup> Due to previous findings (see Porter, Bhanwer, Woodworth, & Black, 2013; James et al., 2014; Schump & Lafrenière, 2016), we included measures of the Dark Tetrad in Study 2a. However, we did not find that these traits predicted higher levels of *schadenfreude* or higher levels of meaning in life. In order to measure the Dark Triad, which is composed of Narcissism, Machiavellianism and Psychopathy, participants completed the 27-item Short Dark Triad Scale (SD3; Paulhus, 2013). The SD3 is composed of 9 items that measure each of the three traits: For narcissism (sample items: “Many group activities tend to be dull without me;” “I feel

embarrassed if someone compliments me” reverse scored),  $M(SD)=3.46(1.14)$ ,  $\alpha=.82$ ; for Machiavellianism (sample items: “Avoid direct conflict with others because they may be useful in the future;” “Whatever it takes, you must get the important people on your side”),  $M(SD)=3.94(1.03)$ ,  $\alpha=.81$ ; and, for psychopathy (sample items: “People often say I’m out of control;” “Payback needs to be quick and nasty”),  $M(SD)=2.65(1.01)$ ,  $\alpha=.80$ . The fourth component of the Dark Tetrad, sadism, was measured using the Varieties of Sadistic Tendencies scale (Paulhus & Jones, 2015). The VAST is composed of one subscale measuring vicarious sadism (sample items: “I sometimes replay my favorite scenes from gory slasher films;” “I sometimes look away in horror movies” reverse scored),  $M(SD)=2.89(1.21)$ ,  $\alpha=.80$ ; and another subscale measuring direct sadism (sample items: “I enjoy making people suffer;” “I enjoy tormenting animals—especially the nasty ones”),  $M(SD)=2.20(0.91)$ ,  $\alpha=.80$ .

Contrary to our expectations, none of the dark tetrad X condition interactions were significant, suggesting that the relationship between morally ambiguous sources of positive affect and meaning in life does not differ based on variation in antisocial personality traits. Although it was not a primary aim of this research, the null results for the moderation analyses of the Dark Tetrad members was unexpected. These findings imply that the relationship between schadenfreude and meaning in life does not differ based on whether or not one has morally ambiguous personality characteristics.

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**Table 1. Correlations Among Measures, Study 1**

	MLQ-P	JWB	SWLS	FI	IR	PA	NA
Meaning in Life (MLQ-P)	<b>.91</b>	.29**	.56**	.14**	.31**	.52**	-.46**
Just World Beliefs (JWB)		<b>.78</b>	.38**	.22**	.26**	.35**	-.21**
Life Satisfaction (SWLS)			<b>.87</b>	.28**	.23**	.68**	-.53**
Faith in Intuition (FI)				<b>.84</b>	.11**	.26**	-.07
Intrinsic Religiosity (IR)					<b>.91</b>	.20**	-.13**
Positive Affect (PA)						<b>.91</b>	-.61**
Negative Affect (NA)							<b>.90</b>
Partial Correlations	--	--	.09*	.26**	.22**	.13**	.22**

*Note.* \* $p < .005$ , \*\* $p < .001$ .  $N$ 's= 945-949; Reliabilities are shown on the diagonal. For intrinsic religiosity, the reliability estimate is based on 2-items from the full scale. Coefficients in the last row are partial correlations between MLQ-P and JWB, controlling for each variable.

*Table 2. Correlations Among Measures, Study 2a*

	PA	NA	Schad.	JWB
Meaning in Life	.39**	-.22**	.24**	.43**
Positive Affect		-.20**	.50**	.42**
Negative Affect			-.01	-.04
Schadenfreude				.18*

*Note.*  $N = 208$ . \* $p < .05$ ; \*\* $p < .001$ . JWB=just world beliefs; schad= schadenfreude.

**Table 3. Correlations Among Measures, Study 2b**

	PA	NA	Schad.	JWB	Happy
Meaning in Life	.06	-.03	-.07	.18**	.35**
Positive Affect		-.18*	.74**	.14*	.22*
Negative Affect			-.44	-.01	-.09
Schadenfreude				.13	.24*
Happy					.15*

Note.  $N = 208$ . \* $p < .05$ ; \*\* $p < .003$ . Schad=schadenfreude; JWB=just world beliefs.

*Table 4. Correlations Among Measures, Study 3*

	PA	NA	Schad.	JWB
Meaning in Life	.54**	-.32**	-.05	.20**
Positive Affect		-.21**	.08*	.22**
Negative Affect			-.03	.02
Schadenfreude				.13

*Note.* \* $p < .05$ ; \*\* $p < .001$ .  $N = 1,206$ ; Schad= schadenfreude; JWB=just world beliefs.

**Table 5. Means and Standard Deviations for Meaning in Life for Each Condition, Study 3**

	Just World Threat	Just World Maintain	Just World Control
Schadenfreude	5.00(1.32)	4.81(1.52)	4.89(1.41)
Control	4.94(1.47)	4.79(1.37)	4.74(1.48)

*Note.* N=1200.

### Figure Captions

**Figure 1.** Hypothetical results demonstrating the alternative predictions for Study 2a. The hedonic prediction is shown at the top, and the eudaimonic prediction is shown at the bottom. JWB= just world beliefs; Schad=the schadenfreude condition, and control= all other conditions grouped together.

**Figure 2.** Means for each condition on the schadenfreude manipulation check (top panel), positive affect (middle panel) and negative affect (bottom panel), Study 2a. Error bars are 95% confidence intervals bootstrapped with 3000 resamplings

**Figure 3.** Error bars are 95% confidence intervals bootstrapped with 3000 resamplings

**Figure 4.** Schad=the schadenfreude condition. For this analysis a dummy code was created for the schadenfreude condition will all other conditions grouped together as the baseline, indicated by “other”. Generated regression lies for those  $\pm 1$  *SD* from the mean on just world beliefs within the schadenfreude and undeserving, control, and PA conditions.

**Figure 5.** Schad=the schadenfreude condition. For this analysis a dummy code was created for the schadenfreude condition will the control condition as the baseline. Generated regression lies for those  $\pm 1$  *SD* from the mean on just world beliefs within the schadenfreude and control conditions.

**Figure 6.** JW = just world; Schad = schadenfreude. For this analysis dummy codes were created representing the just world threat condition (1=threat, 0= control), and schadenfreude condition (1=schadenfreude, 0 = control. Generated regression lies for those  $\pm 1$  *SD* from the mean on just world beliefs within the experimental cells. True control represents the combination of the just world manipulation control and schadenfreude control group. JW Control + Schad = the control for the just world manipulation and the schadenfreude condition. JW Threat + control =

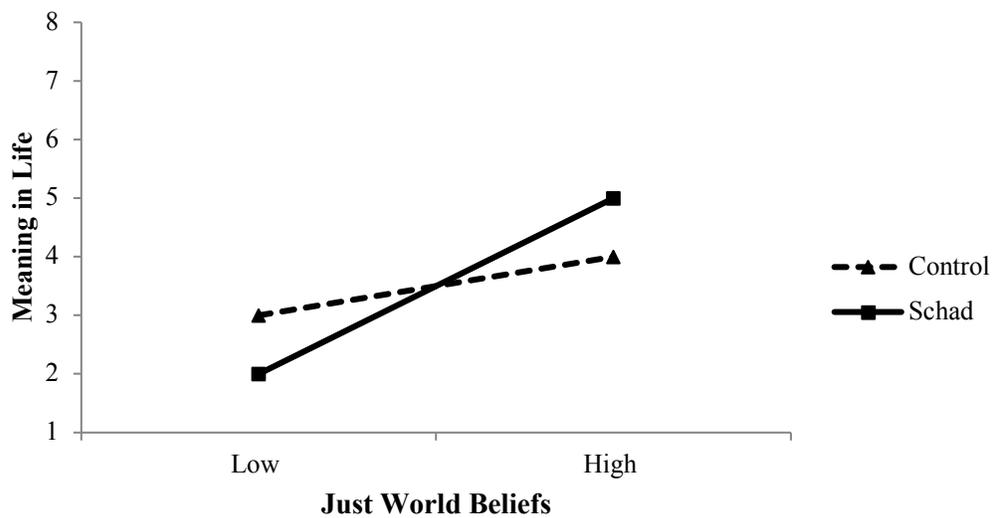
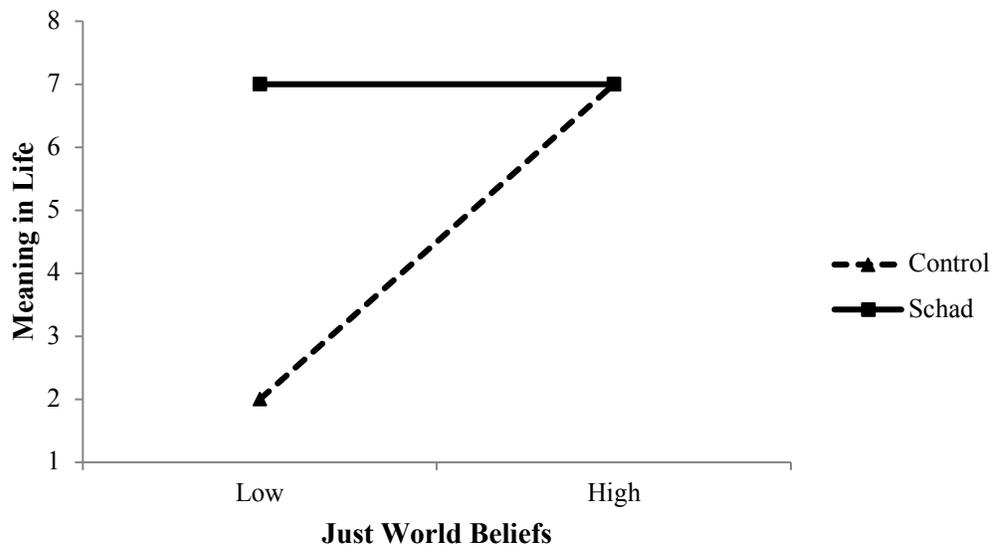
the combination of the just world threat condition and schadenfreude control group. JW Threat + Schad = the just world threat and schadenfreude condition.

**Figure 7.** Schad=the schadenfreude condition. For this analysis dummy codes were created representing the just world threat condition (1=threat, 0= control), and schadenfreude condition (1=schadenfreude, 0 = control. Generated regression lines for those  $\pm 1 SD$  from the mean on just world beliefs within the experimental cells representing the just world threat plus schadenfreude condition vs. the just world control plus schadenfreude control condition (or, True control).

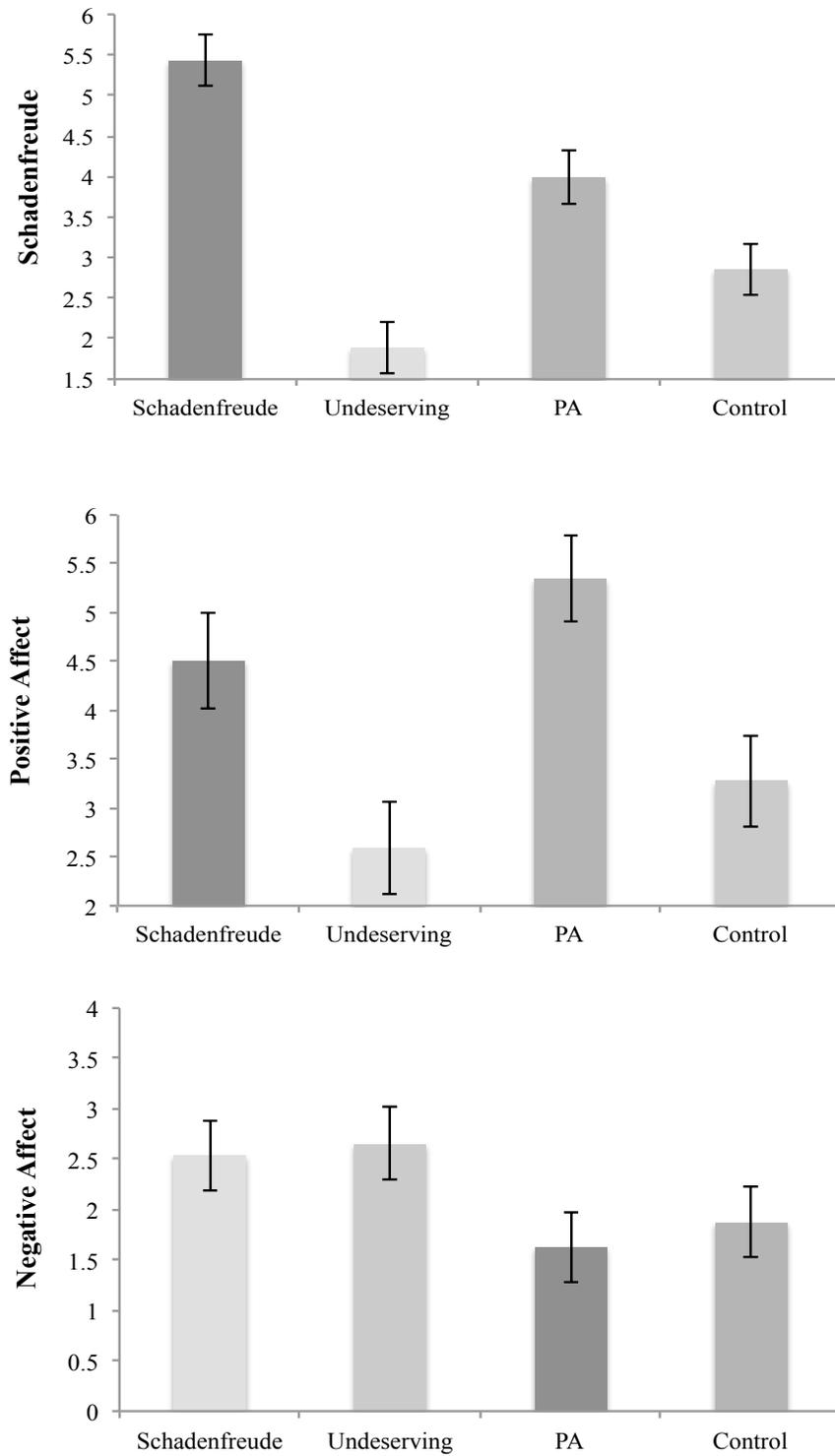
**Figure 8.** Schad=the schadenfreude condition. For this analysis dummy codes were created representing the just world threat condition (1=threat, 0= control), and schadenfreude condition (1=schadenfreude, 0 = control. Generated regression lines for those  $\pm 1 SD$  from the mean on just world beliefs within the experimental cells representing the just world threat plus schadenfreude control condition vs. the just world control plus schadenfreude control condition (or true control).

**Figure 9.** Schad=the schadenfreude condition. For this analysis dummy codes were created representing the just world threat condition (1=threat, 0= control), and schadenfreude condition (1=schadenfreude, 0 = control). Generated regression lines for those  $\pm 1 SD$  from the mean on just world beliefs within the experimental cells representing the just world control plus schadenfreude condition vs. the just world control plus schadenfreude control condition (or true control).

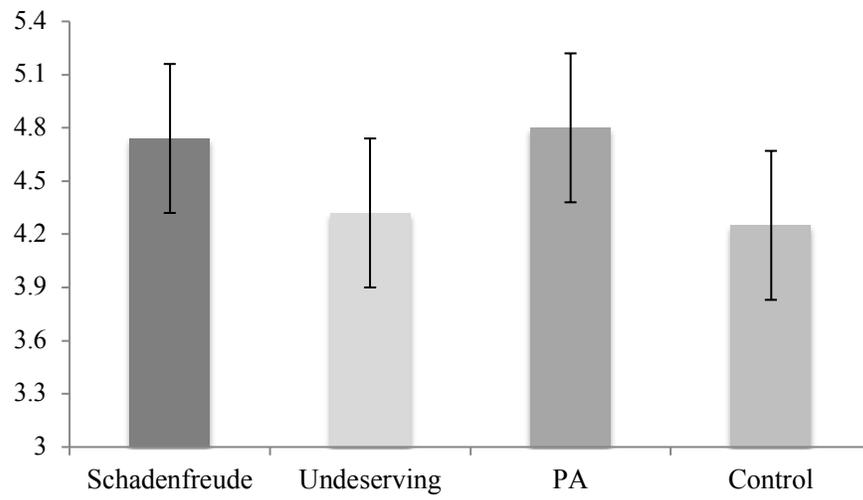
**Figure 1. Alternative Hedonic (top) and Eudaimonic (bottom) Predictions for Just World Beliefs X Condition Effects**



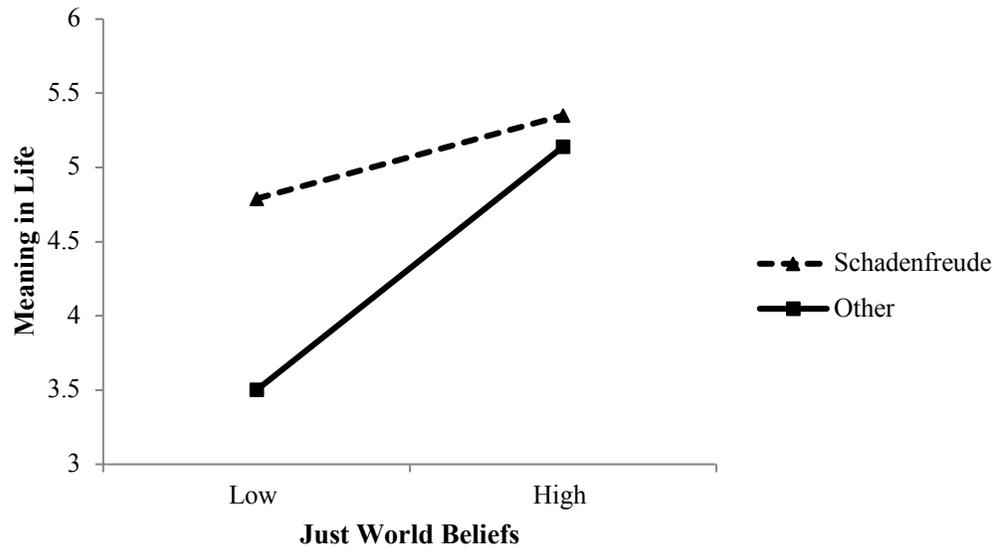
**Figure 2. Cell Means for Schadenfreude Manipulation Check (top), Positive Affect (middle) and Negative Affect (bottom), Study 2a**



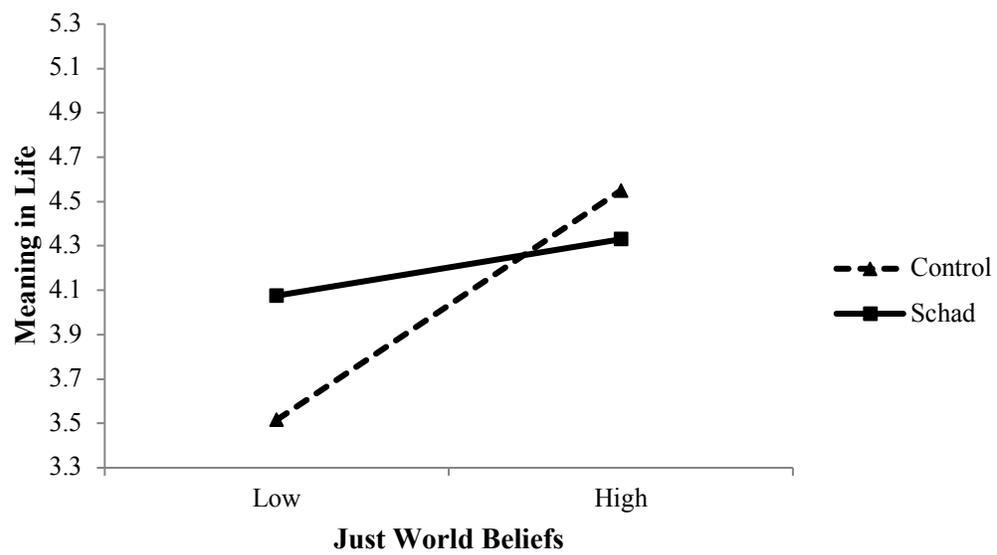
*Figure 3. Means for Presence of Meaning in Life, Study 2a*



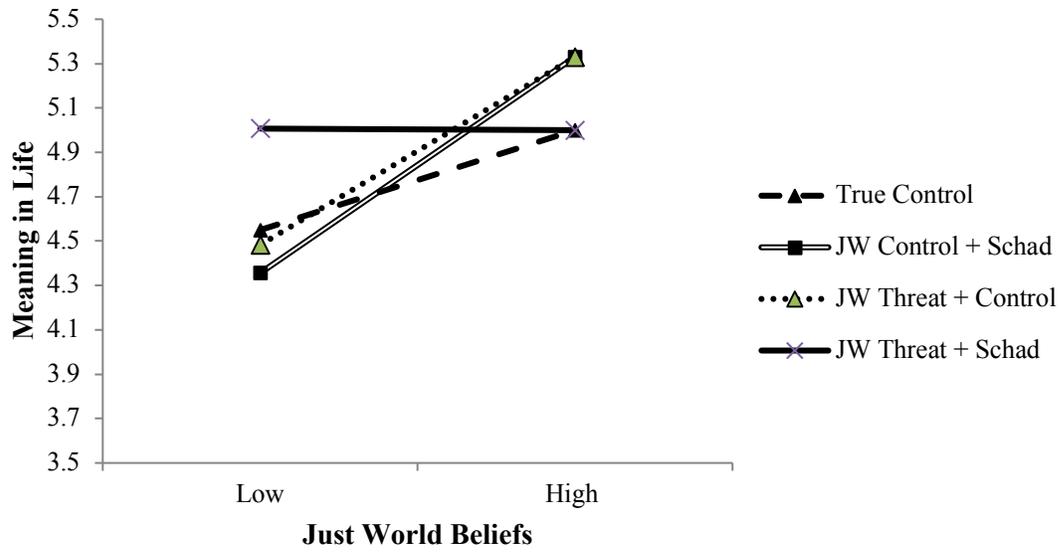
*Figure 4. Just World Beliefs X Condition Predicting Meaning in Life, Study 2a*



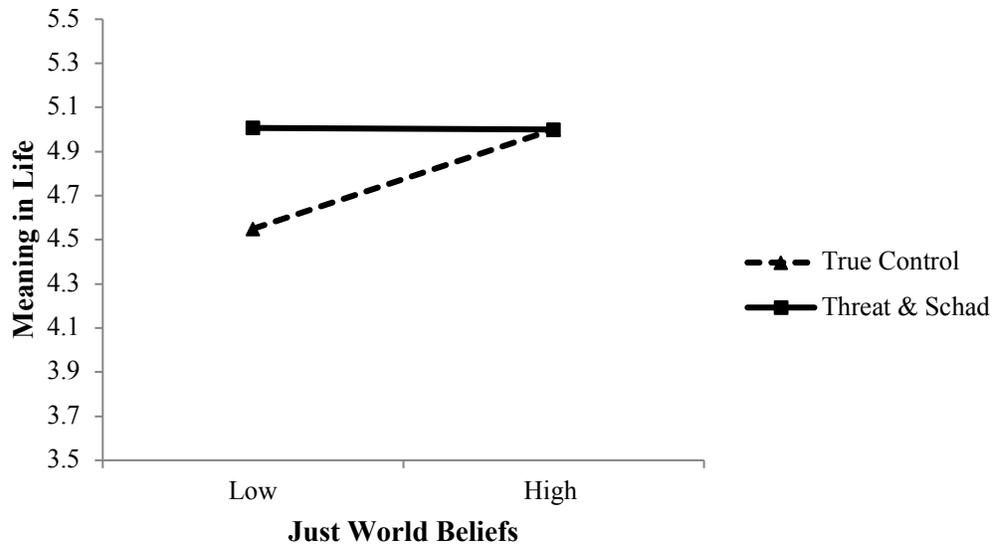
*Figure 5. Just World Beliefs X Condition Predicting Meaning in Life, Study 2b*



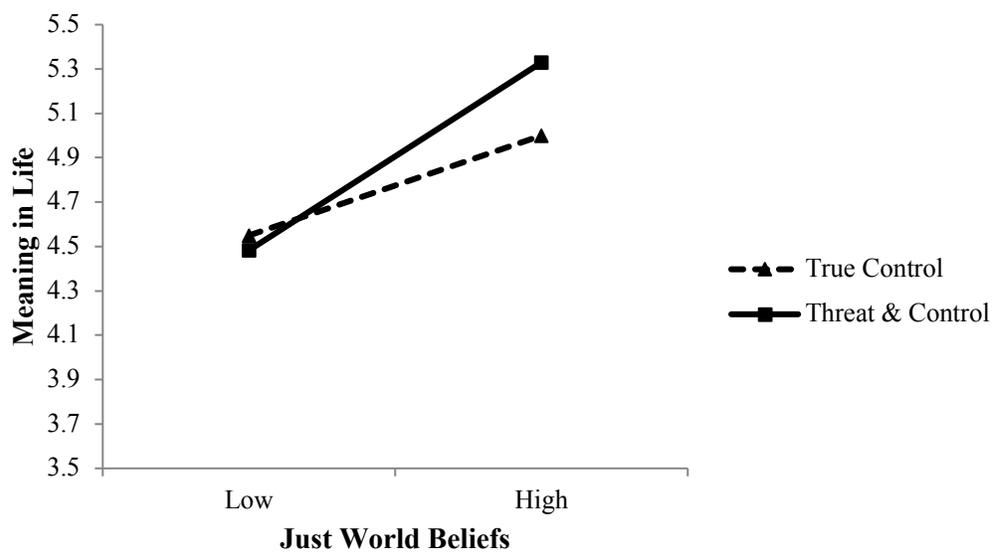
**Figure 6. Three-way Interaction of Just World Conditions X Schadenfreude Condition X Just World Beliefs (manipulation check), Study 3**



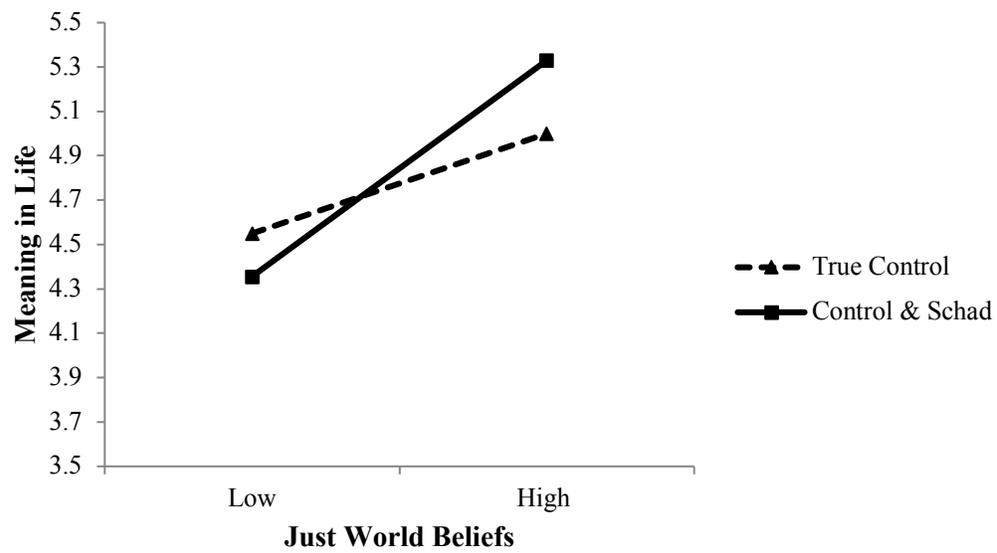
**Figure 7. Just World Beliefs X Condition (Threat and Schadenfreude vs. True Control) Predicting Meaning in Life, Study 3**



**Figure 8. Just World Beliefs X Condition (Threat and Control vs. True Control) Predicting Meaning in Life, Study 3**



**Figure 9. Just World Beliefs X Condition (Control and Schadenfreude vs. True Control)  
Predicting Meaning in Life, Study 3**



## Appendix A

Vignettes for the schadenfreude, undeserving, positive affect, and control conditions, Study 2a.

### Coffee Shop Setting:

#### **Schadenfreude Condition**

You are at a busy coffee shop with a friend and have been waiting in line for quite some time. As the two of you chat, you notice a businessman cut into line in front of you. As you near the counter, you overhear that he coincidentally ordered the same exact drink you were going to order. After the barista pours the drink, she informs the man that he was lucky because he got the last one. The man turns to you and says, “you snooze, you lose.” As he walks to the door, the man trips over himself and spills the last coffee all over his expensive suit.

#### **Undeserving Condition**

You and a friend decide to go grab a coffee. When you get there, you find that they are extremely busy, and there is quite the long line. A man shows up at the same time as the two of you, and decides to let you get in line first. After you have your coffee, you notice the man leaving the café. On his way to the door, he trips over himself and spills the coffee all over his suit.

#### **Positive Affect Condition**

You and an old friend decide to catch up over a cup of coffee. You decide to meet at your favorite local café. When you get there, you find that you’re very lucky because there is no line today. After placing your order, the barista informs you that they appreciate you for being a

regular customer, your coffee is on the house. You and a friend find a table and have a great time catching up.

### **Control Condition**

The average American drinks 2 cups of coffee on a weekday. On the weekends, the average American only drinks one cup of coffee. Of all coffee-drinking Americans, half of coffee consumption occurs at a coffee shop, 20% occurs at home, and 30% of coffee is consumed at work. For the consumption that occurs at coffee shops, the average American waits 3 minutes in line before ordering their drink, and waits an average of another 2 minutes for the drink to be made.

## **Appendix B**

Faux news stories from the just world threat, maintaining and control conditions, Study 3.

### **Control**

STUDENT REPORTS: Scholarship Funding Opportunities in the U.S.

Scholarships are an integral part of the United States upper-level education system. Hundreds of scholarships are available to students at the college level each year. Without this funding, many people would simply be unable to pursue higher education. Additionally, for those that would otherwise be able to attend college, these funding opportunities reduce the burden of debt that follows and undergraduate education.

The national bureau of education funding (NBEF) estimates that over 1 billion dollars in scholarship funding are provided to college students in America annually. Many of these funding opportunities are content specific. For instance, some only fund students that are interested in pursuing degrees in the sciences (e.g., biology or physics) while others are specific for students studying the arts (e.g., music). Additionally, some scholarships are limited to students based on demographics, such as first-generation college students. Other scholarships only apply to students that are interested in engaging in certain extra-curricular activities, such as community engagement, or studying abroad (e.g., the Center for the Arts and Sciences scholarship). Finally, some scholarships are more general, and simply awarded to students based on merit.

According to the NBEF, Emily Smith, 20, was the most recent recipient of the Center for the Arts and Sciences scholarship, and she plans to use this funding to study biology in London. Smith told reporters that she is excited about the opportunity to study abroad, and that she would put the funding to good use.

### **Just World Maintaining**

STUDENT REPORTS: Blind woman receives CAS Scholarship!

Emily Smith, 20, was the first American blind woman to be granted a Center for the Arts and Sciences Scholarship (CAS) to cover tuition and living expenses in a Study abroad program. Smith was accepted to study biology at a university in London. Her visa has been accepted, and she plans to begin her program in London next semester.

The young woman was born at 24 weeks, and the excess oxygen in the incubator left her blind. She strives to lead a normal life, despite her disability. Smith says that her time in school was not always easy: She was often a victim of bullying because she was blind. Smith has always insisted that she did not want special treatment and has received all of her education from mainstream educational institutions. As such, she has learned independently and has developed the ability to adapt to different environments.

'The news about the scholarship was like a dream. This will be the best opportunity in life for me. I will be the first person in my family to receive a college education. I worked so hard for it!' says Smith. Smith also says that she felt honored to be accepted for the CAS Scholarship, especially as a blind student. She noted, "This just really goes to show that when people work hard at something, no matter who you are, people truly get what they deserve."

### **Just World Threat**

STUDENT REPORTS: Blind woman receives CAS Scholarship and has to give it back!

Emily Smith, 20, was the first American blind woman to be granted a Center for the Arts and Sciences Scholarship (CAS) to cover tuition and living expenses in a Study abroad program. Smith was accepted to study biology at a university in London. However, her visa was rejected due to a clerical error made by U.K. authorities, and she had to give the scholarship back.

The young woman was born at 24 weeks, and the excess oxygen in the incubator left her blind. She strives to lead a normal life, despite her disability. Smith says that her time in school was not always easy: She was often a victim of bullying because she was blind. Smith has always insisted that she did not want special treatment and has received all of her education from mainstream educational institutions. As such, she has learned independently and has developed the ability to adapt to different environments.

'The news about the scholarship was like a dream. But now, the best opportunity in life for me has been taken away. I would have been the first person in my family to receive a college education. I worked so hard for it!' says Smith. Smith also questions the fairness of reasons that her visa was rejected. She noted, "This just really goes to show that even when you work really hard at something, no matter who you are, sometimes people don't get what they deserve."