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## Descriptive and Prescriptive Belief in a Just World

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A thesis submitted in partial fulfillment of the requirements for the Doctor of Philosophy degree in Psychology

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## Abstract

The Justice Motive has traditionally been conceptualized as a homeostatic, prevention-focused motivation, but attempts to measure individual differences in the Justice Motive (i.e., the Belief in a Just World) have not treated it as one. The measurement of a motivation requires accounting for both the current state and the goal state, but traditional measurement techniques have relied solely on beliefs about how just the world currently is (i.e., the current state). This has resulted in two major issues in the literature. First is the assumption that everyone who reports believing in a just world has reached that belief because of the same motivation. The second issue is that measurements of the Belief in a Just World have demonstrated only a small relation with the Justice Motive. The present research was designed to address these issues by introducing a second, complementary scale called the Prescriptive Belief in a Just World Scale, which measures beliefs about how just the world should be (i.e., the goal state), to be used in conjunction with the traditional scale, which we now refer to as the Descriptive Belief in a Just World Scale. Across seven studies, we found evidence that the Descriptive and Prescriptive Belief in a Just World Scales are independent and that we can use them to detect significant differences in a number of justice-related variables, judgments of the injustice of specific events, and the willingness to engage in behaviours prototypical of a strong Justice Motive which would be undetectable without the inclusion of our second scale. Taken together, our results suggest that using the Descriptive and Prescriptive Belief in a Just World Scales concurrently allows us to better understand variation in the strength of the Justice Motive.

**Keywords:** Justice Motive, Belief in a Just World, fairness, justice, motivation, social cognition

## Lay Summary

The Justice Motive is the motivation to believe that the world is generally just. Put another way, it is the need to believe that good things happen to good people and bad things happen to bad people. However, not everyone's motivation is equally strong. Psychologists have traditionally tried to measure differences in the strength of this motivation by asking people whether they believe the world is just, and inferring that anyone who believes the world is just has a strong motive to believe. The problem is that understanding the strength of a motive requires understanding the gap between where someone is (the current state) and where someone wishes to be (the goal state). For example, if you asked someone if they were hungry, you would not be able to infer whether they are generally a hungry person from their answer without knowing how long it had been since they last ate. Similarly, we need to understand variations in how just people believe the world should be (the goal state), along with their beliefs about how just the world is (the current state), in order to properly assess differences in the strength of the motivation to believe the world is just.

To do this, we introduced the Prescriptive Belief in a Just World Scale, which measures beliefs about how just the world should be, to be used along with the traditional Descriptive Belief Scale. This allows us to account for the gap between the current state and goal state of an individual's just world beliefs. Using the two scales, we found novel results regarding the different sets of beliefs that individuals can hold while reporting high and low Descriptive Beliefs in a Just World, dependent on whether they were high or low in Prescriptive Beliefs. We found evidence that these individuals do not seem to utilize the major components of the Justice Motive in the same way. In summary, we were able to show that using both Descriptive and Prescriptive scales gives us a deeper understanding of the ways people vary in the strength of their Justice Motive.

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## Descriptive and Prescriptive Belief in a Just World

The Belief in a Just World (BJW) is, at its most basic, the belief that people deserve what they get and get what they deserve. In its early form, BJW was not conceptualized as a singular psychological process, but rather as a “useful metaphor” for the framework of interconnected psychological structures and processes that lead to consistent patterns of responding to instances of injustice (Lerner, 1997). Conceptually, BJW is an individual difference variable that is rooted in Justice Motive Theory (Lerner, 1977), which states that the need to believe that the world is just is a fundamental and psychologically unique motivation that is necessary in order to function as a social being in a complex world.

In this introductory section of the thesis, we will begin by outlining the research on the Justice Motive, and its effects on perception, interpretation, and attribution in the context of injustice. We will then discuss the individual difference focused BJW literature that developed from the Justice Motive literature. Next, we will discuss how different BJW scales have been developed in an attempt to reconcile discrepancies between the Justice Motive and BJW literatures, before discussing evidence for the normativity of the expression of BJW. Next, we will briefly review three justice-related variables (belief in meritocracy, social dominance orientation, and right-wing authoritarianism) that will be used in the current research to help us explore the facets of belief in a just world. Finally, we will explain that research to this point has not properly accounted for the theoretical structure of the Justice Motive as a homeostatic, prevention-focused motive.

The goals of this program of research are twofold. First, we aim to develop a method for differentiating between a true belief in a just world and a reported belief in a just world that is the result of non-justice motivations, such as self-presentation or system-justification. Second, we seek to provide a tool that can serve as a conceptual bridge between the Justice Motive literature and the belief in a just world literature. We will do this by introducing the concept and measurement of a prescriptive Belief in a Just World, a belief about how just the world should be. Assessing current beliefs about how just the world is without accounting for how just the world should be does not allow for proper measurement of the Justice Motive, because assessing a motivation or goal, by definition, requires an understanding of both a current and a desired state (Kruglanski et al., 2002).

### **The Justice Motive**

The need to believe in a just world is commonly theorized to serve two separate roles. The first of these motivations is the “personal contract”, the hypothetical agreement between an individual and the world which implicitly states that good people will get good outcomes, and bad people will get bad outcomes. Justice Motive Theory further suggests that these beliefs arise naturally during development (Lerner, 1977). As children learn to act on their environment, they naturally form beliefs based on the way that their actions affect their environment and other people. For example, when children are rewarded by their parents for desirable behaviour, they learn that behaving correctly will earn them desired outcomes, whether that be praise or material reward. When children are punished for misbehaving, they learn that authority can detect violations of rules and norms, and apply punishments where punishments are due. All of these daily experiences

provide immediate and concrete evidence that good behaviour will be rewarded and bad behaviour will be punished, therefore, it is worth the individual's time and effort to suppress the desire for instant gratification in order to gain rewards and avoid punishment. In this way, the personal contract allows an individual to pursue long-term goals and perceive this investment of time and effort as worthwhile (Hafer, 2000b).

This belief serves an important, adaptive function (Furnham, 2003), and as a result, violations of this belief are threatening to individuals and their world views (Lerner & Miller, 1978). There are a number of compensatory behaviours and beliefs that can be used to maintain belief in a just world when that belief is threatened with instances of injustice. Though Lerner (1980) outlined nine specific strategies, these strategies can be represented by three categories: rational strategies, irrational strategies, and protective beliefs. Rational strategies describe the subset of strategies that deal with injustice by first admitting that it exists (or will exist), and then changing the world in order to restore justice. These rational strategies recognize that suffering exists in the world, and seek to restore justice by acting to prevent or restore, not by denying that it exists. Rational strategies, when available, are generally endorsed by everyone as means to alleviating threats to the belief in a just world. That is, most people favour remedying injustice as the predominant means of maintaining their just world beliefs.

Irrational strategies, conversely, primarily rely on motivated interpretation of specific details surrounding an injustice. Though not readily utilized by everyone, these strategies provide a means of maintaining just world beliefs in instances where the threat of injustice cannot be directly addressed. These strategies typically take three forms. First, the cause of injustice can be reinterpreted so that it is not a random and uncaring

world that is responsible for suffering, but rather, the behaviour of the victim (Lerner & Montada, 1998), no matter how implausible the connection. Blaming a rape on a victim's clothing is an example; by reinterpreting the event as being caused by the behaviour of the victim, rather than acknowledging that bad things can happen to anyone, the need to believe in a just world is not threatened. The cause of the injustice can be attributed to deliberate behavior on the part of the victim, and as such, it is their fault for making a bad decision, because in a just world, bad outcomes result from bad decisions. Similarly, perceptions of justice can be restored by calling the character of the victim into question (Lerner & Miller, 1978). For example, when confronted with the threatening reality of an unarmed black citizen being shot to death by police, perceptions of justice can be restored by derogating the victim's character, by, for instance, focusing on the fact that he had previous legal trouble. If individuals can convince themselves that only bad people have legal trouble, and therefore it was a bad person that the bad thing happened to, the injustice is no longer threatening. Finally, people can reinterpret an outcome that is incongruent with a target's character by adding a cognition to restore perceptions of justice (Hafer & Bègue, 2005). For example, activation of the complementary myths of "poor but happy" and "rich but miserable" has been found to buffer against just-world threat (Kay & Jost, 2003). By embracing such a myth, an individual does not have to feel threatened by the physical and mental health burdens associated with poverty, because those individuals being poor is actually protecting them from all the complications and stress that make rich people unhappy. In each of these cases, nothing about the initial injustice has changed, and as such, nothing about the general level of justice in the world

has changed, but the individual no longer finds these specific instances threatening to his or her general belief.

The personal contract conceptualization and its sensitivity to just-world threats have received a great deal of empirical support. This research has focused primarily on irrational strategies, particularly causal attributions and victim derogation. Although this has left certain strategies under-researched (see Hafer & Bègue, 2005), this focus is logically consistent with the conceptualization of the belief in a just world as an attributional process (Lerner & Miller, 1978). Causal and character attributions are inherently ambiguous processes (Moskowitz, 2005), and as such provide an opportunity for people to interpret information in a motivated manner (e.g., Bègue & Muller, 2006).

In addition to influencing interpretation of ambiguous information, the need to believe in a just world also changes the way in which information is perceived and recalled. Using a modified Stroop task, Hafer (2000a) found that when participants' BJW was threatened by the presentation of an innocent victim, participants were significantly slower identifying the colour of justice-related words compared to neutral words, suggesting that threats to the BJW bias our perceptual processing towards justice-related concepts. Furthermore, greater latencies in identifying word colour were positively associated with victim derogation. Consistent with just-world theory, the participants whose response latencies suggested they were most threatened by the innocent victim were the most likely to derogate the victim.

Similarly, the need to believe in a just world also influences the way people search for information. Callan, Ferguson, and Bindemann (2013) tracked participant eye gaze while they listened to a story about a target and, at the same time, searched a visual



scene containing good and bad outcomes that may befall the target. When participants were listening to a story about a good person, they preferentially looked at good outcomes, and when they were listening to a story about a bad person, they preferentially looked at bad outcomes. These findings suggest that the need to believe in a just world is so fundamental that it even biases attention.

But all violations of justice are not equally threatening. At its most basic, as discussed above, the Justice Motive is threatened when bad things happen to good people. Logically, then, injustice is less threatening when it happens to less good people, whether or not this evaluation is based on a dimension that is relevant to the injustice. For example, the “beauty is good” stereotype is a well-documented phenomenon in which people generally assume that physically attractive people are more likely to be good (Eagly et al., 1991). Consistent with this, Callan, Powell, and Ellard (2007) found that people judged the death of a physically attractive woman to be more tragic and unfair than the death of a less attractive woman. In addition, when asked retroactively to recall what the women looked like, people who were told that the woman suffered a great deal before dying (a high threat condition) remembered the woman as being less attractive than participants in the low threat condition. Presumably, remembering the woman as less attractive made the injustice less threatening. Similarly, it is well established that people generally have more favourable attitudes towards younger compared to older people (Kite, Stockdale, Whitley, & Johnson, 2005), which suggests that bad things happening to old people would be less threatening to the BJW than bad things happening to young people. Indeed, Callan, Dawtry, and Olson (2012) found that, in general, people believed that a perpetrator who caused a car accident should be punished less when the victim of

the car accident was older. Additionally, this relation was moderated by ageism (negative attitudes toward the elderly); those who were low in ageism recommended the same punishment for the perpetrator, regardless of victim's age.

These differences in attitudes towards different targets moderate the degree of threat that results from incidents of injustice, because the level of threat depends on the discrepancy between how good we judge targets to be and the degree to which we judge what happened to them to be good or bad. The more a target represents a quality towards which negative attitudes are held (e.g., physical unattractiveness or advanced age), the less threatening it is when something bad happens to them.

The degree to which the need to believe in a just world is threatened is not caused only by individual characteristics and identity, but by group identity as well. Given that certain groups are disproportionately subject to both negative attitudes through prejudice and stereotyping, and negative social value through group differences in power (Sidanius & Pratto, 1999), it logically follows that the BJW, in aggregate, can serve as a means of allowing and maintaining these differences. This leads to the second role that the BJW serves, which is system justification. Broadly speaking, a justification is an idea that is used to support another idea or behavior. System justification, then, describes a network of related psychological processes that are used to justify the social structure as it currently exists, even when the social structure is unjust or disadvantageous to either the self or the groups with which one identifies (Jost & Banaji, 1994). Specifically, System Justification Theory states that individuals are motivated to justify the status quo in which they live, either with or without conscious awareness, in service of a number of lower level, underlying needs, such as the maintenance of relationships (Jost & van der Toorn,

2012). System Justification Theory suggests different reactions than does Justice Motive Theory, in that Lerner believed people's primary reaction to injustice was to address it directly through rational strategies and only when prevented from doing so would rationalization processes (i.e., irrational strategies) occur, whereas System Justification Theory suggests that individuals actively exaggerate how just institutions and society are in general. This tendency is theorized to be especially prominent when the status quo is perceived to be inescapable, when it is threatened, and when the individual feels reliant on or controlled by the system. However, even though they predict different primary patterns of response to injustice, the Justice Motive can be understood as an individual motivation that maintains the status quo.

### **The Belief in a Just World: Individual Differences in the Strength of the Justice Motive**

Very shortly after the advent of research into the Justice Motive, there arose a parallel body of research focusing on individual differences in the Justice Motive, based on the hypothesis that there would be natural variation in the strength of the Justice Motive, and only those with a strong motive should respond to injustice in the manner predicted by Justice Motive Theory. Indeed, research utilizing the Just World Scale (developed by Rubin & Peplau, 1973) supported this hypothesis, finding that individuals with a stronger BJW derogated victims more than those with a weaker BJW.

Research since then has found support for these findings across a wide range of targets and contexts. For example, higher BJW in men is related to the degree of victim derogation when judging women who were the victims of rape (Kleinke & Meyer, 1990). Similarly, higher BJW is predictive of support for the use of coercive interrogation

techniques by law enforcement (Jones & Brimbal, 2017), consistent with the idea that bad things only happen to bad people. Interestingly, however, those high in BJW not only are more supportive of coercive interrogation techniques, but also have a stronger belief in their efficacy. Though an admittedly complex issue, the relative ineffectiveness of these techniques is well documented (e.g., Rattner, 1988), and as such, differences in belief about their efficacy can be reasonably attributed, at least in part, to motivated searching and/or memory for facts that are consistent with the BJW.

BJW is related to negative attitudes towards a wide range of subordinate groups. Those with a stronger BJW generally have more negative attitudes towards the economically disadvantaged, including both the poor (Furnham & Gunter, 1984) and the unemployed (Reichle, Schneider, & Montada, 1998). They also tend to have more negative attitudes towards the socially disadvantaged, that is, those lacking power, such as refugees (Montada, 1998), the elderly (Lipkus & Siegler, 1993), homosexual AIDS patients (Anderson, 1992), and transgendered people (Thomas, Amburgey, & Ellis, 2016). Furthermore, higher BJW is positively associated with a number of well-established system-justifying beliefs, including social dominance orientation (Pratto, Sidanius, Stallworth, & Malle, 1994), right-wing authoritarianism (Lambert, Burroughs, & Nguyen, 1999), the protestant work ethic (Furnham & Rajamanickam, 1992), and both hostile and benevolent sexism (Sakalli-Ugurlu, Yalcin, & Glick, 2007).

BJW facilitates system-justification based on the same Justice Motive that drives the personal contract, but rather than being applied to individuals, it is applied to groups and to policies. For example, Oldmeadow and Fiske (2007) examined the role that BJW plays in the commonly held stereotype that members of higher status groups are judged to

be more competent than those in low status groups, and found that high BJW individuals were more likely to endorse these stereotypes than those low in BJW. The Justice Motive makes this conclusion almost a logical necessity, because if the world is just, and people get what they deserve, and certain groups have more than other groups, then it must be that certain groups deserve more. One plausible means of deserving more is for one group to be more competent than another. When faced with an unjust system, rather than an unjust world, maintaining the BJW requires derogating groups, rather than individuals.

Similarly, BJW predicts support for social policies that are consistent with the belief that the world, as it currently exists, represents a just distribution of social and economic resources. For example, BJW predicts less support for economic redistributive policies, such as higher taxation rates (Benabou & Tirole, 2006). At the same time, BJW predicts support for law and order policies, which are known to disproportionately target subordinate groups and maintain hierarchy (Sidanius, Pratto, Laar, & Levin, 2004). For example, in a study conducted shortly after the September 11<sup>th</sup>, 2001 terrorist attacks, Henderson-King, Henderson-King, Koches, and Kauffman (2004) asked participants their preferred approach to American intervention in Afghanistan, and found that BJW was positively associated with the use of military force, as well as support for increased surveillance of US citizens. In another study, participants were asked to read case files related to an aggravated murder, and then to judge the defendants' probability of guilt, as well as assigning a sentence. Additionally, the socioeconomic status (SES) of the defendant was manipulated to be either low SES, high SES, or not mentioned (Freeman, 2006). Those higher in BJW assigned more blame and longer sentences to the low SES, compared to the high or no SES, defendant. Again, these findings are logically consistent

with the need to believe in a just world, because in a just world, innocent people do not get accused of crimes and people are poor because of their lack of character, not because of luck or happenstance. People higher in BJW participate in maintaining hierarchy by assuming systemic outcomes are just.

Additionally, Tian (2016) found that the relation between negative life events and life satisfaction is moderated by the BJW. BJW appears to buffer life satisfaction against the experience of negative life events, such that it is primarily those who are low in BJW whose life satisfaction is negatively influenced by negative life events. It is unclear, however, whether these effects are due to beliefs in immanent justice, suggesting that at some point the world will compensate them for their troubles, or whether a general personal positivity bias (Taylor & Brown, 1988) leads them to ignore negative experiences as exceptions, while confident that as a good person, good things generally happen more consistently to them and are more meaningful.

### **BJW for the Self and Others**

Although both roles of BJW, the personal contract and system-justification, are consistent with the same basic mechanisms, it begs the question of how a person could ever be motivated to pursue positive change. If high BJW is a requirement for initiating long term planning and motivation to work for change (Hafer, 2000b), but high BJW also is related to acceptance of the status quo, then the BJW seems to preclude the simultaneous perception of a world that needs change and the motivation to instigate that change. One attempt to resolve this seeming paradox was the development of the idea that BJW could be better understood in terms of a BJW for self versus a BJW for others (Lipkus, Dalbert, & Siegler, 1996). These initial studies found evidence that BJW for self

plays an important role in mental health and well-being. Specifically, BJW for the self was negatively correlated with depression and stress. Additionally, though both BJW for the self and for others were correlated with life satisfaction, the relation was significantly stronger and more reliable for BJW for the self than for BJW for others. Bègue and Bastounis (2003) found evidence suggesting that BJW for the self aligns more closely with the personal contract conception of the Justice Motive, finding a positive relation between BJW for the self and having a sense of purpose in life, while also providing evidence that BJW for others more closely aligns with BJW's system-justifying components, demonstrating it is predictive of negative attitudes towards the elderly, negative attitudes towards the poor, and dispositional attributions and punitiveness towards criminals.

Further research confirmed the link between BJW for the self and psychological adjustment. BJW for the self positively predicts confidence in the ability to reach goals (Sutton & Winnard, 2007), inhibition of negative responding in order to facilitate forgiveness (Strelan & Sutton, 2011), and optimism and subjective well-being (Jiang, Yue, Lu, Yu, & Zhu, 2016). Conversely, BJW for the self is negatively related to delinquent behavioural intentions in young adults (Sutton & Winnard, 2007), intensity of pain, degree of disability, and psychological distress in patients suffering from arthritis and fibromyalgia (McParland & Knussen, 2010), and intentions to use corrupt means to achieve goals (Bai, Liu, & Kou, 2016).

Research has also clarified the link between BJW for others and defensive, system-justifying beliefs associated with the need to believe in a just world. In addition to motivating specific system-justifying beliefs about others like those described earlier,

BJW for others also seems to motivate, or at least allow, negative behaviour by the individual. After all, if we accept as fact that the world is fair, then not only must the things that happen to other people be fair, but the things that I do must also be fair. As a result, those higher in BJW for others also tend to be higher in anti-social tendencies. For example, Sutton and Winnard (2007) found that those who are higher in BJW for others report that they are more likely to expect to engage in anti-social behaviours in the future, such as theft, breaking windows, and getting into fights in public. In addition to beliefs about future behaviour, BJW for others is also predictive of social goals. BJW for others is negatively related to a number of affiliative social goals, including nurturance and intimacy, and is positively related to negative social goals, including dominance and social demonstration goals (Sutton & Stoeber, 2017). Furthermore, these differences in goals translate into differences in social responding. For example, in the face of a social transgression, BJW for others is positively associated with negative responding and unrelated to positive responding (Strelan & Sutton, 2011).

Evidence for the discriminant validity of these two measures, however, is mixed. Certain variables, such as subjective well-being, have been found to be reliably related to BJW for the self, but unrelated to BJW for others (e.g., Strelan & Sutton, 2011; Sutton et al., 2008). Furthermore, sometimes both scales indicate relations in the same directions with the same variables (e.g., Lipkus et al., 1996) and sometimes the scales demonstrate relations in opposite directions, suggesting that BJW for the self and for others may be at opposite ends of the same continuum (e.g., Sutton & Stoeber, 2017). These discrepancies suggest that the self-other distinction may not be the clearest means of understanding



how someone with a low BJW can act to initiate change, and make it difficult to fully understand the theoretical underpinnings of these different sets of beliefs.

There have been other attempts to develop alternate BJW scales that focus on increasing the specificity of the concepts being measured, such as the 5-Dimensional Belief in Just Treatment Scale (BJT5; Stroebe, Postmes, Täuber, Stegeman, & John, 2015), which attempts to distinguish causal dimensions underlying just world beliefs (e.g., God, Nature, Others, etc). As we will explain in more detail shortly, the Prescriptive Belief in a Just World Scale, the measure we are introducing in this body of research, is conceptually distinct from these types of efforts, because we are seeking to develop a better measure of general just world beliefs in order to understand the Justice Motive, not increase our ability to discriminate between different domains of just world beliefs.

### **The Normativity of the Belief in a Just World**

In addition to representing beliefs about the world, it has long been known that BJW also serves as a means of signaling in a complex social context. Participants who identified as politically right-wing, left-wing, or moderate were asked to complete a BJW scale twice, once from their own perspective and once from the perspective of a hypothetical other who was either right- or left-wing (Dittmar & Dickinson, 1993). Reported BJW varied as a function of political orientation in the manner discussed above, with the most left-wing individuals reporting less BJW than the moderate individuals, who reported less BJW than the right-wing individuals. Additionally, when completing the BJW scale from the perspective of someone other than themselves, patterns of responding showed identical patterns across political groups. Specifically, regardless of their own political orientation, people understood that the more politically right-wing

someone was, the more likely they were to believe in a just world. This study was the first to suggest that BJW has a normative component and provides an opportunity for social signaling of group membership.

Further research has confirmed that there is a normative component to the expression of the BJW. Alves and Correia (2008) asked participants to fill out the BJW in a manner that would convey either a positive or a negative image of themselves. On both the BJW-self and BJW-others scales, participants in the positive image condition reported BJW significantly above the scale midpoint. In the negative image condition, participants reported significantly lower BJW scores, below the midpoint for BJW-self and at the midpoint for BJW-others. In a second study, based on a description of a target's BJW, participants were asked to judge that person on the perceived likelihood that they were accurately described by a number of adjectives, as well as a general measure of attitudes towards the target and how willing they would be to meet the target. Participants expressed significantly more positive attitudes, and greater willingness to meet the targets in person, when they believed them to be high believers in a just world. They also assigned them more positive adjectives, including those describing qualities that are associated with either social utility (e.g., intelligence) or social desirability (e.g., kindness), suggesting that the normativity of BJW is not just limited to conveying the image of one who is likeable, but also competent.

It seems that people specifically apply this knowledge to the BJW for self in order to differentiate themselves from others. When asked to complete the BJW-self scale as themselves and as though they were an average member of their own class, participants reported significantly higher BJW-self for themselves than for others in their class (Alves

& Correia, 2010b). This fits with other research which suggests that the value of the expression of high BJW for self is anchored in both social utility and social desirability, whereas the expression of high BJW for others only conveys social utility (Alves & Correia, 2010a).

### **Justice-Relevant Variables**

**Meritocracy.** There are three primary rules that can be applied in the pursuit of distributive justice: equity, equality, and need (Deutsch, 1975). Of these, merit is most closely related to equity, in which outputs are based directly on inputs, and those who contribute equal inputs should expect equal outputs. Merit is a specific case of the equity principle, in which outputs in terms of resources and rewards like pay and marks are proportional to the inputs of talent, intelligence, and effort. Early research on meritocracy was primarily focused on equity in the workplace, examining the relations between perceptions of equity/merit and job relevant variables, such as satisfaction and motivation (e.g., Greenberg, 1988; Greenberg & Leventhal, 1976; McFarlin & Sweeney, 1992).

More recently, however, the focus of merit research has shifted from the workplace to broader society, in which a support for meritocracy can serve as a system-justifying, hierarchy legitimizing belief. In a study examining the trade-off between equality and efficiency in a hypothetical society paradigm, Mitchell, Tetlock, Mellers, and Ordóñez (1993) manipulated the strength of the correlation between wealth and effort, meaning they manipulated the degree to which the hypothetical society was meritocratic. When effort and outcome were weakly linked, representing a less meritocratic society, people tended to support a higher minimum standard of living. When income was tightly linked to effort, representing a more meritocratic society,

people preferred distributions where all people were above the poverty line, but maximized efficiency above this threshold by tying distributions closely to merit. Most intriguingly, when the relation was moderate, ideological polarization was strongest. In the context of what was arguably the most ecologically valid scenario, where the link between effort and outcomes was ambiguous, liberals were more likely to focus on the role that chance plays in determining outcomes, and conservatives were more likely to focus on the role of ability and effort, and as such, liberals were more likely to favour equality whereas conservatives were more likely to favour equity.

One of the most direct and explicit ways that support for meritocracy maintains the status quo is by justifying opposition to affirmative action and other redistributive policies. By claiming that inequality is a problem of the past and that redistributive programs unfairly penalize the meritorious in favour of the unnecessarily needy, meritocratic arguments serve as a bulwark against social change (Fraser & Kick, 2000). Furthermore, belief that resources in society are distributed according to merit positively correlates with other system-justification variables, such as just world beliefs and the Protestant work ethic, and predicts whether people support allocating tax dollars towards social programs versus tax rebates (Garcia, 2001).

Typically, one reason why hierarchy legitimizing beliefs effectively maintain group disparities is because they are supported even by subordinate group members (Jost & Hunyady, 2005; Sidanius & Pratto, 1999). That is, these beliefs are not simply adopted by the dominant group in order to maintain group differences, but rather, both dominant and subordinate group members share these beliefs, which strengthens the ability of these beliefs to reinforce the status quo. This applies to support of meritocracy as well. At the

group level, the more contact low status group members have with higher status group members, the more likely they are to believe that the world is meritocratic (Sengupta & Sibley, 2013). The impact of these beliefs on individuals, however, is unclear. Major, Kaiser, O'Brien, and McCoy (2007) found that instances of discrimination led to reduced self-esteem and higher in-group blame for subordinate group members who held a strong belief in a meritocratic society, whereas those with a low belief in meritocracy demonstrated the opposite pattern. Presumably, for victims of discrimination who believe in meritocracy, instances of discrimination represent a conflict between what is and what should be, and as such, are more threatening to the individual's world view. Those low in meritocratic beliefs, however, expect discrimination in a world where outcomes are not closely tied to inputs, and as such, have their worldview confirmed, rather than threatened, by instances of discrimination. Conversely, McCoy, Wellman, Cosley, Saslow, and Epel (2013) found that amongst low-status group members, belief in meritocracy can serve a palliative function. Amongst subordinate group members, there was a positive relation between belief in meritocracy and well-being (both self-esteem and physical health), which was mediated by perceptions of control. This suggests that there may be individual benefits for low-status group members who believe their world is a meritocracy, even though, in aggregate, support for this belief passively contributes to group-based, non-meritocratic differences in average resource distribution.

Part of this discrepancy may be due to the existence of different types of belief in meritocracy. Son Hing et al. (2011) found that the descriptive belief in meritocracy (the belief that the world *as it currently exists* is meritocratic) serves as a hierarchy legitimizing ideology, and is positively related to a number of other such beliefs, whereas

a prescriptive belief in meritocracy (the belief that merit *should* be the basis of resource distribution) is related to support for policies aimed at changing the system to increase merit.

**Social Dominance Orientation.** Social Dominance Orientation (SDO) is an individual difference variable that describes the acceptance of and preference for maintaining group-based hierarchies in a social system (Pratto, Sidanius, Stallworth, & Malle, 1994). SDO was created within the framework of Social Dominance Theory (SDT), which was developed to help understand why all observed societies organize themselves into group-based hierarchies (Sidanius, Pratto, Laar, & Levin, 2004). SDT explains the emergence of hierarchy based on group asymmetries at three levels; the individual, the group, and society (Sidanius, Levin, Federico, & Pratto, 2001). At each level, there are forces that reinforce hierarchy (e.g., SDO, ingroup violence, and certain parts of the criminal justice system, respectively) and forces that act to mitigate hierarchy (e.g., charitable donations, affirmative action, and income redistribution policies, respectively). The combined influence of all forces at all levels work against each other until they settle at what is called hierarchical equilibrium (Sidanius et al., 2001). Equilibrium is achieved when inequality satisfies the need of the dominant group for hierarchy without destabilizing the broader society.

It is within this context that SDO acts as a system-justifying ideology. High SDO individuals tend to view the world in competitive, zero-sum terms (Sibley, Wilson, & Duckitt, 2007). As such, SDO is predictive of support for policies and beliefs that maintain a competitive advantage for dominant groups, such as law and order policies and military programs. Conversely, SDO is negatively correlated with policies that seek

to reduce group-based differences in access to positive social value, such support for gay rights, women's rights, social welfare policies, ameliorative racial policies, and interracial marriage (Pratto et al., 1994).

Additionally, SDO can lead low status group members to hold prejudiced views against their own group, as well as more favourable views of dominant groups. For example, when Levin and Sidanius (1999) sampled high- and low-status groups in both the United States and Israel, they found that higher SDO predicted higher levels of in-group identification for the high-status groups, but lower levels of in-group identification for the low-status groups. More importantly, SDO predicted higher levels of negative affect towards low-status groups across all groups, regardless of in-group status.

SDO is also associated with exploitative interpersonal tendencies. Sinn and Hayes (2018) found that higher SDO predicted willingness to endorse deceptive and exploitative tactics in an attempt to manage their rank amongst groups of people. This was consistent with their general findings that higher SDO reflected a "fast life strategy", which, from an evolutionary, adaptationist perspective, means that they are willing to take more risks or break more interpersonal norms as a means of serving their own best interests.

More recently, Ho et al. (2012) differentiated between two subdimensions of the SDO scale, the SDO-Dominance (SDO-D) subscale and the SDO-Egalitarianism (SDO-E) subscale. Based on earlier work by Jost and Thompson (2000), the SDO-D subscale represents the desire to maintain the subjugation of outgroups, through active and forceful means if necessary, whereas SDO-E represents the willingness to embrace more subtle beliefs that function as system-justifying or hierarchy legitimizing beliefs. SDO-D is generally more strongly related to more toxic or nakedly competitive beliefs, such as

old-fashioned racism and zero-sum competition, and SDO-E is more associated with beliefs that more indirectly serve to maintain inequality, such as opposition to redistributive policies or belief in the Protestant Work Ethic (Ho et al., 2012).

**Right-Wing Authoritarianism.** In the wake of World War II, social scientists were interested in exploring the roots of people's willingness to submit to authority. The rise of fascism during the 1930s and the atrocities of the war had revealed a troubling human capacity for supporting and even championing authority, even when the authorities in question were using their power for historically evil means. In the attempt to understand who these people were, Adorno et al. (1950) proposed the concept of an authoritarian personality. Those who were higher in authoritarianism tended to be more supportive of deference to authority, aggression towards outgroups, and traditional values.

As research on the construct continued in the following decades, it came to be more commonly referred to as right-wing authoritarianism (RWA). RWA, much like the authoritarian personality, has consistently been associated with prejudice and discrimination towards outgroups (Altemeyer, 1981) and is characterized by three attitudinal clusters that tend to co-occur: authoritarian submission, authoritarian aggression, and conventionalism (Altemeyer, 1996). These attitudinal clusters result in what Altemeyer (1996) called equal-opportunity bigotry, because compared to other people, those high in RWA dislike almost every group that is different from their own. For example, high RWA has been associated with negative attitudes towards African Americans, Arabs, women, and homosexuals (Altemeyer, 1996), as well the homeless, people with aids, and drugs users (Peterson, Doty, & Winter, 1993). In addition to



general prejudice, high RWA individuals also endorse harsh and punitive solutions to problems perceived as being caused by violations of authority's dicta, reporting higher levels of support for solutions such as quarantining people with AIDS, engaging in a Rambo-like crusade against drug users, and advocating the use of violence to oppose abortion (Peterson et al., 1993).

More recent research suggests that RWA functions similarly across cultures. For example, the relation between RWA and prejudice towards homosexuals and women was comparable in samples collected in Canada and Ghana (Hunsberger, Owusu, & Duck, 1999). Similarly, in a Russian sample collected shortly after the collapse of communism, authoritarianism correlated positively with pro-communist attitudes and religiosity, and negatively with attitudes towards homosexuals and environmentalists (McFarland, Ageyev, & Djintcharadze, 1996).

At face value, RWA may seem to be redundant with SDO, as both variables predict prejudice and support for the status quo. Though correlated, their relation is weak ( $r = .14$ ; Pratto et al., 1994). Additionally, Duckitt (2001) suggests that RWA and SDO cause higher levels of prejudice through different motivational pathways. RWA is driven by the motivation to achieve ingroup conformity and collective security, whereas SDO is motivated by the goal of maintaining group-based dominance and superiority. Supporting this claim, Sibley et al. (2007) found that increases over time in the belief that the world is a dangerous place predicted selective increases in RWA. Conversely, increases in the belief that the world is a competitive place predicted selective increases in SDO.

RWA and SDO also differentially predict support for intergroup aggression. Henry, Sidanius, Levin, and Pratto (2005) measured the RWA and SDO of both

American and Lebanese samples, as well as each group's support for acts of aggression against one another. In the American sample, support for anti-Arab aggression was nearly identically predicted by RWA and SDO, presumably because from an American perspective, support of authority-sanctioned aggression and desire to maintain the current social hierarchy both motivate aggression against the Middle East. For the Lebanese sample, RWA was a positive predictor of support for anti-Western aggression, whereas SDO was a negative predictor of support for aggression against the West, presumably because authority sanctioned aggression motivated support for aggression against the West, whereas a desire to maintain hierarchy would be undermined by aggression against the West.

Interestingly, Sinn and Hayes (2018) found that RWA was connected to positive, ingroup focused motivations, and that those high in RWA valued honesty, cooperation, and social networking. They found that, in general, higher RWA individuals embraced slow life strategies, meaning that they were willing to invest in relationships and others in their group as a long-term social strategy. This is in contrast to high SDO individuals, who, as mentioned earlier, favour fast life strategies.

### **The Justice Motive as a Homeostatic, Prevention-Focused Motivation**

Research into the Justice Motive has typically conceptualized it, at a mechanistic level, as a homeostatic, prevention-focused goal in which the desired state is belief in a just world (Ellard, Harvey, & Callan, 2016). A homeostatic system requires a minimum of three components: a receptor, a control system, and an effector (Hardy, 1978; see Figure 1 for a basic model of a homeostatic system). Receptors are responsible for monitoring the variable that the homeostatic system aims to maintain. The control system

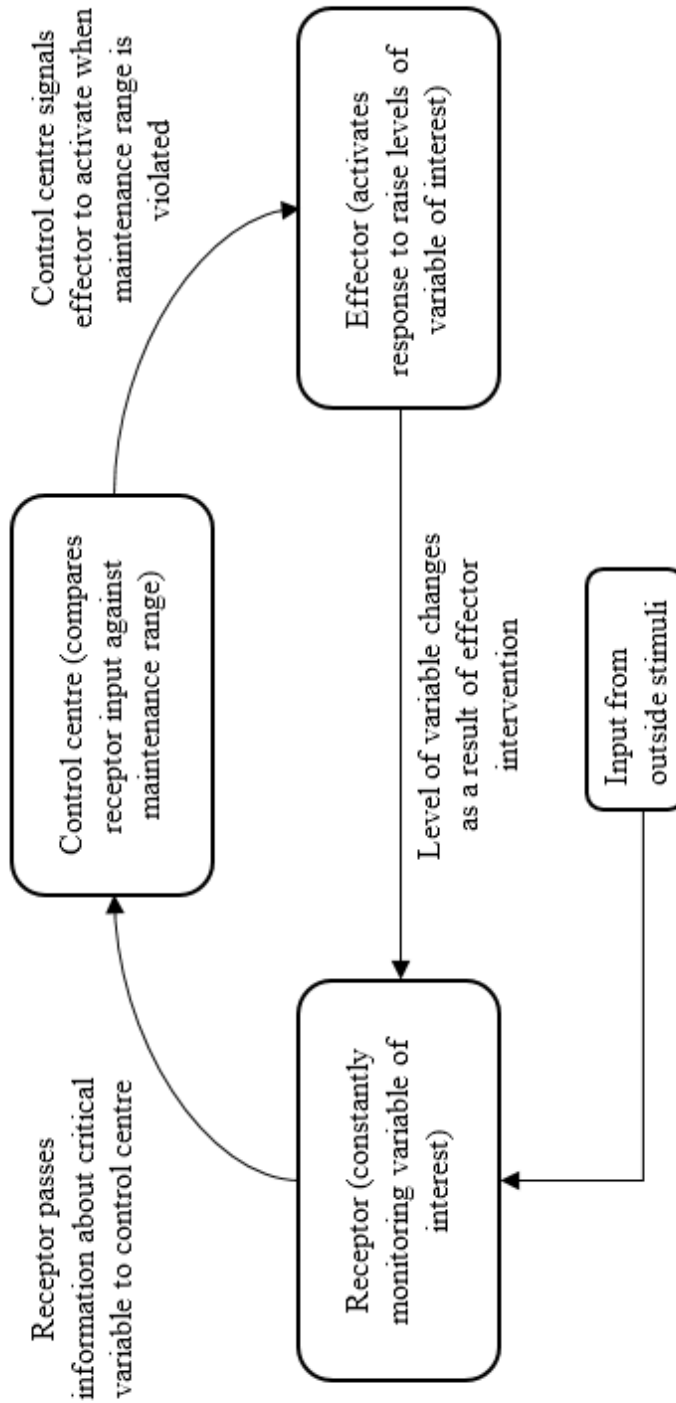


Figure 1. Basic components of a homeostatic system

is responsible for setting the upper and lower limits that the system accepts as homeostatic (i.e., the maintenance range), for comparing incoming information from the receptor against this range, and for signalling the effector when the receptor indicates conditions outside the maintenance range. The effector is responsible for initiating mechanisms to restore homeostasis by moving the variable of interest back within the boundaries of the maintenance range.

To understand how these mechanisms function in the context of the Justice Motive, let us consider an example in which you live in a town where the police card minorities at a disproportionate rate compared to white citizens (see Figure 2). The function of the receptor is to perceive and interpret facts or events as justice-relevant and assign a justice value. So upon reading a news article that describes this statistical disparity, the receptor would interpret this fact as being justice-relevant and, as such, a possible instance of injustice. The control centre is responsible for comparing this value against the maintenance range and if the perceived justice is below the lower threshold of the maintenance range, it would register as injustice, and the belief in a just world would be threatened. This would signal the effector, the mechanism responsible for restoring homeostasis, in order to reduce the threat and restore perceptions of justice by engaging in either rational or irrational strategies. In the case of minority carding, most people would feel that rational means (i.e., changing the reality of the situation to be more just) is beyond their ability. As such, the likely mechanism by which the effector would act is through irrational strategies. In this case, that might be a form of victim blame, in which you restore just world beliefs by reminding yourself that police are the good guys, and if

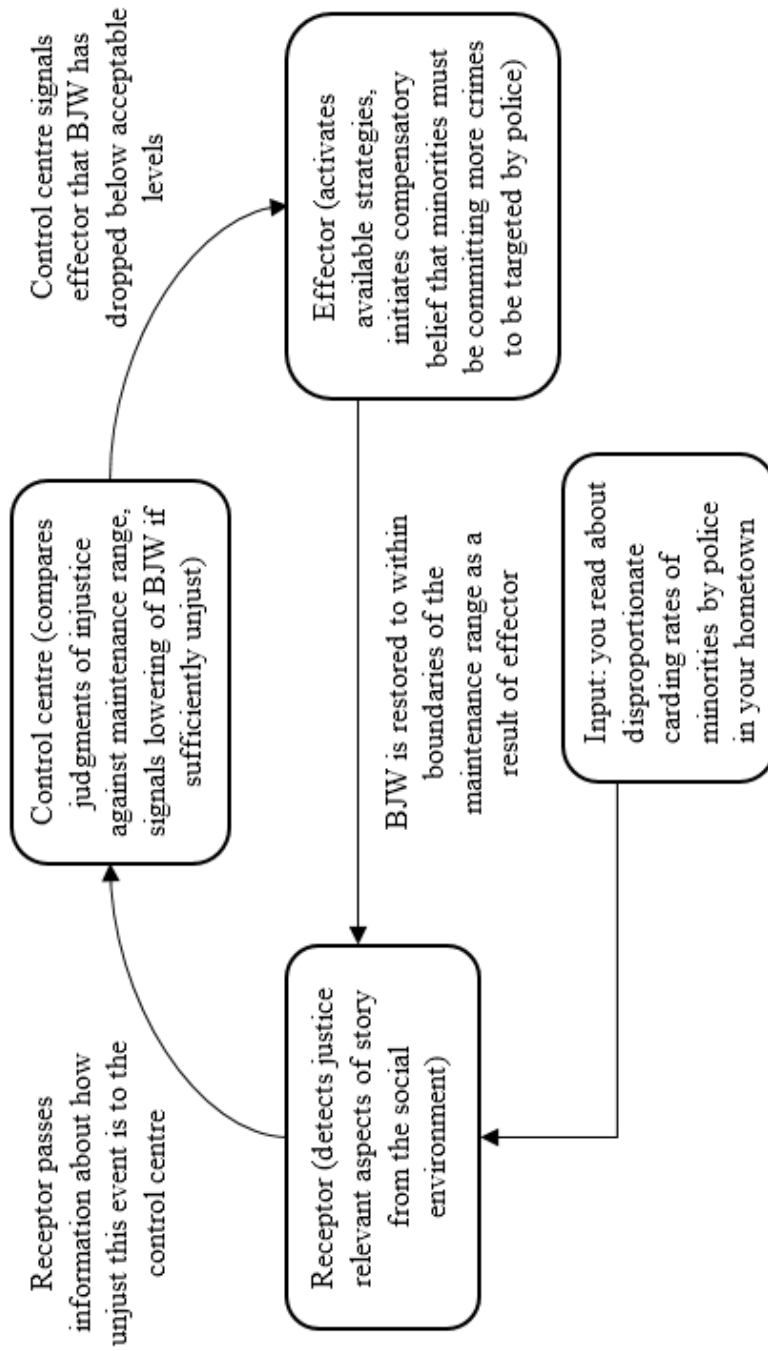


Figure 2. Homeostatic system with justice-relevant example

minorities are getting more attention from police, then perhaps it is because they commit more crimes.

Compatible with this conceptualization of homeostasis is the concept of a prevention-focused motivation. Human motivations can be understood as either promotion- or prevention-focused (Molden, Lee, & Higgins, 2008). Promotion-focused motivations have as their goal an increase in something positive, whereas prevention-focused motivations aim for a reduction in something negative. Because the Justice Motive reacts to threats to justice, the system is classified as prevention-focused. That is, the system is activated in the presence of a negative event (a threat to the belief in a just world) and acts to mitigate the negative effects of that event (by restoring the belief), matching the definition of a prevention-focused motivation. For brevity, we will generally refer to the Justice Motive as homeostatic, but in each case we are referring to a prevention-focused homeostatic motivation, that is, a system that motivates a reaction to drops in the level of a critical variable in order to restore it to the acceptable range.

Hafer and Sutton (2016) reviewed the literature on individual differences in BJW and concluded that the relation between self-reported BJW and the Justice Motive is very weak. We argue that this inability of BJW scales to consistently predict individual differences in justice motivated behaviour is primarily due to a lack of clarity about what it means for the strength of a homeostatic motivation to vary. By definition, a goal requires an understanding of the gap between the current state and a desired end state. One of the primary reasons we believe that individual difference measures have offered little evidence of correspondence to the Justice Motive is that current general BJW measures neglect this aspect of the motive. In order to address this gap, we are

introducing the use of the Prescriptive Belief in a Just World Scale, as a complement to the Descriptive (i.e., traditional) BJW Scale. This allows us to understand the motivation in terms of both a general belief about how just the world is, and how just the world should be. Next, we will explain in more detail why this is essential.

As outlined above, homeostasis operates as a function of the distance between the maintenance range and the current state of the variable in question, according to the receptor system. For example, the motivating effects of hunger get stronger the further away from satiety an organism perceives itself to be. In order to make a meaningful statement about the motivational strength of hunger, we need information about both the maintenance range of the organism and the current distance from that range. We could not, however, meaningfully infer dispositional differences in the strength of hunger motivation in a situation in which an individual who had not eaten for days was hungrier than an individual who had eaten an hour ago. We would understand that the gap between their maintenance range of satiety and their current state of satiety is the cause of the relative strength of their motivation, but we could not conclude that the latter individual has a weaker dispositional motivation to eat. Instead, when we label someone as having a weaker dispositional motivation to eat, we would be describing someone who is comfortable not eating for longer periods of time than most people. That is, their maintenance range is wider, and therefore, it requires the control centre to register a more significant deviation in state levels of hunger in order for the measurement to register outside the maintenance range and trigger the effector mechanism to restore balance through motivation.

This logic also applies to understanding the divide between the Justice Motive and BJW literatures. As just noted, Hafer and Sutton (2016) reported that the relations between BJW scales and reactions to victims as predicted by the Justice Motive are typically small. These small relations, however, should be expected if the field is currently measuring a homeostatic goal without accounting for the maintenance range of that goal. Returning once more to the analogy of hunger, the Justice Motive literature (which focuses on reactions to injustice for everyone) is the equivalent of depriving people of food and measuring whether, in general, this motivates people to eat. The BJW literature (which focuses on individual differences in the strength of the Justice Motive) is the equivalent of asking individuals whether or not they are generally hungry people, and then using that to predict whether or not they will act like they are hungry. In the first case, we would expect that, in general, depriving people of food will make them hungrier. In the second case, we ask people whether they generally consider themselves hungry people and use that information to predict whether or not they will eat when we offer them food, which of course demonstrates a small relation, because some people will have eaten more recently than others (i.e., whether or not people are dispositionally hungry, they will sometimes be hungry and sometimes not).

Another logical error in the Justice Motive literature requires an understanding of the structure of the goals which compose the motivation. The goal that is to be achieved as a function of the Justice Motive, a belief in a just world, is commonly conceptualized as an equifinal goal which demonstrates substitutability (Ellard, Harvey, & Callan, 2016). In the goal literature, equifinality describes a goal which can be achieved through multiple means, and substitutability describes a set of means which are interchangeable



with one another in pursuit of a goal (Kruglanski et al., 2002). We know the Justice Motive is equifinal because, as discussed earlier, there are two main categories of strategies that can be used to maintain a belief in a just world, rational and irrational. Lerner and Simmons (1966) found that, generally, people will attempt to restore homeostasis to their BJW using rational strategies, and only after those efforts are frustrated will some subset of people turn to alternative strategies. The desire to understand why some people did not turn to alternative strategies was the impetus for the split that exists today between the Justice Motive literature and the BJW literature. Rubin and Peplau (1973, 1975) theorized that the differences in reactions to injustice were driven by individual differences in the strength of the Justice Motive, suggesting that those who were willing to engage in non-rational strategies, such as victim derogation, had the strongest Justice Motive. That is, their willingness to employ strategies that others were not willing to use suggests a stronger need to believe in a just world.

This, however, is not necessarily the case for an equifinal goal. The number of substitutable means associated with an equifinal goal is independent from the strength of the motivation. Using hunger as an example once more, if we were attempting to understand individual differences in hunger motivation of a set of people based on behavioural evidence, we could put various foods in front of them and see if they are willing to use the food to satiate their hunger. We could reasonably conclude, given an equal amount of time since each member of the group had eaten, that those who ate had a stronger motivation to eat than those who did not eat. Let us further imagine that the only food offered to the group was chicken. Now, the evidence becomes less clear, because we know intuitively that people differ in the means that they associate with the

equifinal goal of sating hunger. An omnivore has a larger set of substitutable means available to satisfy their hunger than a vegan. Thus, a vegan might be equally hungry, but unwilling to engage with a particular means (e.g., eating chicken) in order to achieve the same goal. This could be because they are morally unwilling to engage with the means available, or it could be because they know that meat will make them physically ill, which will actually lead them further away from their goal of sating hunger. Furthermore, generally speaking, the fewer means an individual has associated with a particular goal, the stronger the association between each means and the goal (Kruglanski et al., 2002). As a result, the activation of that goal more strongly activates the one or few means associated with that goal, compared to the relatively diffuse activation of a large set of substitutable means. A vegan who is hungry is more likely to think about seeking out tofu as a means of sating hunger compared to an omnivore, even though both would be willing to eat tofu as a means of sating hunger.

Again, this analogy helps us to understand the Justice Motive. If we assume that the same set of substitutable means are available to each participant, then, assuming an equal threat, the willingness to engage in any of these means can be taken as evidence of the strength of the underlying motive. If, however, an individual were to consider only rational strategies as effective means for achieving the goal of homeostasis, then the unwillingness to engage in irrational means is not evidence that their Justice Motive is weak, but rather, just as with hunger, evidence that the means available are either morally objectionable (i.e., “it is wrong to blame a victim for the bad things that happen to them”) or even considered likely to increase the distance between the present state and the homeostatic goal (i.e., “blaming subordinate groups for their misfortune makes the

world less just, not more”). From this understanding, we can see the logical flaw in much of the existing literature, in which a lower belief in a just world is taken as evidence of a weak Justice Motive, when, in fact, the lowering of a belief in a just world is a critical part of the process surrounding the Justice Motive (i.e., a threat to the belief in a just world). That is, a lowered (or threatened) belief in a just world is a fundamental component of the Justice Motive working exactly as theorized, and so to take the presence of a proposed component of a model as evidence against that model is logically inconsistent.

### **The Current Research**

The goals of this program of research are twofold. First, we aim to develop a method for differentiating between a true belief in a just world and a reported belief in a just world that is the result of non-justice motivations, such as self-presentation or system-justification. Second, we seek to provide a tool that can serve as a conceptual bridge between the Justice Motive literature and the belief in a just world literature.

The most fundamental component of these goals is to introduce a means of measuring an individual’s maintenance range. To do this, we will measure two types of belief in a just world, beliefs about how just the world currently is (i.e., descriptive beliefs; BJW-D) and beliefs about how just the world should be (i.e., prescriptive beliefs; BJW-P). The purpose of assessing prescriptive beliefs is as a means of assessing the maintenance range of individuals, because the stronger a prescriptive belief, the narrower the acceptable range of distributions should be. That is, someone with a very strong prescriptive belief in a just world should register a relatively small justice violation as outside their maintenance range. At the other end of the prescriptive scale are individuals

who report ambivalence about whether or not the world should be just (no-one will report that the world should be systematically unjust, that is, only bad people should get good things and only good people should get bad things, which makes no sense)<sup>1</sup>. Those who are ambivalent about how just the world should be are able to apply justice-irrelevant concepts to beliefs about what others may consider justice-relevant.

By incorporating these two concepts into the measurement of the BJW, we should be able to identify different types of people. A high reported descriptive BJW in the context of a high prescriptive BJW suggests a genuine belief in a just world. These individuals have strong beliefs about the way the world should be, and a compatible belief about how the world is. Conceptually, we would not expect these people to act like people who need to restore BJW, because they already possess it. We should find that these individuals would respond to justice threats like highly justice motivated individuals, because they have a relatively narrow maintenance range. What this means specifically depends on what component of their homeostatic system is responsible for their unique combination of characteristics. For example, if the difference between high and low levels in BJW-D is caused by the receptor portion of the system, high levels of BJW-D could be a result of a relative insensitivity to perceiving injustice. If the differences are caused by variation in the control centre, that would suggest differences in the maintenance range of the individual, or how much injustice they are willing to

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<sup>1</sup> In parallel fashion, a weak belief in a just world is generally theorized to represent a belief in a random, unordered world, not a belief in a world in which the relation between inputs and outputs is strong and inverse (Furnham & Procter, 1989). That is, a weak belief in a just world is a belief in a world that is neither just nor unjust, rather than deeply unjust.

tolerate before it becomes threatening. If the differences are caused by variation in the effector portion of the system, those with the highest BJW may be those with the widest range of strategies available to them in order to restore a belief in a just world when a homeostatic imbalance is detected.

For those who report a high descriptive BJW, but an ambivalent prescriptive BJW, that would suggest a motivated response based on something other than the Justice Motive, such as self-presentation or system-justification, because an ambivalent belief in how things should be suggests a broader range of acceptance for how things are. In terms of justice, this suggests that those who are low on BJW-P would be less likely to detect a violation of justice that requires restoration of homeostasis, and as such, a reported high BJW-D would be motivated by something other than the Justice Motive. These individuals might be cynical believers in a just world, those who act as though they believe in a just world without actually believing. How these people respond to injustice will also shed light on the differences in the underlying mechanistic causes of these differences.

Similarly, we could have an individual who reports a weak descriptive BJW, but a strong prescriptive BJW. We would expect these individuals, in general, to be those most motivated to address injustice, because they have a strong belief about how the world should be (implying a narrow maintenance range) and, as such, would have a strong motivation to restore justice, because a relatively small injustice should be sufficient to trigger their homeostatic motivation to restore justice. Moreover, their low BJW-D indicates that they are not able to protect their beliefs by irrational means. Consistent with

our discussion earlier, they may be the individuals with the fewest means available to satisfy their equifinal goal of believing in a just world.

Finally, if someone reported a low descriptive belief in a just world as well as an ambivalent prescriptive belief, then we would expect them to be relatively insensitive to injustice, and unconcerned with justice in general, as they both believe the world is less than fair and do not have strong beliefs about how fair the world should be. Figure 3 summarizes the four possible combinations of high and low BJW-D and BJW-P.

Using the complementary BJW-D and BJW-P scales, we aim to achieve the following goals: to distinguish the genuine belief in a just world from self-serving/status quo maintaining BJW, to help unify the literature by clarifying elements of the Justice Motive that can vary between individuals, and to create a simple and easily administered tool for quantifying the components of the Justice Motive.

## **Study 1a**

### **Introduction**

The primary goal of our first study was to establish the discriminant validity of different versions of the BJW scale. Specifically, we wanted to establish preliminary evidence that the descriptive and prescriptive versions of the scale<sup>2</sup> were measuring

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<sup>2</sup> Initially, we included four versions of the BJW scales, descriptive and prescriptive beliefs for others, and descriptive and prescriptive beliefs for the self. After four studies, however, we concluded that the inclusion of the self scales made the results unwieldy and did not add meaningfully to interpretation, and so were excluded from the final results. This is the reason for some of the odd or imbalanced degrees of freedom across results from Studies 1a, 1b, 2a, and 2b. Please see Appendix A for more details on their exclusion, and Appendix C for the full scales.

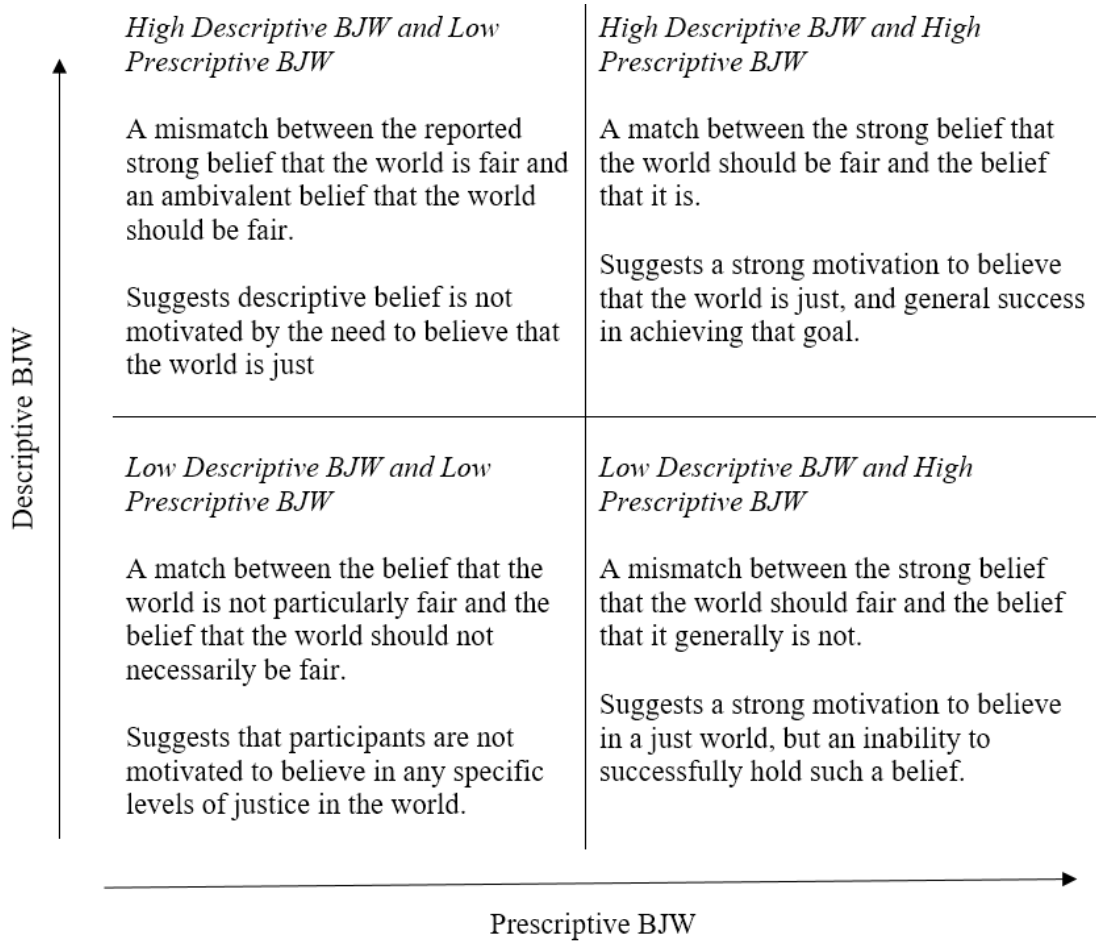


Figure 3. Four quadrants to represent different combinations of high and low BJW-D and BJW-P

different constructs. In order to do this, we measured a number of individual difference variables that are known to be associated with justice-related perspectives, including Social Dominance Orientation, Right-Wing Authoritarianism, the Perceptions of Meritocracy Inventory (PMI; a measure of the belief that the world functions as a meritocracy), and the Preference for the Merit Principle Scale (PMP; a measure of the belief that the world should function as a meritocracy). Additionally, we included measures of household income and political orientation.

This study was primarily exploratory in nature. In order to begin building a picture about the nature of the constructs underlying our new measures, our goal, first and foremost, was to establish differential relations between relevant variables. In general, we expected that variables generally associated with system-justification (justifying the current system as good), including SDO, RWA, and PMI, would be positively related to our descriptive BJW measures. In contrast, we expected that variables generally associated with concerns about justice, such as the PMP, would be positively associated with our prescriptive BJW measures, whereas measures that are negatively associated with believing the status quo should change, including SDO and RWA, would be negatively associated with our prescriptive measures.

## **Method**

**Participants.** Participants were recruited via Amazon's Mechanical Turk (MTurk), an online crowdsourcing platform. Participant eligibility was limited to native English speakers living in the United States who had at least 97% approval rating for previously completed human intelligence tasks (HITs; MTurk's label for individual assignments). Participants received \$0.25 as compensation for participating in the study.



Out of the 290 participants who agreed to participate in the study, 242 completed the entire study. Of those, 42 failed to properly follow instructions that served as an attentional check and were excluded from analysis. The final sample size was 200 participants (84 women, 115 men, and 1 participant who preferred not to report gender;  $M_{\text{age}} = 29.93$ ;  $SD_{\text{age}} = 8.22$ ). A statistical power analysis was performed in G\*Power in order to estimate necessary sample sizes in order to achieve power of .80 to detect a medium effect. Though our initial sample size was sufficient to meet these power requirements, the splitting of the sample and unexpectedly high number of exclusions from the data set resulted in a power of .7 to detect a medium effect size.

### **Materials.**

**Demographics.** Participants were asked four questions related to demographics. They were asked their gender (male, female, and a “prefer to not answer” option), age (open ended), household income (6-point scale from \$0 - \$30,000 to \$150,000+, as well as a “prefer not to answer” option), and political beliefs (7-point scale from “strongly liberal” to “strongly conservative”).

**Just world beliefs.** We used two different just world beliefs scales, based on the Global Belief in a Just World Scale (GBJWS; Lipkus, 1991). The GBJWS scale is an 8-item scale in which participants are asked to rate statements such as “I feel that people get what they are entitled to have” and “I feel that people earn the rewards and punishments they get” on a scale from *strongly disagree* (-3) to *strongly agree* (3). It has been shown to have acceptable internal reliability ( $\alpha = .827$ , Lipkus, 1991). In addition to this version of the BJW scale, which we labelled as the Descriptive Belief in a Just World Scale (BJW-D), we created an additional version that assessed the degree to which participants

believe the world *should* be just, which we labelled the Prescriptive Belief in a Just World Scale (BJW-P; see Appendix C for full versions of each scale). It contained parallel items to the original scale, but in which participants were asked to rate how just the world should be, such as “I feel that people should get what they are entitled to have” and “I feel that people should earn the rewards and punishments they get”. There was one item in the original descriptive scale, “I feel that when people meet with misfortune, they have brought it upon themselves”, which did not allow for a structurally parallel prescriptive version. Thus, we included only 7 items for both the descriptive and prescriptive measures. Both BJW-D and BJW-P demonstrated very good to excellent internal reliability in our sample ( $\alpha = .902$  and  $\alpha = .898$ , respectively).

***Social Dominance Orientation.*** Social dominance orientation was measured using the SDO<sub>6</sub> Scale (Pratto et al., 2006). This is a 16-item scale in which participants rate statements such as “It’s probably a good thing that certain groups are at the top and other groups are at the bottom” and reverse-scored items such as “We would have fewer problems if we treated different groups more equally” on scales from *strongly disagree* (1) to *strongly agree* (7). The SDO-6 Scale has good internal reliability ( $\alpha = .83$ ) as well as good test-retest reliability; participants tested at a three month interval showed a high correlation between SDO scores at Time 1 and Time 2,  $r = .81, p < .01$  (Pratto et al., 2006). In our sample, the SDO-6 scale demonstrated excellent internal reliability,  $\alpha = .918$ .

***Right Wing Authoritarianism.*** Traditionalism and respect for authority were measured using the Right Wing Authoritarianism Scale (Altemeyer, 1996). This is a 22-item scale in which participants rate statements such as “What our country really needs is

a strong, determined leader who will crush evil, and take us back to our true path” and reverse-scored items such as “There is absolutely nothing wrong with nudist camps” on scales from *strongly disagree* (1) to *strongly agree* (7). The RWA Scale has previously demonstrated good internal reliability ( $\alpha = .83$ ). In our sample, the RWA scale demonstrated excellent internal reliability,  $\alpha = .937$ .

***Descriptive belief in meritocracy.*** Belief in the degree to which the world as it currently exists functions as a meritocracy was measured using the Perceptions of Merit Inventory (PMI; Garcia, 2001). This is a 24-item scale in which participants rate statements such as “All people who work hard can improve their position in life” and reverse-scored items such as “Many people's efforts go unnoticed and unrewarded” on scales from *strongly disagree* (1) to *strongly agree* (7). The PMI has been demonstrated to have good internal reliability ( $\alpha = .83$ ) as well as good test-retest reliability; participants tested at a four to five week interval showed a high correlation between PMI scores at Time 1 and Time 2, ( $r = .84$ ; Garcia, 2001). In our sample, the PMI demonstrated very good internal reliability,  $\alpha = .893$ .

***Prescriptive belief in meritocracy.*** Belief in the degree to which the world should function as a meritocracy was measured using the Preference for the Merit Principle Scale (PMP; Davey, Bobocel, Son Hing, & Zanna, 1999). This is a 15-item scale in which participants rate statements such as “Qualifications ought to be given more weight than seniority when making promotion decisions” and reverse-scored items such as “People ought to be able to get away with poor quality work under some circumstances” on scales from *strongly disagree* (1) to *strongly agree* (7). The PMP has been

demonstrated to have acceptable internal reliability ( $\alpha = .70$ ). In our sample, the PMP demonstrated acceptable internal reliability,  $\alpha = .747$ .

**Attention Check.** Participants completed a 1-item attention check, which included the following instruction:

Most modern theories of decision making recognize the fact that decisions do not take place in a vacuum. Individual preferences and knowledge, along with situational variables can greatly impact the decision process. To facilitate our research on decision making we are interested in knowing certain factors about you, the decision maker. Specifically, we are interested in whether you actually take the time to read the directions; if not, then some of our questionnaires that require you to understand the instructions will be filled out inaccurately. So, to demonstrate you have read the instructions, please answer ‘very bad’ on the mood item below. Thank you very much.

Participants were then asked “What is your current mood?” and asked to respond on a 7-point scale from *very bad* (1) to *very good* (7). All participants who did not answer *very bad* were excluded from analysis.

**Procedure.** After completing the demographics questionnaire, participants were randomly presented with one BJW scale. Next, they completed the SDO scale, the RWA scale, the PMP scale, and the PMI scale. Upon completion of the PMI, participants were presented with the one item attention check described above.

## Results

In order to examine differentiating correlations amongst variables, the BJW-D ( $M = 4.23$ ,  $SD = 1.34$ ) and the BJW-P ( $M = 5.76$ ,  $SD = .936$ ) scales were correlated with

each of the four justice-relevant scales, as well as with household income and political orientation (see Table 1 for means and standard deviations; see Table 2 for all correlations). Missing data were handled using listwise deletion, with a missing data rate of 0.57%.

Consistent with previous findings (e.g, Lambert et al., 1999; Son Hing et al., 2011), BJW-D, the descriptive belief that the world is just, correlated positively with RWA ( $r(52) = .276, p = .043$ ), as well as with PMI ( $r(52) = .486, p < .001$ ). Surprisingly, counter to previous findings, BJW-D was uncorrelated with SDO ( $r(52) = .219, p = .112$ ).

BJW-P, the belief that the world should be just, correlated positively with PMP ( $r(47) = .549, p < .001$ ) and negatively with SDO ( $r(47) = -.660, p < .001$ ).

## **Discussion**

Preliminary results were encouraging in that we found evidence that our two BJW scales are measuring different underlying processes or combinations of processes. The primary evidence for this is that the different BJW scales demonstrated unique patterns of correlations. Patterns will be discussed in more detail after the replication results in Study 1b.

Perhaps the most surprising finding was that the well-established relation between BJW-D and SDO was not present in this sample. Given the numerous studies that have found a relation between these variables, it seems reasonable to expect that this null result

Table 1. Study 1a Means and Standard Deviations

	BJW-D	BJW-P	SDO	RWA	PMI	PMP
Means	4.23	5.76	2.90	3.49	3.95	4.80
Standard Deviations	1.34	0.94	1.12	1.20	0.81	0.68

Table 2. Study 1a Correlations

	SDO	RWA	PMI	PMP	Income	Political Orientation
Descriptive BJW	.238	.358**	.551**	-.137	-.050	.000
Prescriptive BJW	-.629**	-.111	-.180	.535**	.063	-.113

\* Correlation is significant at the .05 level (two-tailed).

\*\* Correlation is significant at the .01 level (two-tailed).

will not replicate in future studies. Additionally, it is interesting that the BJW-D was not related to either household income or political orientation. Though there is substantial research supporting the relation between BJW and political orientation, these effects are often quite small, and, as such, it may not be surprising that they would be absent in some samples.

## Study 1b

### Introduction

The primary goal of this study was to replicate and confirm the relations amongst variables established in the Study 1a. As a result, we hypothesized that PMI and RWA would be positively related to BJW-D, that PMP would be positively related to BJW-P, and that SDO would be negatively related to the BJW-P scale. Additionally, we expected that the lack of a relation between BJW-D and SDO was an aberration and the typical finding would likely reappear in this sample. The lone difference between Studies 1a and 1b was that we asked participants to complete both BJW scales, rather than just one, in order to further assess their independence via intercorrelation.

### Method

**Participants.** Participants were again recruited via MTurk. Participant eligibility was limited to native English speakers living in the United States who had at least 97% approval rating for previously completed HITs. Participants received \$0.25 as compensation for participating in the study. Out of the 418 participant who agreed to participate in the study, 351 completed the entire study. Of those, 73 failed an attentional check and were excluded from analysis. The final sample size was 278 participants (112 women, 163 men, and 3 participants who preferred not to report gender;  $M_{\text{age}} = 32.32$ ;



$SD_{age} = 10.51$ ). A statistical power analysis was performed in G\*Power to estimate necessary sample sizes in order to achieve power of .80 to detect a medium effect.

Results showed that our sample sizes were sufficient to achieve this level of power.

### **Materials.**

***Just world beliefs.*** As in Study 1a, we again tested two different just world beliefs scales, the BJW-D and BJW-P scales. Each scale demonstrated very good to excellent internal reliability in our sample ( $\alpha = .934$  and  $\alpha = .869$ , respectively).

***Social Dominance Orientation.*** Social dominance orientation was once again measured using the SDO-6 Scale (Pratto et al., 2006), and again our sample demonstrated excellent internal reliability,  $\alpha = .920$ .

***Right Wing Authoritarianism.*** Traditionalism and respect for authority were again measured using the Right Wing Authoritarianism Scale (Altemeyer, 1996). In our sample, the RWA scale again demonstrated excellent internal reliability,  $\alpha = .947$ .

***Descriptive belief in meritocracy.*** Belief in the degree to which the world as it currently exists functions as a meritocracy was again measured using the Perceptions of Merit Inventory (PMI; Garcia, 2001). In this sample, the PMI demonstrated excellent internal reliability,  $\alpha = .908$ .

***Prescriptive belief in meritocracy.*** Belief in the degree to which the world should function as a meritocracy was again measured using the Preference for the Merit Principle Scale (PMP; Davey, Bobocel, Son Hing, & Zanna, 1999). In our sample, the PMP again demonstrated acceptable internal reliability,  $\alpha = .740$ .

***Attention Check.*** The attention check used in this study was identical to the one used in Study 1a.

**Procedure.** After completing the demographics questionnaire, participants were randomly presented with both of our BJW scales. Next, they completed the SDO scale, the RWA scale, the PMP scale, and the PMI scale. Upon completion of the PMI, participants were presented with the one item attention check described above.

## Results

Again, we examined differentiating correlations amongst variables. We examined correlations between the BJW scales, and between both the BJW-D ( $M = 4.52$ ,  $SD = 1.30$ ) and BJW-P ( $M = 5.84$ ,  $SD = .838$ ) scales and the four justice-relevant scales, plus household income and political orientation (see Table 3 for means and standard deviations; see Table 4 for all correlations). Missing data were handled using listwise deletion, with a missing data rate of 2.33%.

As in Study 1a, BJW-D correlated positively with RWA ( $r(142) = .351$ ,  $p < .001$ ) and PMI ( $r(141) = .507$ ,  $p < .001$ ). Inconsistent with Study 1a, but in keeping with previous research, BJW-D was also positively correlated with SDO ( $r(142) = .292$ ,  $p < .001$ ). Also different than our original findings, BJW-D was negatively related to PMP ( $r(142) = -.204$ ,  $p = .014$ ).

Our findings regarding BJW-P were largely consistent with the findings from Study 1a. BJW-P correlated positively with PMP ( $r(131) = .553$ ,  $p < .001$ ) and correlated negatively with SDO ( $r(131) = -.447$ ,  $p < .001$ ). In this study, however, it also correlated negatively with RWA ( $r(131) = -.205$ ,  $p < .001$ ) and political orientation (meaning the more conservative people were, the less they believed the world should be just;  $r(130) = -.171$ ,  $p = .050$ ). Investigating the relation between BJW scales, we found the BJW-D and BJW-P were uncorrelated ( $r(39) = -.195$ ,  $p = .222$ ).

Table 3. Study 1b Means and Standard Deviations

	BJW-D	BJW-P	SDO	RWA	PMI	PMP
Means	4.52	5.84	2.91	3.40	3.86	4.90
Standard Deviations	1.30	0.84	1.14	1.25	0.83	0.66

Table 4. Study 1b Correlations

	BJW-D	BJW-P	SDO	RWA	PMI	PMP	Income	Political Orientation
Descriptive BJW	-	-.195	.292**	.351*	.507**	-.204*	.143	.013
Prescriptive BJW	-.195	-	-.447**	-.205*	-.040	.553**	-.037	-.171*

\* Correlation is significant at the .05 level (two-tailed).

\*\* Correlation is significant at the .01 level (two-tailed).

## Discussion

The most important insight that this study provided is that BJW-D and BJW-P are uncorrelated. This finding strongly suggests that they are independent constructs. This is important, because the tendency of BJW-D and BJW-P to be correlated with the same variables in opposite directions, particularly SDO and RWA, raises the question of whether they are independent or simply opposite ends of the same dimension. The fact that they are uncorrelated is supportive of their conceptual independence.

In general, this study's findings were largely consistent with those of Study 1a. Specifically, BJW-D was positively correlated with both RWA and PMI. This makes sense, in that RWA describes a belief in the legitimacy of authorities and the current system. As such, it should be the case that people who are higher in RWA have a higher belief in a just world, because a belief that authorities are correct no matter what tautologically demands acceptance of the idea that the current system is just. Furthermore, PMI, as a measure of belief that the world functions as a meritocracy, should intuitively be related to the degree to which one honestly believes the world is just, in that meritocracy is held as a near-universally supported distributive justice principle. However, as Son Hing et al. (2011) found, some degree of the descriptive belief in meritocracy is likely due to a desire to maintain the status quo. Therefore, the presence of this relation is necessary, but not sufficient, to claim that a belief in a just world is sincere. The primary difference in findings related to BJW-D for this study compared to Study 1a is that in this study we found a significant positive relation between BJW-D and SDO, as expected. Additionally, in this study, BJW-D was negatively related to the PMP, that is, prescriptive merit beliefs. This implies a system-

justification based, insincere component to BJW-D. Based on the idea that meritocracy enjoys broad support as a justice principle, it would follow that someone who believed the world as it is now is just would be supportive of the idea that the world should be governed by principles of meritocracy. If the world as it is now is already a meritocracy, then support for meritocracy would suggest support for maintaining the status quo. A lack of support for a prescriptive belief in meritocracy suggests that moving towards a meritocracy would be a move towards change in an undesirable direction. The fact that BJW-D demonstrates a positive relation with PMI and a negative relation with PMP provides support for one component of our primary hypotheses, that the BJW-D as currently measured is comprised of both a genuine belief in a just world and a more cynical claim of the world not needing to move in the direction of being more just, reflective of motivations other than the Justice Motive.

Finally, our findings regarding BJW-P were largely consistent with those from Study 1a. It once again correlated positively with PMP and negatively with SDO. This makes theoretical sense, because the PMP measures prescriptive support for meritocracy, which is often considered in North America to be a nearly universal justice principle. As such, support for meritocratic distribution should correspond with support for justice more broadly. Similarly, SDO is support for a system that does not consider fairness paramount, one in which different groups have different access to positive social value. As such, high SDO suggests that considerations other than justice are paramount when describing an ideal world, and so should correspond to relatively low support for BJW-P.

Additionally, in this study, BJW-P correlated negatively with RWA and political orientation, meaning that the more conservative participants reported to be, the less they

supported the idea that the world should be just. This is in line with findings regarding conservatism and system-justifying variables such as SDO and RWA, again suggesting that faith in authority and the status quo precludes supporting ideas that imply change. This further supports the idea that there are different motivations underlying claims of a high BJW-D, because, again, it demonstrates that response patterns that typically relate to higher reported BJW also correspond to lower support for meritocracy, which suggests an opposition to change. If the world truly were just already, then there would be no reason to oppose the world being a meritocracy. That is, a true believer in a just world would not be opposed to saying the world should operate according to principles of meritocracy, because for most people, believing in a just world means believing in a meritocratic world. The fact that some participants claim a belief in a just world while also opposing moving towards a more meritocratic world suggests that these individuals are reporting a belief that they may not actually hold.

Though hardly conclusive, the combination of these findings across both studies provide a reasonable foundation for moving forward with our exploration of descriptive and prescriptive beliefs in a just world as mutually contributing components of the Justice Motive.

## **Study 2a**

### **Introduction**

Having established preliminary evidence that our descriptive and prescriptive scales are measuring different constructs, we sought to begin identifying the specific components of the underlying constructs, and to establish means of assessing the veracity of participants' claims regarding beliefs about the justice of the world, in order to

differentiate between motivated reporting of BJW and a sincere BJW. Our primary means for doing this involved assessing participants' understanding of their own social worlds, and the frequency with which participants had experienced specific life events, both positive and negative, as well as a rating of the degree to which participants considered these experiences to be fair or unfair. Though we included both positive and negative events, we focused predominantly on negative events, as negative events are most relevant in the context of understanding a prevention-focused motivation like BJW, as well as being generally more salient to people (Rozin & Royzman, 2001).

Additionally, we calculated interaction terms assessing the multiplicative combination of frequency and fairness of reported events, in order to increase their ability to predict BJW. If a negative event, or class of negative events, has happened with some frequency in a participant's life, but he or she does not consider these events to be justice-relevant, then we would not expect the frequency of the events to be predictive of BJW. Similarly, if specific events are considered deeply unfair, but participants have never experienced these events, then we would again not expect them to be predictive of BJW. However, by using the product of the two, the multiplicative term should more appropriately weigh both the frequency of the event and the perceived fairness of that event to calculate an overall estimate of the degree to which these events affect perceptions of justice in the world.

This study was again an exploratory attempt to further understand our various BJW measures. In general, we expected that the reported frequency of negative life events would predict BJW-D. Additionally, we expected that the reported unfairness of negative events, independent of their frequency, would be more predictive of BJW-P than



BJW-D, based on the idea that prescriptive measures of BJW reflect the breadth of the maintenance range of the homeostatic system underlying the Justice Motive and, as such, should reflect stronger beliefs about whether certain negative experiences are just or unjust.

### **Method**

**Participants.** Participant were again recruited via MTurk. Participant eligibility was limited to native English speakers living in the United States who had at least 97% approval rating for previously completed HITs. Participants received \$0.50 as compensation for participating in the study. Out of the 310 participants who agreed to participate in the study, 299 completed the entire study. Of those, 19 failed an attentional check, and were excluded from analysis. The final sample size was 280 participants (127 women, 152 men, and 1 participant who preferred not to report gender;  $M_{age} = 35.39$ ;  $SD_{age} = 11.92$ ). A statistical power analysis was performed in G\*Power in order to estimate necessary sample sizes in order to achieve power of .80 to detect a medium effect, for both the correlational effects and the interaction effects to be tested. Results showed that our sample sizes were sufficient to achieve this level of power for both sets of tests.

### **Materials.**

***Frequency of life experiences for the self.*** In order to measure the frequency with which participants had experienced a sampling of negative and positive events in their life, we created a Frequency of Life Events for the Self scale (FLE-S). The scale contained 21 items. Participants were asked to rate on a 4-point scale from *Never* (1) to

*Many Times* (4) how frequently they had experienced specific events, both negative (e.g., “Been bullied”) and positive (e.g., “Eaten an enjoyable meal at a restaurant”).

***Fairness of life experiences for the self.*** In addition to the frequency of specific life events, we were interested in assessing the degree to which people thought these events were fair or unfair using a scale we labelled the Unfairness of Life Events for the Self Scale (ULE-S). Specifically, we were interested in participants’ evaluations of negative events as unfair. Focusing on the negative events from the Frequency of Life Experiences scale, we asked participants to rate the unfairness of 11 negative events that were described in the Life Experiences Scale, on a five point scale ranging from *Very Unfair* (1) to *Very Fair* (5).

***Just world beliefs.*** As in previous studies, we used two different just world beliefs scales, the Descriptive Belief in a Just World Scale and the Prescriptive Belief in a Just World Scale. In order to prevent confusion about the similarity of the scales, instructions included a warning to participants that the questions may look similar to questions they had already answered, but were different in important ways, and participants were asked to please pay close attention. Both scales demonstrated excellent internal reliability in our sample ( $\alpha = .951$  and  $\alpha = .931$ , respectively).

***Social Dominance Orientation.*** Social dominance orientation was once again measured using the SDO-6 Scale (Pratto et al., 2006), and again our sample demonstrated excellent internal reliability,  $\alpha = .964$ .

***Attention Check.*** The attention check used in this study was identical to the one used in Studies 1a and 1b.

### **Procedure.**

After completing the demographics questionnaire, participants were presented the life experiences scale, described above. Participants then rated each of the negative life experiences described in the life experiences scale for how fair or unfair they consider those experiences. Next, they completed the BJW-D scale, followed by the BJW-P scale<sup>3</sup>. Finally, participants completed the SDO scale and were presented with the one item attention check.

## Results

We examined the factorability of both the frequency of life experiences for the self scale and the fairness of life experiences for the self scale. Here, we provide a summary of the factor analysis procedure we followed. For full details, please see the descriptions in Appendix B. A priori to factor analysis, we separated the scale into positive life events and negative life events subscales, in order to allow for independent evaluation of the impact of negative and positive events on a theoretically prevention-focused motivation. Principal components analysis was used because our primary goal in identifying factors was to compute composite scores for the underlying factors of the FLE-S and ULE-S.

First, we examined the positive event frequency (PEF) subscale of the FLE-S. The initial principal components analysis revealed three factors that exceeded the Eigenvalue  $> 1$  criterion. Using varimax rotation in order to examine the loadings of each items on the hypothetical factors, we found that the three-factor structure yielded a solution that

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<sup>3</sup> Because we initially included four versions of the BJW scale, all participants filled out the BJW-D scale first, and then randomly completed one of the three alternate versions. As such, only about a third of the total sample completed the BJW-P scale.

was uninterpretable. Because we were unable to infer any additional meaning from the factor structure of the PEF, we proceeded to treat it as a single factor throughout analysis.

Next, we examined the negative life event frequency (NEF) subscale of the FLE-S. Again using an Eigenvalue  $> 1$  criterion, our initial analysis revealed four factors. The varimax rotated factor structure revealed that only two items loaded on the third factor, and four items loaded on the fourth factor, neither of which was interpretable. After eliminating the two uninterpretable factors, we forced a two factor solution, which yielded a much more interpretable solution. The first factor appeared to describe instances of poor treatment in interpersonal contexts, such as suffering discrimination because of your religion or ethnicity, or having been bullied. As such, we refer to this factor as the interpersonal factor (IPF). The second factor appeared to describe instances of bad luck, or the unfortunate life events that are relatively likely to happen to most people eventually, such as having been in a car accident or having suffered a death in the family. As such, we refer to this factor as the bad luck factor (BLF).

We repeated this process with the ULE-S. Because we did not measure unfairness for positive life events, there was no need to separate the items in positive and negative events a priori. Our initial analysis of the negative event unfairness (NEU) subscale revealed three factors. The varimax rotated factor structure revealed that only two items loaded on the third factor, and both had high cross-loadings. As such, we once again forced a two-factor solution. The interpretation of the factors of unfairness ratings of negative life events revealed a structure almost identical to that found for the frequency of these events. One factor captured the perceived unfairness of having been treated badly by others in an interpersonal context, such as being harassed in a job setting or being the

victim of an untrue rumour, and the other factor seemed to reflect the perceived unfairness of having been the victim of bad luck events, such as having food poisoning or having written an exam that was unreasonably difficult. We refer to these factors as the interpersonal unfairness and bad luck factors (IPU and BLU), respectively. This parallel structure is particularly compelling in that there is no obvious reason to assume that people would parse the relatively concrete estimates of the frequency of negative life events and the more abstract concepts of how unfair these events are in the same way. Please note that because both of our negative event focused factor analyses resulted in factor sets that did not include all of the items from our life event questionnaires, we also examined the relations between the full negative life experience frequency and negative life event unfairness scales and our variables of interest.

We also examined the factorability of the items that composed the BJW-D and BJW-P scales. Our initial analysis revealed two factors. Both the unrotated and varimax rotated factor structures revealed that the seven items of the BJW-D Scale loaded on the first factor, and the seven items of the BJW-P Scale loaded significantly on the second factor. Although there were two items from the BJW-D Scale that exceeded our cross-loading cutoffs in the unrotated solution, these cross-loadings were not present in the rotated solution. Overall, all seven items from each scale loaded significantly on their own respective factor, and not at all on the other factor, providing good evidence for the independent factor structure of BJW-D and BJW-P.

Having identified factors underlying the life experiences and fairness scales, we next investigated with which variables the BJW-D ( $M = 3.83$ ,  $SD = 1.37$ ) and BJW-P ( $M = 6.00$ ,  $SD = 1.03$ ) scales correlated (see Table 5 for means and standard deviations; see

Table 6 for all correlations). Missing data were handled using listwise deletion, with a missing data rate of 1.28%.

BJW-D was positively correlated with SDO ( $r(275) = .331, p < .001$ ) and negatively correlated with frequency of all negative life events ( $r(275) = -.173, p = .004$ ), the unfairness of all negative life events ( $r(275) = -.132, p = .029$ ), the frequency of negative interpersonal events ( $r(275) = -.252, p < .001$ ), and the unfairness of negative interpersonal events ( $r(275) = -.196, p = .001$ ). We also examined correlations between BJW-D and the SDO-Dominance (SDO-D) subscale and the SDO-Egalitarianism (SDO-E) subscale. The findings were no different from the correlation with the full SDO scale, for either the SDO-D subscale ( $r(275) = .320, p < .001$ ) or the SDO-E ( $r(275) = .298, p < .001$ ) subscale.

Additionally, we found that BJW-P correlated positively with overall negative life event unfairness ratings ( $r(88) = .278, p = .008$ ), bad luck factor frequency ( $r(88) = .361, p < .001$ ), and interpersonal factor unfairness ratings ( $r(88) = .432, p < .001$ ), and correlated negatively with SDO ( $r(88) = -.280, p = .008$ ). We again examined correlations with the SDO-D and SDO-E subscales, and again the findings were no different from the correlation with the full SDO scale, for either the SDO-D subscale ( $r(88) = -.273, p = .009$ ) or the SDO-E ( $r(88) = -.252, p = .016$ ) subscale. Importantly, BJW-D and BJW-P were not correlated with one another ( $r(88) = -.030, p = .781$ ).

We were also interested in investigating the interaction between how frequently participants reported having had specific experiences and how unfair they believed those experiences to have been. If, for example, BJW-D was based on an individual's personal experiences, we would expect that the degree to which the frequency of specific events

Table 5. Study 2a Means and Standard Deviations

	BJW-D	BJW-P	PEF	NEF	NEU	IPF	IPU	BLF	BLU	SDO
Means	3.83	6.00	2.65	2.22	3.97	2.16	4.66	2.34	3.68	2.56
Standard Deviations	1.37	1.03	0.37	0.45	0.52	.049	0.54	0.58	0.83	1.44

Table 6. Study 2a Correlations

	BJW-D	BJW-P	PEF	NEF	NEU	IPF	IPU	BLF	BLU	SDO
Descriptive BJW	-	-.030	.106	.173**	-.132*	.252**	.196**	-.042	-.083	.331**
Prescriptive BJW	-.030	-	.149	.163	.278**	.049	.432**	.361**	.158	.280**

\* Correlation is significant at the .05 level (two-tailed).

\*\* Correlation is significant at the .01 level (two-tailed).

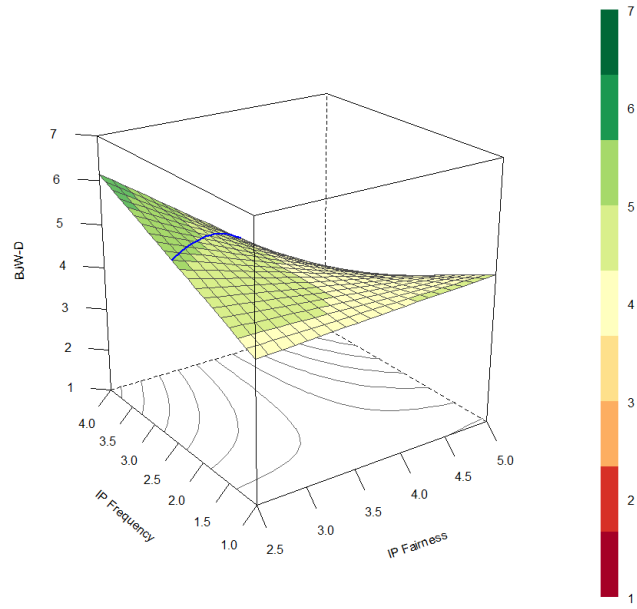


predicts belief in a just world would be moderated by how unfair that event was rated. In order to do this, we created three multiplicative interaction terms using the frequency and unfairness of: all negative life events, the interpersonal factor, and the bad luck factor. We regressed each of our BJW scales on each combination of these interaction terms and their component parts, in total running 6 separate regressions. We were interested in whether the interaction terms would significantly increase the prediction of BJW above and beyond the two components themselves.

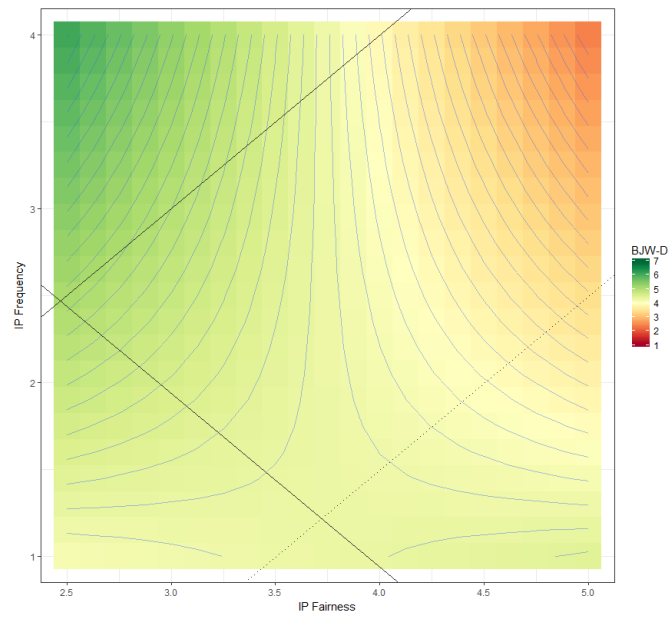
Of these 6 regressions, only one was significant. The interaction term of the interpersonal frequency factor and the interpersonal unfairness factor added significantly to the prediction of BJW-D ( $t(273) = -2.05, b = -.543, p = .042$ ). In order to interpret the interactions, we can inspect the saddle plots and contour maps generated by the regression equations<sup>4</sup>. Looking at Figures 4 and 5, which depict the surfaces generated by the regression equation predicting BJW-D, we can see how the four corners of the horizontal plane correspond to different combinations of the two predictor variables that compose the interaction term, and the height of the plane corresponds to the value of the criterion variable at that point. The far corner of the horizontal plane represents the maximum value of the IP Frequency scale and the maximum value of the IP Fairness scale. The left corner of the horizontal plane represents the maximum of the IP Frequency

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<sup>4</sup> Saddle plots are generated based on the surface described by a regression equation. Both the X and Y axes start at the bottom of the graph in the corner closest to the reader. The X axis increases up and to the right and the Y axis increases up and to the left. These axes represent the component variables of the interaction being depicted. The height of the Z axis indicates the value predicted by the regression equation for each combination of values on the X and Y axes. Because the 3-dimensional nature of the saddle plot can sometime obscure the far corner of the graph, a contour map depicting the same surface is paired with each saddle plot.



*Figure 4.* Saddle plot predicting BJW-D with IP frequency for self, unfairness for self, and interaction



*Figure 5.* Contour map predicting BJW-D with IP frequency for self, unfairness for self, and interaction

scale and the minimum of the IP Fairness scale. The right corner represents the minimum value of the IP Frequency scale and the maximum value of the IP Fairness scale. The near corner represents the minimum value of both scales. With this in mind, we can see that judgments of how just the world is (BJW-D on the vertical axis) are highest for those who report that negative interpersonal events happen to them frequently but are neither fair nor unfair (the left corner), and are lowest for those who report that negative interpersonal events happen to them frequently and are very unfair (the far corner). When the frequency of negative interpersonal events for the self is low, BJW-D scores are ambivalent, regardless of how unfair the events are judged to be (the right and near corners). All remaining interactions that we tested were not significant.

### **Discussion**

Once again, BJW-D and BJW-P were uncorrelated, further supporting the argument that these scales measure separate and independent constructs. This was even more strongly supported by the factor analysis of the items BJW-D and BJW-P scales, which loaded cleanly on their respective scales. Also important is the finding that BJW-D was related to the estimated frequency and unfairness of negative events for the self. This confirms that these measures respond to negative events in a manner consistent with a prevention-focused motivation. In addition, it suggests that at least a component of the variance is based on real-life experiences and their perceived unfairness, which lends support to one component of our broader hypothesis, that there is variance in the “true” level of belief in a just world.

Finally, it is meaningful that the interaction of frequency of interpersonal events and their reported unfairness predicted Descriptive Belief in a Just World, where we see

that those who reported negative interpersonal events almost never having happened to them neither agreed nor disagreed that the world is just, regardless of how unfair they considered interpersonal infractions to be. In contrast, those who reported having been subject to a high number of interpersonal infractions, and also that these events were particularly unfair, reported the lowest belief in a just world. Intriguingly, those who reported having been the frequent victims of negative interpersonal treatment, while also believing that these events happening to them are neither fair nor unfair, reported the highest levels of BJW-D. This seems surprising, but may be reflective of instances in which members of dominant groups (e.g., men, Christians) believe that they, too, are subject to the same negative interpersonal events as others (e.g., gender discrimination, religious discrimination), but they are able to maintain their belief in a just world because, from their perspective, the fact that these things happen to everyone means that they are neither fair nor unfair.

## **Study 2b**

### **Introduction**

This study expanded on the findings and methodology of Study 2a by asking participants to estimate the frequency and unfairness of the same set of events from Study 2a but happening to others, rather than happening to the participants themselves. This is important, because a general belief in a just world should be more closely based on general beliefs about how frequently certain events happen to others out in the world, not just to oneself. In addition, having established with some confidence the differences amongst the BJW scales, we sought to begin exploring our primary theoretical question: whether measuring both descriptive and prescriptive BJWs clarifies the relation between

the strength of the Justice Motive and the degree to which people believe in a just world. As in Study 2a, we asked each participant to complete the BJW-D scale, as well as randomly presenting participants with one of the three remaining scales (see footnote 2 for an explanation of why there were three versions of the scale). This again allowed us to examine the intercorrelations amongst our scales in a different sample, as well as allowing us to examine how descriptive BJW, prescriptive BJW, and the interaction of the two can help us to understand different justice motivations.

Additionally, in this study, we added a measure of justice sensitivity. Just as people vary in their need to believe in a just world, people also vary in their sensitivity to violations of justice (Lovas & Wolt, 2002). That is, people vary in the degree to which they are bothered by injustices in the world (Schmitt, Neumann, & Montada, 1995). The Justice Sensitivity Scale (JSS) was developed as a short and reliable means of assessing individual differences in JS in three contexts: sensitivity to being the victim of injustice (victim sensitivity), sensitivity to observing injustice happening to another (observer sensitivity), and sensitivity to personally benefiting from injustice (perpetrator sensitivity; Schmitt, Gollwitzer, Maes, & Arbach, 2005).

There are a number of demographic variables that relate to JS (Schmitt, Baumert, Gollwitzer, & Maes, 2010). Generally speaking, women are more justice sensitive than men. Justice sensitivity is negatively correlated with age; as people get older, they grow more accepting of instances of injustice, especially from the victim perspective. Furthermore, victim sensitivity is significantly higher amongst the unemployed, and perpetrator sensitivity increases monotonically as the number of years of education completed increases.

One important component of JS is how people vary in their processing of situations that are ambiguously just or unjust. Baumert and Schmitt (2009) demonstrated this by showing participants two video clips. The first was one of three videos, which was a clear depiction of either justice, injustice, or a justice-neutral scene. The second clip was ambiguous in terms of whether the actions discussed were just or unjust. They found that those who were more justice sensitive perceived greater injustice in the second video, whether primed with injustice or not primed at all. Conversely, the same people, when primed with justice, were more likely to interpret the ambiguous clip as depicting a just scenario. The bias of justice sensitive individuals is not valenced, but rather, justice concepts seem to be more available and more readily primed. Justice sensitive individuals also display attention and memory biases for justice-related information (Baumert, Gollwitzer, Staubach, & Schmitt, 2011). After witnessing injustice, those higher in JS were more likely to preferentially attend to unjust stimuli, compared to negative but justice-unrelated stimuli, and were again more likely to interpret ambiguous situations as justice-relevant. Additionally, those higher in JS were more likely to remember details of the injustice later, that is, they demonstrated a memory bias for injustice. Though these biases have generally been found in observer sensitive individuals, there is evidence they are also found in the victim sensitive (Baumert, Otto, Thomas, Bobocel, & Schmitt, 2012). These cognitive bases of JS are consistent with research which suggests that justice sensitivity is related to cognitive empathy and concern for others, two subscales of the Interpersonal Reactivity Index (a measure of trait empathy; Davis, 1983), but not to the emotional empathy subscale (Decety & Yoder, 2016).

Justice-sensitive individuals also react differently to injustice. For example, people higher in JS are more willing to altruistically punish others for violations of justice. That is, even when the violation of justice is not at their expense and when they stand to gain nothing personally (either now or in the future) from seeing a norm-violator punished, justice sensitive individuals are more likely to sacrifice in order to restore justice (Lotz, Baumert, Schlösser, Gresser, & Fetchenhauer, 2011). They are also more likely to share altruistically, using their own resources to do good as well as punish violations, suggesting that justice sensitivity is not just a desire to redress wrong, but also a desire to act pro-socially and disperse positive value to others (Edele, Dziobek, & Keller, 2013). Taken together, the addition of justice sensitivity should aid our developing understanding of individuals who vary in both BJW-D and BJW-P.

Overall, our analyses were again exploratory. Our goal, however, using SDO, RWA, PMI, PMP, and the Justice Sensitivity Scale (JSS) was to test whether using both descriptive and prescriptive measures would identify patterns suggesting that some variables reflect only descriptive BJW, some reflect only prescriptive BJW, and some reflect an interaction of the two (suggesting that there are differences between the four combinations of prescriptive and descriptive BJW, i.e., high-high, high-low, low-high, and low-low).

## **Method**

**Participants.** Participant were again recruited via MTurk. Participant eligibility was limited to native English speakers living in the United States who had at least 97% approval rating for previously completed HITs. Participants received \$1.00 as compensation for participating in the study. Out of the 350 participants who agreed to



participate in the study, 308 completed the entire study. Of those, 18 failed an attentional check and were excluded from analysis. The final sample size was 290 participants (153 women, 137 men;  $M_{\text{age}} = 35.73$ ;  $SD_{\text{age}} = 10.58$ ). A statistical power analysis was performed in G\*Power in order to estimate necessary sample sizes in order to achieve power of .80 to detect a medium effect, for both the correlational effects and the interaction effects to be tested. Results showed that our sample sizes were sufficient to achieve this level of power for both sets of tests.

### **Materials.**

*Frequency of life experiences for others.* We can again sought to measure estimates of the frequency with which participants believed certain negative and positive events occurred, but this time, we were interested in how frequently participants believed these events happened to other people, rather than to themselves (FLE-O). The scale again contained 21 items, and participants were asked “For each of the following events, please indicate how often you think the average person has had the following experiences”, and to rate on a 4-point scale from *Never* (1) to *Many Times* (4) how frequently other people experienced specific events, both negative (e.g., “Had food poisoning”) and positive (e.g., “Visited Europe”).

*Fairness of life experiences for others.* We also assessed participants’ ratings of the fairness or unfairness of these events when other people experienced them. In this study, however, we asked participants to rate the fairness of all 21 events described in the Frequency of Life Experiences for Other scale, on a five point scale ranging from *Very Unfair* (1) to *Very Fair* (5). Specifically, participants were asked “For each of the following events, please rate whether you think it is VERY UNFAIR, SOMEWHAT

UNFAIR, NEUTRAL, SOMEWHAT FAIR, or VERY FAIR that people experience them”. We refer to this as the Unfairness of Life Experiences for Others Scale (ULE-O).

***Just world beliefs.*** As in previous studies, we used two different just world beliefs scales, the BJW-D and the BJW-P. As in Study 2a, instructions warned participants about the similarity between scales to avoid confusion and maintain participant attention. Both scales demonstrated good to excellent internal reliability in our sample ( $\alpha = .947$  and  $\alpha = .821$ , respectively).

***Social Dominance Orientation.*** As in studies 1a and 1b, social dominance orientation was once again measured using the SDO-6 Scale (Pratto et al., 2006), and again our sample demonstrated excellent internal reliability,  $\alpha = .963$ .

***Right Wing Authoritarianism.*** Traditionalism and respect for authority were again measured using the Right Wing Authoritarianism Scale (Altemeyer, 1996). In our sample, the RWA scale again demonstrated excellent internal reliability,  $\alpha = .966$ .

***Descriptive belief in meritocracy.*** Belief in the degree to which the world as it currently exists functions as a meritocracy was again measured using the Perceptions of Merit Inventory (PMI; Garcia, 2001). In our sample, the PMI again demonstrated excellent internal reliability,  $\alpha = .955$ .

***Prescriptive belief in meritocracy.*** Belief in the degree to which the world should function as a meritocracy was again measured using the Preference for the Merit Principle Scale (PMP; Davey, Bobocel, Son Hing, & Zanna, 1999). In this sample, the PMP demonstrated good internal reliability,  $\alpha = .831$ .

***Justice Sensitivity Scale.*** Justice sensitivity was measured using the Justice Sensitivity Scale (Schmitt et al., 2005). This is a 30-item scale, composed of three

subscales of 10 items, each of which measures sensitivity to injustices from a different perspective, that of a Victim, an Observer, or a Perpetrator. Each subscale is composed of parallel questions, such as “It bothers me when others receive something that ought to be mine”, “It bothers me when someone gets something they don’t deserve” and “It disturbs me when I receive what others ought to have” on scales from *strongly disagree* (1) to *strongly agree* (7). Each of the subscales demonstrate good internal reliability ( $\alpha = .89$ ,  $\alpha = .92$ , and  $\alpha = .92$ , respectively). In our sample, the JSS demonstrated excellent internal reliability, for the total scale ( $\alpha = .947$ ), as well as for the Victim, Observer, and Perpetrator subscales ( $\alpha = .915$ ,  $\alpha = .905$ , and  $\alpha = .915$ , respectively).

**Attention Check.** The attention check used in this study was identical to the one used in Study 1a.

**Procedure.** After completing the demographics questionnaire, participants were presented the life experiences scale, where they estimated how often the various events happen to others. Participants then rated each of the life experiences described in the life experiences scale for how fair or unfair they consider those experiences when experienced by others. Next, in order to account for possible ordering effects, participants were presented with seven questionnaires in random order. These included the BJW-D scale, the BJW-P scale, the PMI scale, the PMP scale, the JSS, the SDO scale, and the RWA scale. Finally, participants completed the one item attention check.

## Results

We examined the factorability of both the frequency of life experiences for others scale and the fairness of life experiences for others scale. Here, we provide a summary of the factor analysis procedure we followed. For full details, please see the descriptions in

Appendix B. A priori to factor analysis, we again separated the scale into positive life events and negative life events subscales, and we again used principal components analysis to identify factors.

First, we examined the positive event frequency (PEF) subscale of the FLE-O. The initial principal components analysis revealed two factors that exceeded the Eigenvalue  $> 1$  criterion, but we again found the solution to be uninterpretable. Because we were unable to infer any additional meaning from the factor structure of the PEF, we proceeded to treat it as a single factor.

Next, we examined the negative event frequency (NEF) subscale of the FLE-O. Our initial analysis revealed three factors. The varimax rotated factor structure revealed, however, that only one item loaded on the third factor, making the third factor uninterpretable, so we once more forced a two-factor solution. This yielded a much more interpretable solution, which appeared to represent factors very similar to the factors in Study 2a. The first factor again appeared to describe instances of poor treatment in interpersonal contexts, such as suffering discrimination because of your religion or ethnicity, or having been bullied. As such, we will continue to refer to this factor as the interpersonal frequency (IPF) factor. The second factor again appeared to describe instances of bad luck, or the unfortunate life events that are relatively likely to happen to most people eventually, such as having been in a car accident or having suffered a death in the family. As such, we again refer to this factor as the bad luck frequency (BLF) factor.

We repeated this process with the ULE-O. In this study, we measured unfairness for both positive and negative life events. We first examined the factor structure of the

unfairness of positive life events. Our initial analysis revealed only a single factor. As such, we treated the positive life unfairness (PEU) subscale as unifactorial. Next, we examined the negative event unfairness (NEU) subscale of the ULE-O. Our initial analysis revealed three factors. The varimax rotated factor structure revealed that only two items loaded on the third factor. Given the limited utility of a factor with only two items, we again forced a two-factor solution. The two-factor solution again revealed a structure almost identical to that found for the frequency of these events. The first factor seemed to reflect the perceived unfairness of having been treated badly by others in an interpersonal context, such as being harassed in a job setting or being the victim of an untrue rumour, whereas the second factor captured the perceived unfairness of having been the victim of bad luck events, such as having food poisoning or having written an exam that was unreasonably difficult. Once again, we refer to these factors as the interpersonal unfairness (IPU) factor and bad luck unfairness (BLU) factor, respectively. And once again, our results will include analyses run using the full negative life experience frequency and unfairness scales, in addition to the factors.

We also again examined the factorability of the items that composed both the BJW-D and BJW-P scale, in order to replicate the EFA results from Study 2a in a separate sample. Our initial analysis revealed two factors. Both the unrotated and varimax rotated factor structures revealed that the seven items of the BJW-D Scale loaded on the first factor, and six of the seven items of the BJW-P Scale loaded significantly on the second factor. The one BJW-P item that failed to reach the cutoff value of .50 demonstrated unrotated and rotated loadings of .443 and .440 respectively, so only just missed the cutoff. Across both factors, there were no items with significant cross-

loadings. This again suggests that, overall, the BJW-D and BJW-P scales represent independent factor structures.

Having identified factors underlying the life experiences and fairness scales, we next investigated with which variables each of the BJW scales correlated (see Tables 7 and 8 for means and standard deviations; see Tables 9 and 10 for all correlations).

Missing data were handled using listwise deletion, with a missing data rate of 0.62%.

We found that BJW-D ( $M = 4.02$ ,  $SD = 1.38$ ), was positively correlated with SDO ( $r(288) = .306$ ,  $p < .001$ ), PMI ( $r(288) = .646$ ,  $p < .001$ ), and RWA ( $r(288) = .364$ ,  $p < .001$ ). It was negatively correlated with frequency of all negative life experiences for others ( $r(288) = -.220$ ,  $p < .001$ ), the unfairness of all negative life experiences ( $r(288) = -.155$ ,  $p = .008$ ), interpersonal factor frequency ( $r(288) = -.260$ ,  $p < .001$ ), interpersonal factor unfairness ( $r(288) = -.138$ ,  $p = .018$ ), bad luck factor unfairness ( $r(287) = -.138$ ,  $p = .018$ ), and Justice Sensitivity ( $r(288) = -.282$ ,  $p < .001$ ). We again examined correlations between BJW-D, and the SDO-D and SDO-E subscales. The findings were again no different from the correlation with the full SDO scale, for either the SDO-D subscale ( $r(278) = .260$ ,  $p < .001$ ) or the SDO-E ( $r(278) = .311$ ,  $p < .001$ ) subscale.

We found that BJW-P ( $M = 6.10$ ,  $SD = .780$ ) correlated positively with all negative life experience unfairness ( $r(96) = .364$ ,  $p < .001$ ), interpersonal factor frequency ( $r(96) = .260$ ,  $p = .010$ ), interpersonal factor unfairness ( $r(96) = .487$ ,  $p < .001$ ), and PMP ( $r(96) = .597$ ,  $p < .001$ ). BJW-P negatively correlated with positive life experience unfairness ( $r(96) = -.228$ ,  $p = .024$ ), SDO ( $r(96) = -.319$ ,  $p = .001$ ), and RWA ( $r(96) = -.221$ ,  $p = .029$ ). Finally, we examined correlations between BJW-P and the SDO-D and SDO-E subscales. The findings were no different from the correlation with

Table 7. Study 2b Means and Standard Deviations of Frequency and Unfairness of Life Events

	PEF	PEU	NEF	NEU	IPF	IPU	BLF	BLU
Means	2.69	1.74	2.41	4.03	2.47	4.55	2.41	3.66
Standard Deviations	0.35	0.73	0.45	0.62	0.69	0.73	0.48	0.71

Table 8. Study 2b Means and Standard Deviations of Beliefs in a Just World and Justice-Relevant Variables

	BJW-D	BJW-P	SDO	RWA	PMI	PMP	JSS
Means	4.02	6.10	2.60	2.90	3.64	5.18	4.40
Standard Deviations	1.38	0.78	1.42	1.42	1.13	0.80	1.05



Table 9. Study 2b Correlations Between BJW Scales and Frequency and Unfairness of Life Events

	PEF	PEU	NEF	NEU	IPF	IPU	BLF	BLU
Descriptive BJW	.090	-.110	-.220**	-.155**	-.260**	-.138*	-.057	-.118*
Prescriptive BJW	.066	-.228*	.033	.364**	.260**	.487**	-.091	-.154

\* Correlation is significant at the .05 level (two-tailed).

\*\* Correlation is significant at the .01 level (two-tailed).

Table 10. Study 2b Correlations Between BJW Scales and Justice-Relevant Variables

	BJW-D	BJW-P	SDO	RWA	PMI	PMP	JSS
Descriptive BJW	-	-.073	.306**	.364**	.646**	.007	-.282**
Prescriptive BJW	-.073	-	-.319**	-.221*	-.105	.597**	.147

\* Correlation is significant at the .05 level (two-tailed).

\*\* Correlation is significant at the .01 level (two-tailed).

the full SDO scale, for either the SDO-D subscale ( $r(98) = -.305, p = .002$ ) or the SDO-E ( $r(98) = -.285, p = .005$ ) subscale.

As in Study 2a, we also investigated a series of interactions. First, we investigated the interactions between how frequently participants estimated specific experiences happened to other people and how unfair they believed those experiences to have been. Second, we investigated the interaction of BJW-D and BJW-P on a number of justice-relevant variables, in service of the primary goal of this research, determining whether accounting for BJW-D in the context of BJW-P provides a more nuanced understanding of the Justice Motive. Specifically, we were looking for evidence of a distinction between a genuine belief in a just world and a motivated claim of belief in a just world, as well as evidence that a strong Justice Motive could exist in the presence of both a high and low BJW-D. To achieve all of these goals, we regressed each of our BJW scales on each combination of the interaction terms and their component parts, consisting of both the frequency and unfairness for positive life experiences, negative life experiences, the interpersonal factor, and the bad luck factor, in a series of eight separate regressions. Third, we regressed eight different justice-relevant variables (SDO, RWA, PMI, PMP, and JSS, as well as each of the three subscales of JSS) on the combination of BJW-D, BJW-P, and their interaction term. Finally, we regressed each of negative and positive experience frequency and unfairness, as well the interpersonal and bad luck factors' frequency and unfairness, on the interaction of BJW-D and BJW-P, for a total of 24 regressions in all.

First, we looked at the interactions of experience frequency and unfairness in predicting our BJW scales, and found no significant regressions. Next, we investigated

whether the interaction of BJW-D and BJW-P significantly predicted justice-relevant variables. We found that the interaction term of BJW-D and BJW-P significantly predicted SDO ( $t(94) = -2.42, b = -.323, p = .017$ ), such that SDO was high only when BJW-D was high and BJW-P was low (i.e., at the midpoint of the scale). In all three remaining corners of the saddle plot, when BJW-D was high and BJW-P was high, when BJW-D was low and BJW-P was high, and when BJW-D was low and BJW-P was low, SDO was very low, significantly below the midpoint of the scale (see Figures 6 and 7). We ran the same regression for both SDO subscales, and found the same interaction for the SDO-D ( $t(94) = -2.70, b = -.368, p = .008$ ) subscale, but not for SDO-E ( $t(94) = -1.63, b = -.259, p = .106$ ), suggesting the interaction is driven primarily by the Dominance subscale.

The interaction of BJW-D and BJW-P also significantly predicted JSS ( $t(94) = -2.40, b = -.233, p = .018$ ). Looking at Figures 8 and 9, we can see that JSS is highest when BJW-D is low and BJW-P is high (the world is not fair but should be fair). When BJW-D is high and BJW-P is low, JSS is slightly above the midpoint, and when BJW-D and BJW-P are both high or both low, we can see that JSS is slightly below the midpoint. In order to clarify the interpretation of this interaction, we regressed each of the three subscales of JSS (the victim, observer, and perpetrator subscales) on BJW-D and BJW-P. We found significant interactions for JSSvic ( $t(94) = -3.36, b = -.380, p = .001$ ) and JSSobs ( $t(94) = -2.04, b = -.224, p = .044$ ). Looking at Figures 10 and 11, we can see that JSSvic demonstrates the same pattern as the full JSS scale, but with a more exaggerated bend in the saddle, such that JSSvic is above the midpoint of the scale when BJW-D is high and BJW-P is low, and when BJW-D is low and BJW-P is high. The opposite

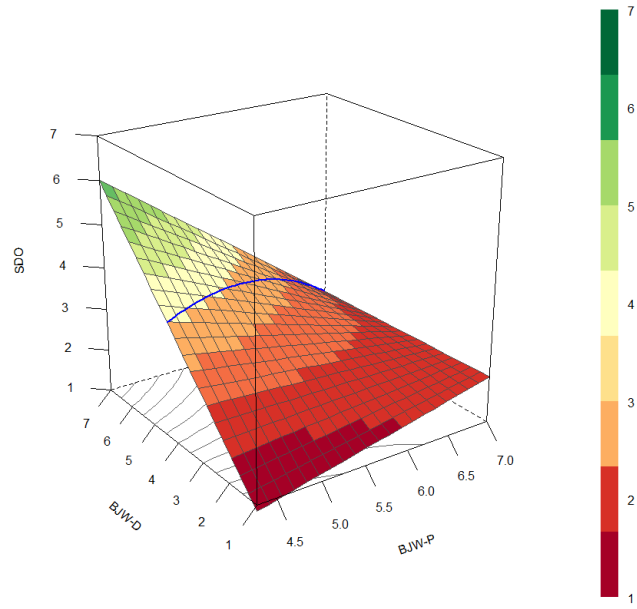


Figure 6. Saddle plot predicting SDO with BJW-D, BJW-P, and interaction

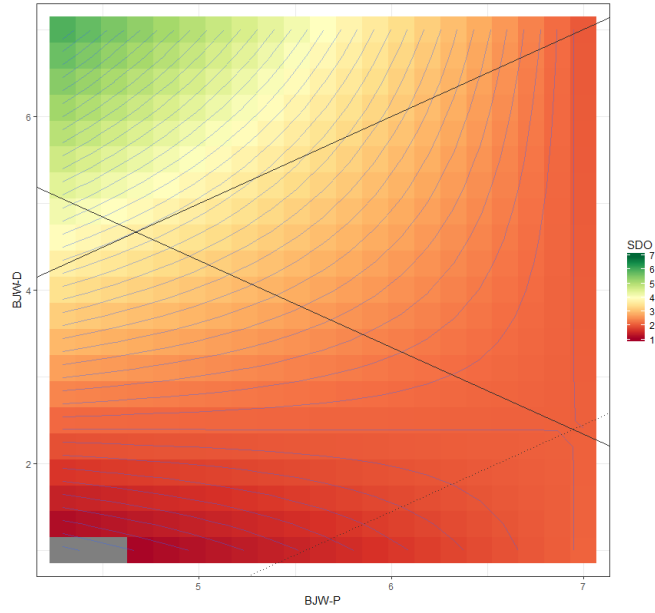


Figure 7. Contour map predicting SDO with BJW-D, BJW-P, and interaction

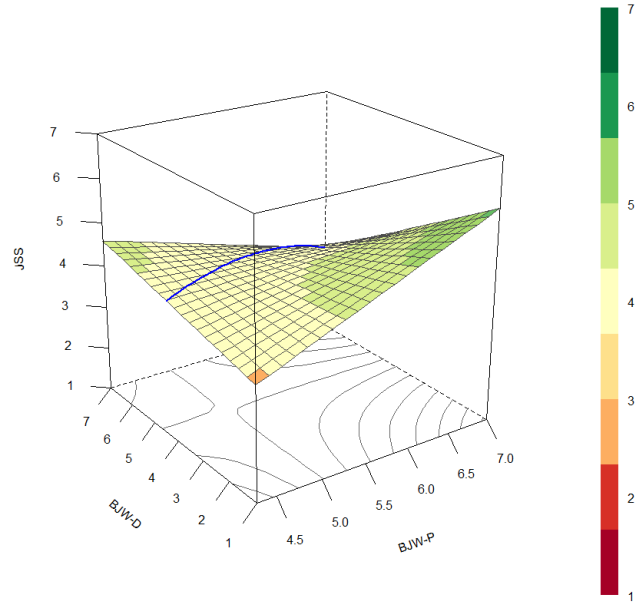


Figure 8. Saddle plot predicting JSS with BJW-D, BJW-P, and interaction

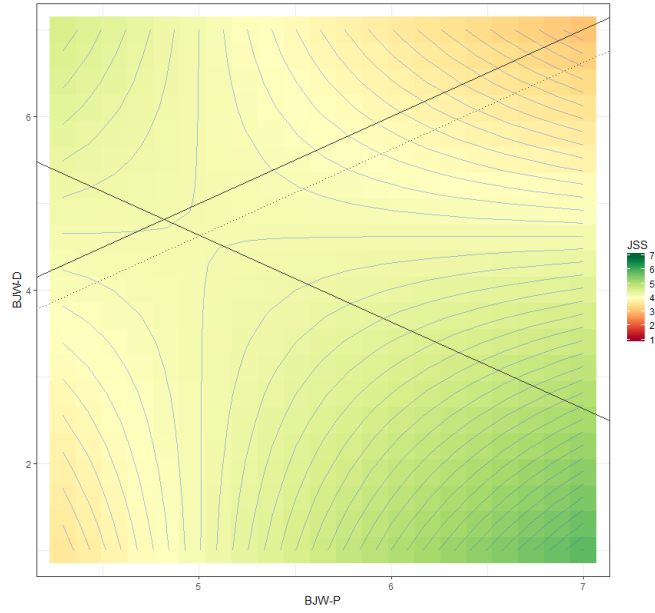


Figure 9. Contour map predicting JSS with BJW-D, BJW-P, and interaction



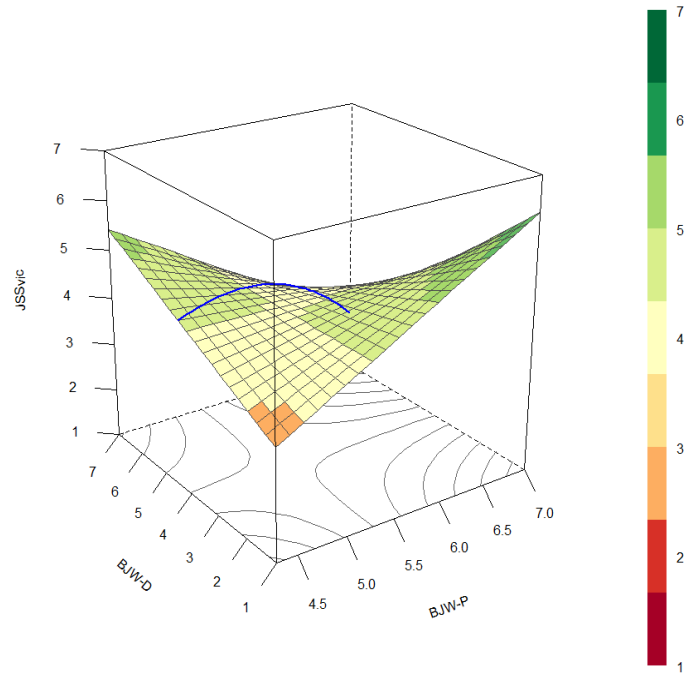


Figure 10. Saddle plot predicting JSSvic with BJD, BJP, and interaction

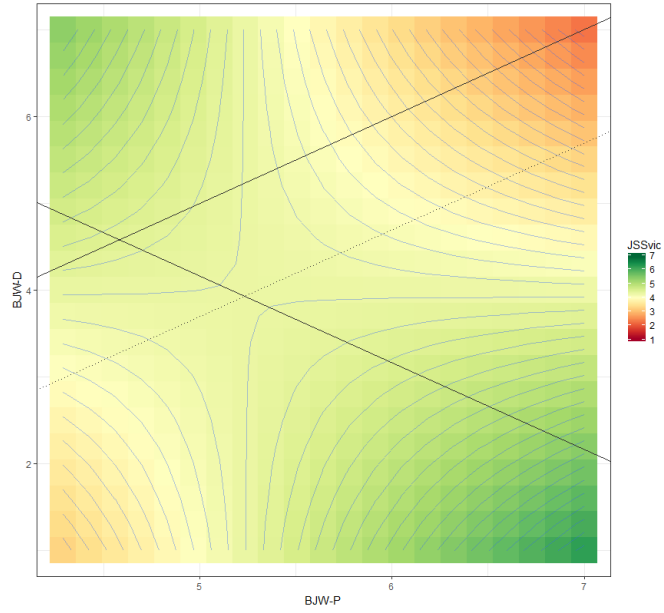


Figure 11. Contour map predicting JSSvic with BJW-D, BJW-P, and interaction

corners, where BJW-D and BJW-P are both low or both high suggest insensitivity to being the victim of injustice. In Figures 12 and 13, we can see that it is only when BJW-D and BJW-P are both high that there is significant sensitivity to observing injustice. The three remaining corners display JSS scores that are at or just slightly above the midpoint. JSS<sub>perp</sub> ( $t(94) = -.749, b = -.095, p = .456$ ) was not significantly predicted by the interaction. The combination of these results suggest that the relatively high general justice sensitivity when BJW-D is high and BJW-P is low is driven by victim sensitivity more than the other scales, whereas the relatively high general justice sensitivity when BJW-D is low and BJW-P is high is driven by a more general justice sensitivity. Additionally, it is worth noting that, although not significant, Figures 14 and 15 demonstrate that the regression of RWA on BJW-D and BJW-P indicate a trending pattern that is very similar to the pattern of its most closely related system-justifying variable, SDO.

Finally, we examined the ability of the interaction of BJW-D and BJW-P to predict the frequency of different events for others, and the fairness of these events. Of these, we only found a significant interaction of BJW-D and BJW-P for bad luck factor unfairness ( $t(94) = 2.32, b = .173, p = .023$ ). Looking at Figures 16 and 17, we can see that it is only when BJW-D is high and BJW-P is low that bad luck events are rated as somewhat fair. In all three other corners of the plot (when BJW-D and BJW-P are both high, both low, or low and high respectively), bad luck events are rated as slightly unfair.

## **Discussion**

This study further confirms two meaningful trends that have been emerging across the set of studies. First, we are beginning to see a clearer picture of the different

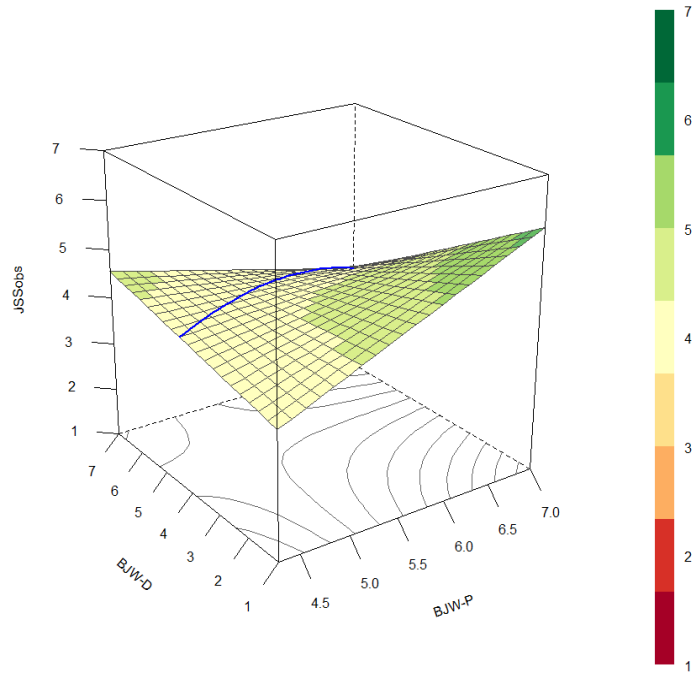


Figure 12. Saddle plot predicting JSSObs with BJW-D, BJW-P, and interaction

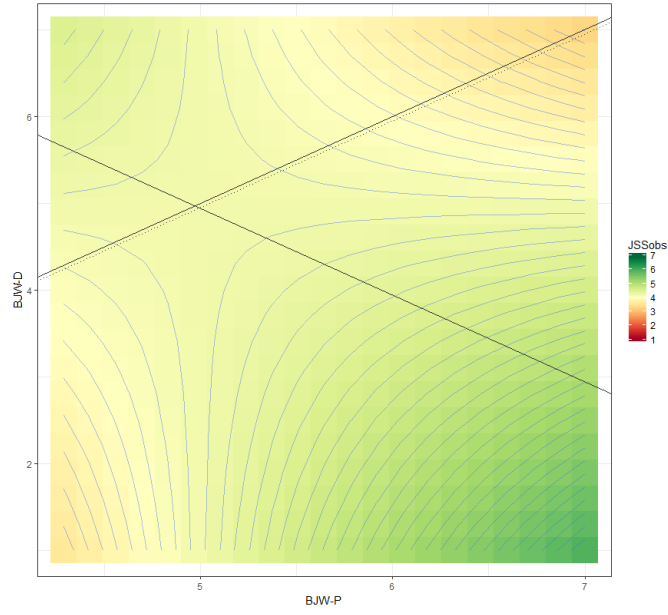


Figure 13. Contour map predicting JSSobs with BJW-D, BJW-P, and interaction

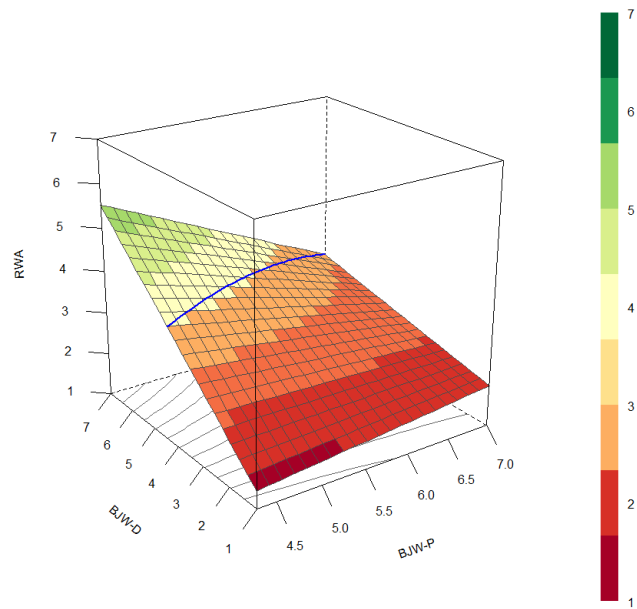


Figure 14. Saddle plot predicting RWA with BJD, BJD-P, and interaction

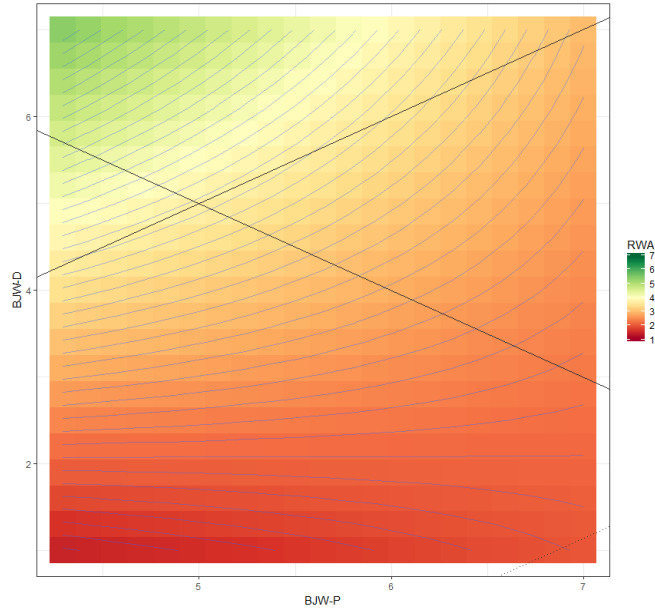
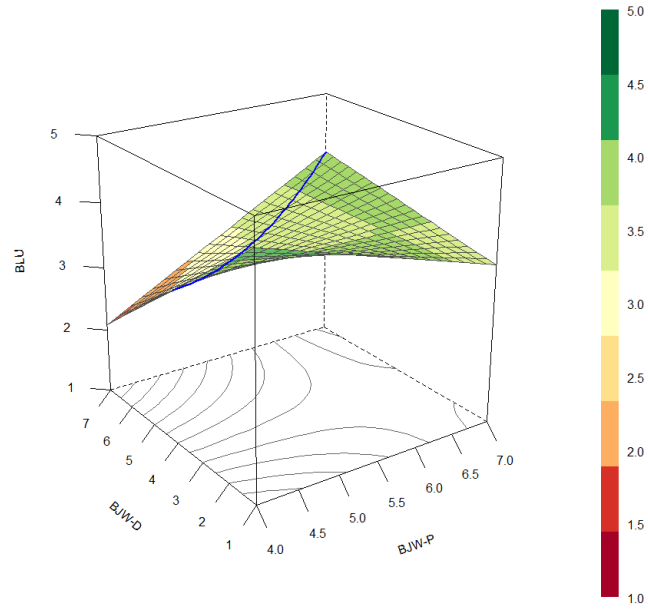
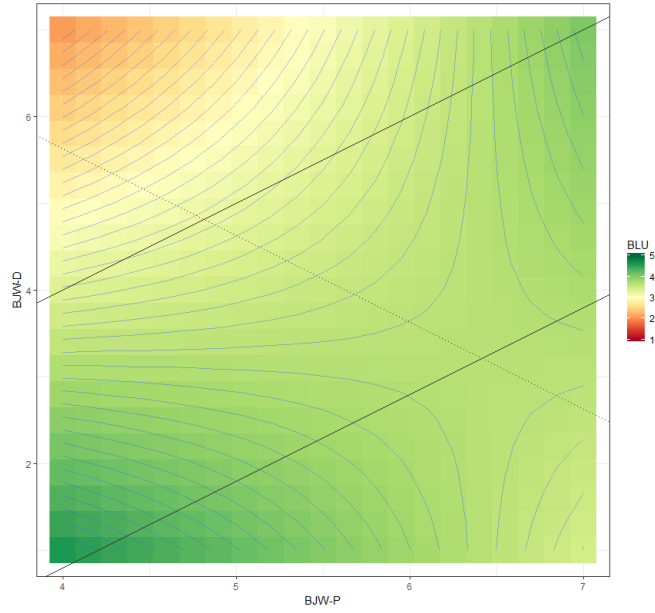


Figure 15. Contour map predicting RWA with BJW-D, BJW-P, and interaction



*Figure 16.* Saddle plot predicting bad luck factor unfairness with BJW-D, BJW-P, and interaction





*Figure 17.* Contour map predicting bad luck factor unfairness with BJW-D, BJW-P, and interaction

types of people that are represented by the four quadrants of our BJW-D by BJW-P matrix (see Figure 18 for a summary of results to this point). Two of these four quadrants match the traditional conception of people with strong and weak Justice Motives. It should be noted, however, that these findings are preliminary and should be interpreted with some caution. Though the patterns of relations are generally conceptually consistent and demonstrate unique combinations of beliefs and attitudes for each of the four corners, many of the relations are quite small. That is, though the relations are statistically significant, the effect sizes are quite small and should be interpreted with caution.

In the high BJW-D, low BJW-P corner (the world is fair but does not necessarily need to be fair), we find those who most closely match with the traditional conception of a high BJW individual. From looking at the variables that correlate with BJW-D, we can see that these individuals tend to believe that the world is meritocratic. They believe that negative life experiences and, specifically, negative interpersonal experiences like bullying and discrimination, are relatively uncommon. To a lesser degree, they believe that these negative experiences are not unfair. Despite reporting that the world is meritocratic, they do not generally support prescriptive statements about the world functioning as a meritocracy. Instead, they justify the system in a way that maintains the world as it is, including higher levels of SDO and RWA. They also tend to be less sensitive to justice in general, though they are quite high in the victim sensitivity subscales of the JSS. This is interesting, because more recently, evidence has emerged which suggests that victim sensitivity may be more self-protective, and less focused on justice. Victim sensitive individuals are less likely to follow norms of equality (Fetchenhauer & Huang, 2004), less forgiving in interpersonal relationships (Gerlach,

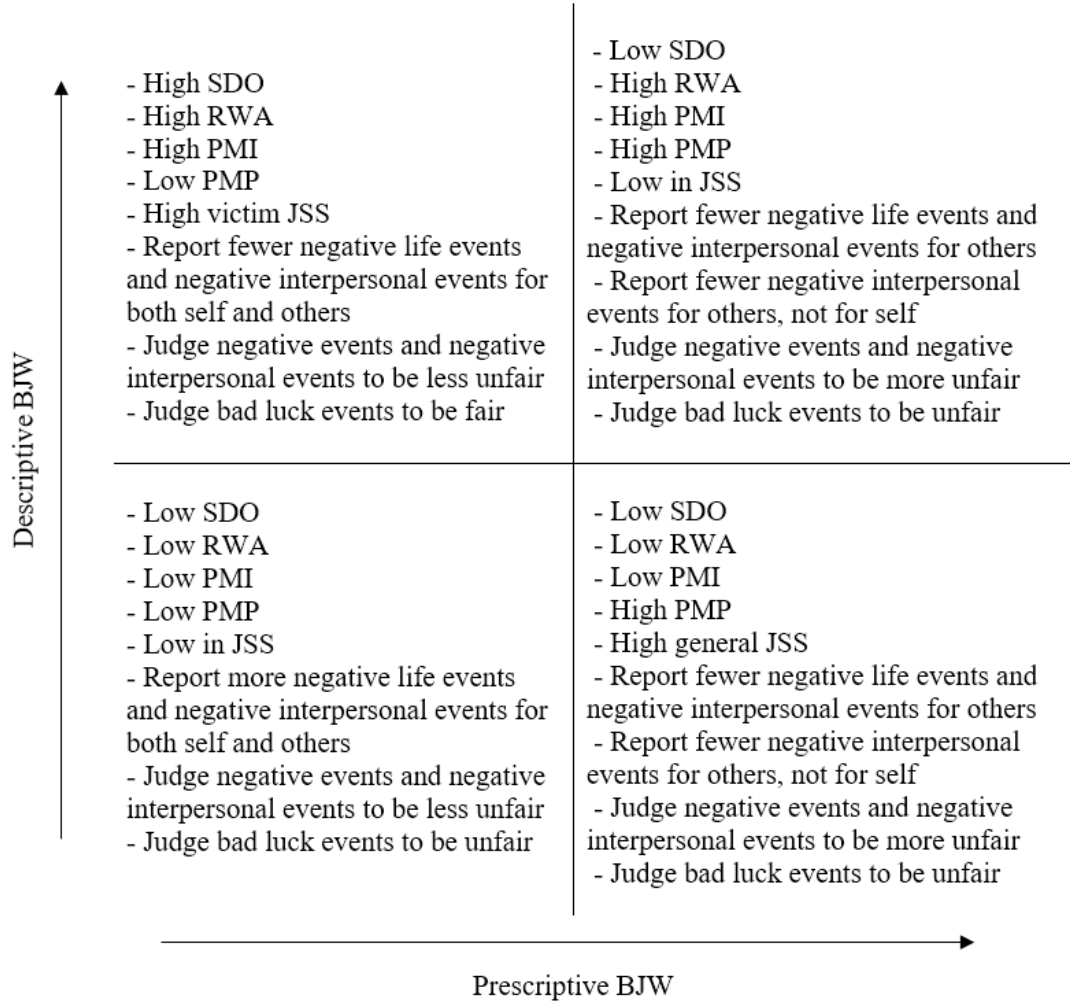


Figure 18. Summary of results from Studies 1a, 1b, 2a, and 2b

Allemand, Agroskin, & Denissen, 2012), less cooperative after infractions against them (Gollwitzer & Rothmund, 2011), less likely to contribute to the public good in the context of low but non-zero probability of a cheater benefiting (Gollwitzer, Rothmund, Pfeiffer, & Ensenbach, 2009), and more likely to demonstrate reactance/resist change when reacting to attempts at reform that will impact their lives (Traut-Mattausch, Guter, Zanna, Jonas, & Frey, 2011). All of this suggests that the high victim sensitivity of the high BJW-D, low BJW-P individuals is particularly important for understanding the Justice Motive in these individuals.

We also gained insight into the relatively unstudied and misunderstood individuals who are high in both BJW-D and BJW-P (the world is fair and should be fair). These individuals show some of the same patterns of belief as the high BJW-D, low BJW-P individuals, but we can see how they are different by looking at the combinations of correlations unique to them, as well as the interactions that were present. Though these individuals also believe that negative life events are relatively rare, they believe that these events are unfair when they do happen. In fact, the interaction on JSS shows that these individuals are typically insensitive to instances of injustice, whereas the prior high-low believers report being unusually sensitive to instances when they are the victim. This could also explain why BJW-D was associated with the number of negative life experiences for the self found in Study 2a. Another critical distinction between high-low believers and high-high believers is in their support for SDO. Examining the significant interaction, we can see that the only people who report relatively high SDO are those in the high BJW-D, low BJW-P corner, whereas the high-high individuals are about as low in SDO as the other corners. All of this combines to suggest a more sincere belief in a

just world, in which unjust things do happen and they are unjust when they do, but they do not happen very often, and as such, the world is a just place. These people oppose system-justifying belief structures and support ideas that could lead to a different and better world, such as prescriptive merit beliefs, but overall believe in a just world.

Finally, it is interesting to note that the only type of individual who reports believing that the occurrence of the bad, random things of life, such as getting sick or having loved ones die, are not really unfair, are those who are high in BJW-D and low in BJW-P. This suggests a maintenance range that allows more injustice, or what most people consider injustice, than the average person.

In the low BJW-D, high BJW-P corner (the world is unfair but should be fair), we find those that most closely match the traditional conception of a low BJW individual, and yet report beliefs which suggest that they care deeply about justice. These individuals do not believe that the world is a meritocracy, though they believe that it should be. They are highly justice sensitive, they think that negative life experiences, especially negative interpersonal treatment, happen relatively frequently and are very unfair. They are unsupportive of system-justifying beliefs, such as SDO and RWA. Though these people are traditionally labelled as possessing a weak Justice Motive, a homeostatic model suggests that this perception may be based on a failure to properly account for their unwillingness to engage in irrational strategies as a means of restoring that belief.

Finally, the low BJW-D, low BJW-P are the most difficult to categorize. They believe the world is not just, but also are ambivalent about whether it should be or not. They think bad things happen to people, but that when they do, they are not necessarily unfair. They are relatively insensitive to justice violations, but are also unsupportive of

system-justifying ideologies. Interestingly, these people represent something very close to a pure form of what someone with a low Justice Motive looks like. That is, they demonstrate no need to believe that the world is just, and seem relatively unbothered by it. But, contrary to the high D, low P individuals, they do not use this belief vacuum as an opportunity to espouse motivated beliefs that are helpful for them, such as the system-justifying beliefs. It is possible that these people consider themselves realists, and think that a belief in a just world is Pollyanna-ish, which represents a fantasy world that is disconnected from the way the world actually functions.

### **Studies 3-5**

Our studies so far have found evidence of a Justice Motive that is compatible with a homeostatic, prevention focused motivation, as well as preliminary evidence suggesting that BJW-D and BJW-P tap into different components of the motive. Additionally, our studies have demonstrated that different people who are all high in BJW-D, which corresponds to the traditional measure of BJW, can hold different beliefs about whether the state of the world matches their beliefs about how the world should be. Within the context of a homeostatic process, the difference between believing that negative events happen frequently to people but are not unfair and believing that negative events rarely happen but, when they do, they are very unfair, is an important distinction.

In order to clarify the nature of this distinction, we conducted a series of studies that investigated the interaction of BJW-D and BJW-P in terms of the three components of a homeostatic system: the receptor, the control centre, and the effector. That is, we investigated how we can use both Descriptive and Prescriptive Belief in a Just World to understand differences in how people detect injustice, how strongly people are affected

by injustice, and how people act or change beliefs in order to maintain a belief in a just world.

In Study 3, we investigated differences in participants' memory for justice-relevant versus justice-irrelevant information across a series of vignettes, which themselves varied in their degree of justice-relevance. In Study 4, we examined whether participants recommended that targets should receive financial restitution to restore justice after reading the same series of vignettes, and we also provided participants with an opportunity to donate their own study compensation to combat injustice. In Study 5, we asked participants to read the same series of vignettes, offer an initial justice judgment, and then tell us whether or not a piece of additional information (which was compatible with irrational strategies for restoring justice beliefs) changed their judgment of how unjust each vignette was.

Thus, we had one study that attempted to measure how individuals vary in their attention/memory for detecting injustice, one study that attempted to measure differences in the degree to which justice violations are judged to be severe when there is only a single strategy for restoring justice available, and a study that attempted to measure differences in how different levels of BJW-D and BJW-P predict strategies for restoring the Belief in a Just World. Expected results for each study are briefly described prior to the methods of each study. More detailed discussion of the results is provided after the descriptions of all three studies.

### **Study 3**

This study was focused on the receptor portion of the theorized homeostatic system that underlies the Justice Motive. Recall, the receptor is the mechanism that is

responsible for monitoring the variable of interest that is specific to that particular homeostatic system. In the case of the Justice Motive, this would be the portion of the system that is responsible for detecting injustice in the world.

Previous research demonstrates that attentional and memory processes serve an important role in the maintenance of the Belief in a Just World. For example, Callan, Ferguson, and Bindemann (2013) found that perceiving instances of injustice caused people to engage in a biased search for information that reduced the threat of that information. Hafer (2000a) found that the presence of a threat to the Belief in a Just World significantly interfered with people's ability to identify the colour of justice-related words presented in a modified Stroop Task. Callan, Kay, Davidenko, and Ellard (2009) found that recall for justice threatening events was biased towards remembering (and misremembering) details in a manner that minimized the threat to the BJW.

These studies are consistent with several of our current findings, particularly those of Study 2b, which found that people with a stronger Descriptive Belief in a Just World reported that negative events happen to others less frequently than those with a weaker BJW-D. Though it is possible that this discrepancy is due to differences in the amount of injustice that different individuals actually perceive in the world (i.e., differences in noticing and recalling events that everyone would consider unfair), it is also possible that there are differences in how equivalent events are interpreted, stored, and recalled (i.e., differences in the interpretation of events that everyone remembers). Therefore, this study tested the viability of the former, memory-caused interpretation (i.e., that high BJW-D is associated with worse memory for unjust events) by focusing on participants' memory for justice-relevant events.



Specifically, this study presented participants with a series of vignettes regarding various instances of injustice. Participants then responded to a series of questions to test their memories for justice-relevant and justice-irrelevant details from the vignettes. We hypothesized that participants who reported higher BJW-D would demonstrate worse recall for details that are relevant to violations of justice, suggestive of relative insensitivity in the receptor (variable monitoring) portion of their homeostatic system, which would allow them to maintain their belief in a just world. We also hypothesized that differences in BJW-P would not be predictive of these differences.

We also examined whether BJW-D and BJW-P interact in predicting memory for these events. Our findings in previous studies suggested that there may be differences amongst high BJW-D individuals who vary in BJW-P, and these different high BJW-D individuals maintain a high BJW-D through different combinations of functional variance in their homeostatic systems. However, without specific information from our previous studies about how these groups vary in terms of the different mechanisms, an a priori hypothesis at this stage would be conjecture, and, as such, these analyses were exploratory.

## **Method**

**Participants.** Participants were again recruited via MTurk. Participant eligibility was limited to native English speakers living in the United States who had at least 97% approval rating for previously completed HITs. Participants received \$1.00 as compensation for participating in the study. Out of the 457 participants who agreed to participate in the study, 305 completed the entire study. Of those, 7 failed an attentional check and were excluded from analysis, leaving us with 298 participants. Additionally,

while coding the open-ended memory responses, we found multiple participants who admitted to copying and pasting the vignettes as they read them, and some who clearly were not attempting to answer the questions (e.g., they wrote the number 20 in every single box). As a result, we eliminated anyone who got 34 or 35 out of 35 answers correct, and anyone who got 0 or 1 answers correct, leaving us with a final sample of 272 participants (133 women, 138 men, and 1 participant who identified as non-binary;  $M_{\text{age}} = 38.45$ ;  $SD_{\text{age}} = 11.24$ ). A statistical power analysis was performed in G\*Power in order to estimate necessary sample sizes in order to achieve power of .80 to detect a small to medium effect, for both the correlational effects and the interaction effects to be tested. Results showed that our sample sizes were sufficient to achieve this level of power for both sets of tests.

### **Materials.**

*Vignettes.* To provide participants with salient justice-relevant scenarios, a series of compelling vignettes was developed. In total, five vignettes were presented to participants, each including a number of details to allow for testing of recall. These vignettes focused on stories describing instances of injustice, such as a man being beaten by strangers or a woman making several thousand fewer dollars a year than a male colleague who does the same job. The events depicted in the vignettes were designed to vary in the level of injustice depicted. That is, we did not want every vignette to be interpreted as an extreme violation of justice by all participants. Additionally, the events were selected to represent different types of moral violations (e.g., violations of fairness, harm, loyalty to the ingroup, and submission to authority; Graham et al., 2013). Both of

these decisions were made in order to allow for variation in judgments between individuals. A complete list of the vignettes can be found in Appendix C.

***Distractor Task.*** In order to create some temporal separation between reading the vignettes and having participants recall details about the stories, participants were asked to complete a distractor task. Participants spent a maximum of five minutes unscrambling a series of eight simple anagrams of the names of animals. This task was designed to provide enough of a gap between tasks, without being too burdensome or adding significantly to the time required to complete the study.

***Memory Test.*** After reading the vignettes, participants were tested on their memory for details from the stories. Half of the questions presented to participants focused on justice-relevant details from the vignettes, and half focused on justice-irrelevant details.

***Just world beliefs.*** As in previous studies, we used two different just world beliefs scales, the BJW-D and the BJW-P. Participants were warned about the similarity between scales to avoid confusion and maintain participant attention. Both scales demonstrated very good to excellent internal reliability in our sample ( $\alpha = .951$  and  $\alpha = .897$ , respectively).

***Attention Check.*** The attention check used in this study was identical to the one used in previous studies.

### **Procedure.**

After accepting the MTurk HIT, participants began by answering a series of demographic questions. They were then asked to read the series of vignettes described earlier. Participants were presented with all five vignettes in a row, in fixed order. After

reading these vignettes, participants were asked to complete the series of anagrams as a distractor task, before answering a series of questions assessing their memory for the content of the vignettes, testing them on both justice-relevant and justice-irrelevant details. All participants then completed both the BJW-D and BJW-P Scales, which were presented in random order. Finally, participants completed the one-item attention check.

## Results

We first calculated mean response scores for both BJW-D ( $M = 3.69$ ,  $SD = 1.45$ ) and BJW-P ( $M = 6.08$ ,  $SD = .934$ ). We also examined gender differences on our two BJW scales. Consistent with past research (see O'Connor et al, 1996), we found that male participants ( $M_{male} = 4.01$ ) generally scored higher on BJW-D than female participants ( $M_{female} = 3.35$ ;  $t(269) = 3.82$ ,  $p < .001$ ). We also found that female participants ( $M_{female} = 6.20$ ) scored significantly higher on BJW-P than male participants ( $M_{male} = 5.95$ ;  $t(269) = -2.24$ ,  $p = .026$ ). This is consistent with research from the moral domain, which suggests that women are generally more sensitive to moral violations than men, particularly when they involve harm (Armstrong, Conway, & Friesdorf, 2018).

We also calculated two means for the number of correct responses participants gave when tested on details from the vignettes, one for justice-irrelevant details and one for justice-relevant details. For justice-relevant details, the mean number of correct responses was 9.25 ( $SD = 3.56$ ), out of a possible score of 17. For justice-irrelevant details, the mean number of correct responses was 6.49, out of a possible score of 18 ( $SD = 3.87$ ). A paired samples t-test indicated that participants demonstrated a significantly higher memory for justice-relevant than justice-irrelevant details ( $t(271) = 17.26$ ,  $p < .001$ ). Participants accurately recalled an average of 59.24% of the justice-relevant details

and 40.79% of the justice-irrelevant details. For justice-relevant and justice-irrelevant recall by vignette, see Table 11.

We examined the correlations between the two BJW scales and our variables of interest. Missing data were handled using listwise deletion, with a missing data rate of 0.07%. BJW-D demonstrated small but significant negative correlations with both BJW-P ( $r(270) = -.123, p = .043$ ) and memory for justice-relevant details ( $r(270) = -.140, p = .021$ ). There was no relation between BJW-D and justice-irrelevant details ( $r(270) = .020, p = .739$ ). BJW-P demonstrated significant positive correlations with memory for both justice-relevant details ( $r(270) = .323, p < .001$ ) and justice-irrelevant details ( $r(270) = .223, p < .001$ ).

Next, we separately regressed both memory for justice-relevant details and memory for justice-irrelevant details on BJW-D, BJW-P, and the interaction term of the two. For justice-relevant details, we found a significant interaction ( $t(268) = 3.90, b = .620, p < .001$ ), in which participants who were high in BJW-D and low in BJW-P demonstrated worse recall than participants who were high in both BJW-D and BJW-P, or participants who were low in BJW-D, regardless of BJW-P (see Figures 19 and 20).

Performing the same regression again, but this time with memory for justice-irrelevant details as the criterion variable, we found no significant interaction ( $t(268) = 1.53, b = .280, p = .127$ ), nor a significant main effect for either BJW-D ( $t(268) = -1.40, b = 1.62, p = .162$ ) or BJW-P ( $t(268) = -.089, b = -.063, p = .929$ ).

## Discussion

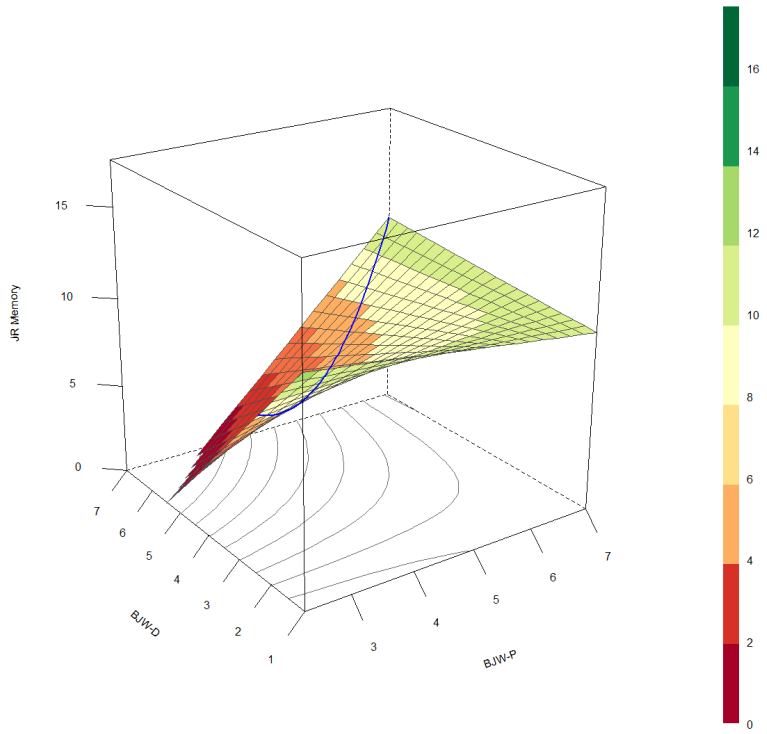
Examining BJW-D and its correlations allows us to understand what conclusions would be drawn from our data with a traditional analysis. Specifically, we found that

Table 11. Key DVs by Vignette from Studies 3, 4, and 5

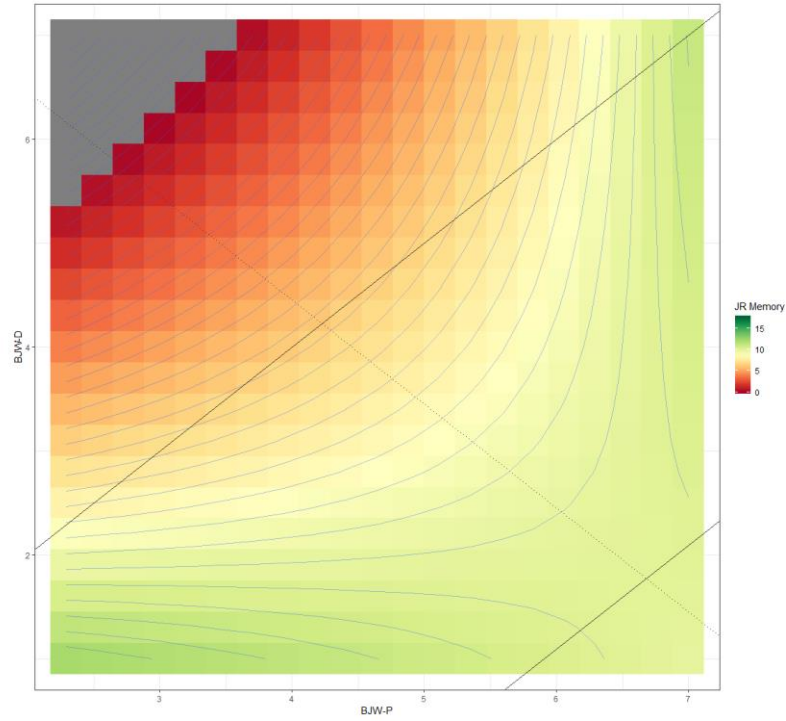
	Vignette 1	Vignette 2	Vignette 3	Vignette 4	Vignette 5
Mean % Correct JR Recall (Study 3)	82.20%	52.17%	85.00%	36.10%	67.89%
Mean % Correct JI Recall (Study 3)	51.75%	59.47%	36.99%	24.26%	31.47%
Mean Compensation (Study 4)	\$2838.11	\$6095.97	\$4760.85	\$4000.20	\$6006.36
Mean Initial Judgment (Study 5)	2.40	1.99	2.23	2.32	2.00
Mean Second Judgment (Study 5)	2.43	1.59	1.96	1.62	1.75

\* Correlation is significant at the .05 level (two-tailed).

\*\* Correlation is significant at the .01 level (two-tailed).



*Figure 19.* Saddle plot predicting memory for justice-relevant details from vignettes with BJW-D, BJW-P, and interaction



*Figure 20.* Contour map predicting memory for justice-relevant details from vignettes with BJW-D, BJW-P, and interaction



those who reported a higher belief in a just world had a worse memory for justice-relevant details. Using a traditional understanding of the BJW, this would lead us to infer that individuals with a higher BJW maintain their belief by selectively ignoring justice-relevant details. That is, these findings support historical interpretations of the BJW by demonstrating that those with a higher BJW are less sensitive to instances of injustice, suggesting some combination of differences in attention, salience, or retention that allows these individual to maintain their high BJW in the face of specific instances of injustice.

However, inspecting the interaction between BJW-D and BJW-P leads us to substantially different conclusions. Looking at Figures 19 and 20, we can see that the negative relation between BJW-D and memory for justice-relevant details was not driven equally by all high BJW-D individuals, but rather was driven almost entirely by the high BJW-D, low BJW-P individuals. At the most extreme ends of the scales (i.e., the corners of the graph), we can see that the variability in memory for justice-relevant facts amongst those with high BJW-D and high BJW-P, low BJW-D and high BJW-P, and low BJW-D and low BJW-P was very small.

The interaction further suggests that variation in beliefs does not have to be nearly as extreme as described above in order to demonstrate a similar pattern. Looking again at Figure 20, if we first locate the point that represents the mean of both BJW-D ( $M = 3.69$ ) and BJW-P ( $M = 6.08$ ), we can evaluate the pattern of results when we move a standard deviation in any direction, for both BJW-D ( $SD = 1.45$ ) and BJW-P ( $SD = .934$ ). If we take high and low BJW to mean one standard deviation in any direction, we see a nearly identical pattern. The number of items recalled by high BJW-D and high BJW-P, low BJW-D and high BJW-P, and low BJW-D and low BJW-P individuals were nearly

indistinguishable, but high BJW-D, low BJW-P individuals (i.e., those who are one standard deviation above the mean in BJW-D and one standard deviation below the mean in BJW-P) showed significant decrements in the number of justice-relevant items correctly recalled (see Table 12 for exact predicted values).

These findings provide compelling initial evidence for two components of our model. First, those who report a stronger belief in a just world are less likely to remember justice-relevant details about a description of injustice. This is in keeping with traditional findings from the BJW literature, in that those with a high BJW seem to have protective cognitive barriers in place that allow them to maintain their belief in a just world. This finding is also consistent with a traditional interpretation of the BJW that is modified to incorporate a homeostatic understanding of the Justice Motive process, specifically, that the receptor portion of the homeostatic system is less sensitive to instances of injustice amongst those with a high BJW. That is, those with stronger just world beliefs hold these beliefs because they detect less injustice in the world.

This interpretation, however, fails to account for differences in how fair people believe the world should be. Doing so provides a clearer understanding of how the sensitivity of the receptor varies as a function of just world beliefs, because it shows us that it was only when people reported believing the world is just while holding ambivalent feelings about whether the world should be fair or not that they demonstrated significant decrements in their memories for these details. For those who believed both that the world is just and that it should be just, there was no evidence of meaningful differences in receptor sensitivity compared to those who believe the world is unjust.

Table 12. Number of Memory Items Correctly Recalled Predicted by BJW-D and BJW-P at  $\pm 1$  SD in Study 3

		Prescriptive BJW			
		-1 SD	Mean	+1 SD	
		+1 SD	6.85	8.80	10.72
Descriptive BJW	Mean	8.23	9.34	10.44	
	-1 SD	9.61	9.88	10.15	

#### Study 4

This study focused on the “control centre” portion of the theorized homeostatic system, which is responsible for setting the system’s maintenance range. Recall, the maintenance range is the range of variation in the variable of interest that is allowable before the system registers an imbalance and, therefore, signals downstream processes to intervene and restore balance. In the case of the Justice Motive, this would be the portion of the system that is responsible for monitoring whether a justice-relevant event violates justice principles sufficiently to threaten the Belief in a Just World.

To do this, we measured the degree of intervention that people felt was required in order to have justice restored. This was measured in two ways. First, participants were asked to imagine that they had been assigned to a newly created government position, the “National Justice Czar”. Across a series of vignettes, they were tasked to act on behalf of society to offer monetary compensation to restore justice. By making the task explicitly justice-based, and by crafting the vignettes to contain overtly justice-relevant information, this task should reduce the influence of any differences in the tendency to interpret situations (or details of situations) as justice-relevant, hopefully minimizing any effects that are due to variation amongst individuals’ receptors, that is, variation due to differences in the detection of injustice. Additionally, because the means of restoring justice is predetermined and consistent with rational strategies (which everyone is assumed to use), there is less opportunity for individual variance in the preferred strategies for restoring justice (i.e., variation in the effector mechanism) to influence the restitution that is awarded.

In addition to the hypothetical scenarios outlined in the vignettes, a second task offered participants an opportunity to donate some or all of the money they received for their participation to a charity. The charity offered was focused on compensating victims of injustice, with no explicit group identity component, in order to reduce the effects of differences in group-based attitudes.

On both measures, we predicted a main effect of BJW-P, such that those who have a higher Prescriptive Belief in a Just World would recommend higher amounts of compensation and donate more of their money, suggestive of a narrower maintenance range, compared to those with a wider or more flexible maintenance range (low BJW-P). We also predicted that there would no main effect of BJW-D. We again tested for an interaction, but without sufficient theoretical rationale from our previous studies, these analyses were exploratory.

## **Method**

**Participants.** Participants were again recruited via MTurk. Participant eligibility was limited to native English speakers living in the United States who had at least 97% approval rating for previously completed HITs. Participants received \$1.00 as compensation for participating in the study. Of the 355 participants who agreed to participate in the study, 301 completed the entire study. Of those, 8 failed an attentional check, and were excluded from analysis. The final sample size was 293 participants (138 women, 151 men, 2 participants who preferred not to report gender, as well as one who identified as female to male/non-binary, and one who identified as gender fluid;  $M_{\text{age}} = 36.68$ ;  $SD_{\text{age}} = 11.52$ ). A statistical power analysis was performed in G\*Power in order to estimate necessary sample sizes in order to achieve power of .80 to detect a small to

medium effect, for both the correlational effects and the interaction effects to be tested. Results showed that our sample sizes were sufficient to achieve this level of power for both sets of tests.

**Materials.**

*Vignettes.* This study used the same five justice-relevant vignettes described in Study 3.

*Restitution.* After reading each vignette, participants were asked, in their capacity as “Justice Czar”, to assign a dollar value to what society should offer the individual in recompense for their suffered injustice. Restitution was indicated on a slider that ranged from \$0 - \$10,000, with \$10,000 having been explained as the maximum that they are allowed to assign unilaterally in their role.

*Just world beliefs.* As in previous studies, we used two different just world beliefs scales, the BJW-D and the BJW-P. As in Study 2a, instructions warned participants about the similarity between scales to avoid confusion and maintain participant attention. Both scales demonstrated excellent internal reliability in our sample ( $\alpha = .948$  and  $\alpha = .896$ , respectively).

*Donation.* Following the apparent completion of the study, participants were asked whether they wanted to donate some or all of their payment for participating in the study to a charity for orphans with medical problems who cannot otherwise afford care (in order to eliminate any agency, blame, or victim derogation). This measure was intended to provide a real-life assessment of the degree to which participants considered justice violations to require interventions to restore justice.

**Attention Check.** The attention check used in this study was identical to the one used in previous studies.

### **Procedure.**

After accepting the MTurk HIT, participants answered a series of demographic questions. Participants were then asked to read the series of vignettes described earlier, presented in fixed order. After reading each vignette, participants were asked to report the amount of compensation that would restore justice in each instance. Next, participants completed both the BJW-D and BJW-P Scales. After the apparent completion of the study, participants were asked if they would like to donate some or all of the money they are being paid to a specified charity. Finally, participants completed the single item attention check.

### **Results**

We again calculated mean response scores for both BJW-D ( $M = 3.85$ ,  $SD = 1.52$ ) and BJW-P ( $M = 6.08$ ,  $SD = .925$ ). Once again, we examined gender differences on our two BJW scales. Consistent with Study 3, we found that male participants ( $M_{male} = 4.09$ ) scored higher on BJW-D than female participants ( $M_{female} = 3.60$ ;  $t(287) = 2.79$ ,  $p = .006$ ). Also consistent with Study 3, we found that female participants ( $M_{female} = 6.26$ ) scored significantly higher on BJW-P than male participants ( $M_{male} = 5.90$ ;  $t(287) = -3.32$ ,  $p = .001$ ). Finally, we calculated overall means for our two key dependent variables, restitution ( $M = 4741.33$ ,  $SD = 2378.17$ ) and donations ( $M = .252$ ,  $SD = .341$ ). See Table 11 for individual vignette means.

Next, we examined the correlations between the two BJW scales and our variables of interest. Missing data were handled using listwise deletion, with a missing data rate of

0.65%. BJW-D again demonstrated a small but significant negative correlation with BJW-P ( $r(291) = -.160, p = .006$ ). In terms of our dependent variables, BJW-D correlated significantly with both, demonstrating a small negative correlation with restitution ( $r(291) = -.138, p = .019$ ), and a small positive correlation with donation ( $r(291) = .185, p = .002$ ). BJW-P demonstrated the opposite pattern, demonstrating a small but significant positive correlation with restitution ( $r(291) = .169, p = .004$ ), and a small but significant negative correlation with donation ( $r(291) = -.166, p = .004$ ).

Next, we regressed amount of restitution on BJW-D, BJW-P, and the interaction term of the two. The analysis revealed no significant interaction ( $t(289) = -1.42, b = -152.62, p = .156$ ), nor a significant main effect for BJW-D ( $t(289) = 1.15, b = 782.94, p = .251$ ). BJW-P positively predicted restitution ( $t(289) = 2.25, b = 954.48, p = .025$ ).

Because the interaction term did not significantly add to prediction, we removed it, and ran the model again, regressing restitution on just BJW-D and BJW-P. We found that BJW-D was a marginal negative predictor of restitution offered ( $t(290) = -1.95, b = -176.88, p = .053$ ) and BJW-P was a significant positive predictor ( $t(290) = 2.60, b = 388.62, p = .010$ ).

We also regressed the amount of money donated on BJW-D, BJW-P, and the interaction term of the two, and found no significant effects for the interaction term ( $t(273) = 1.96, b = .003, p = .845$ ), BJW-D ( $t(273) = .164, b = .016, p = .870$ ), or BJW-P ( $t(273) = -1.03, b = -.065, p = .305$ ). Again, we eliminated the interaction term from the regression model. Regressing donation on just BJW-D and BJW-P, we found a significant positive prediction of BJW-D ( $t(274) = 2.67, b = .036, p = .008$ ) and a significant negative prediction of BJW-P ( $t(274) = -2.40, b = -.053, p = .017$ ).



## Discussion

Overall, support for our hypothesis was mixed. Our first dependent variable, the amount of compensation offered in the role of Justice Czar, provided some evidence in favour of our hypothesis, as a small but significant relation demonstrated that people with higher prescriptive beliefs in a just world offered more money as compensation to victims, suggesting that they considered the events described in the vignettes to be more unjust than those with lower prescriptive beliefs. We also found that higher descriptive belief in a just world was related to a lower amount of compensation offered to victims, which, though counter to our hypothesis that descriptive beliefs would be unrelated to compensation, is still largely in keeping with some of our earlier findings that BJW-D can serve a hierarchy maintaining motive. These findings were also bolstered by the fact that when controlling for descriptive beliefs (i.e., the regression analysis), prescriptive beliefs were a significant positive predictor of victim compensation.

This moderate support for our hypothesis, however, was undercut by the results on our second dependent variable, the amount of participant compensation that was given to charity. In this case, not only did we find a lack of support for our primary hypothesis in this study, with prescriptive beliefs predicting less giving to charity, we also found that descriptive beliefs were positively related to charitable giving. This pattern is the opposite of our hypothesis, as well as the general patterns of findings from our earlier studies.

Though these findings do not provide strong support for our hypothesis, there is reason to believe that flaws in the design of the study reduced our ability to detect meaningful patterns. First, looking at the standard deviations for our two dependent

variables shows that there was a tremendous amount of variance in both of the variables. Victim compensation demonstrated a standard deviation that was almost a quarter of the total scale ( $SD = 2378.17$ , on a scale of 0 – 10,000), and the standard deviation for charitable donations was more than a third of the total scale ( $SD = .341$ , on a scale of 0 – 1). With so much variance, even if a meaningful effect did exist, we would have difficulty detecting it.

Second, this is the only study in which we measured anything after the administration of the BJW scales. This was considered necessary, because the charitable donation measurement required participants to believe that the study was over. Telling the participants that the study was over, and then immediately giving them more surveys to complete seemed like it would undermine the likelihood of participants remaining engaged with the study. However, because the charitable giving DV was assessed following forced deliberation about issues of justice and fairness, it is possible that we undermined our ability to detect differences in charitable giving. The compensation measure, which was obtained prior to administration of the BJW scales (like all of the key DVs in our other studies), yielded more supportive evidence, which is encouraging.

We also may have found the charitable donation results because of differences in attitudes towards government intervention vs. charitable donation as a means of alleviating injustice. As discussed earlier, BJW is associated with political conservatism in the United States (Dittmar & Dickinson, 1993), where one component of the right-wing preference for non-governmental solutions to poverty and injustice is commonly referred to as Compassionate Conservatism, which is the belief that charities and religious organizations are a more effective means of alleviating social problems than are

targeted government programs, and that the government's role should instead be to support these organizations as they develop and administer solutions (Olasky, 2000). As such, it is plausible that the relation between BJW-D and political conservatism was responsible for our unexpected results on the charitable donation dependent variable (where BJW-D was positively related to donations).

### **Study 5**

The final study focused on the effector portion of the theorized homeostatic system, which is responsible for restoring balance to the system when the receptor detects that the variable's state is outside the boundaries of the maintenance range. In the case of the Justice Motive, this would be the portion of the system that is responsible for initiating strategies that restore the Belief in a Just World when the belief is threatened. These were conceptualized earlier as strategies that can be either rational or irrational.

As discussed earlier, recognizing that there are differences across individuals in the strategies that they are willing to use to protect their belief in a just world is one of the critical insights of our model. That is, in the context of a homeostatic process, differences in preferred means of achieving the equifinal goal of restoring homeostasis do not directly imply differences in the strength of the motivation to achieve that goal.

In this study, participants were again asked to read the same series of justice-relevant vignettes. Participants were asked how unjust they believed the events of the vignette to be. They were then given an additional piece of information that was compatible with irrational strategies, and were asked whether, given the new piece of information, an injustice had actually occurred. This allowed us to investigate differences

in the willingness to embrace irrational strategies amongst individuals who vary in terms of both BJW-D and BJW-P.

We predicted a main effect of BJW-D, such that those who are high in BJW-D would generally be more accepting of irrational strategies compared to those low in BJW-D. Given that Study 3 failed to find consistency across high BJW-D individuals in how they attended to injustice, we expected to find that those high in BJW-D would be more willing to embrace irrational strategies when the opportunity was presented as a means of maintaining their just world beliefs in the face of the threat. Additionally, we expected that individuals who are low in BJW-D but high in BJW-P would be the least willing to indicate that irrational strategies are sufficient to restore BJW, which is a key component to why these individuals have traditionally (but erroneously) been labelled as possessing a weak Justice Motive.

## **Method**

**Participants.** Participants were again recruited via MTurk. Participant eligibility was limited to native English speakers living in the United States who had at least 97% approval rating for previously completed HITs. Participants received \$1.00 as compensation for participating in the study. Out of the 351 participants who agreed to participate in the study, 302 completed the entire study. Of those, 8 failed an attentional check and were excluded from analysis. The final sample size was 294 participants (143 women, 150 men, and 1 participant who preferred not to report gender;  $M_{\text{age}} = 36.48$ ;  $SD_{\text{age}} = 11.47$ ). A statistical power analysis was performed in G\*Power in order to estimate necessary sample sizes in order to achieve power of .80 to detect a small to medium effect, for both the correlational effects and the interaction effects to be tested.

Results showed that our sample sizes were sufficient to achieve this level of power for both sets of tests.

### **Materials.**

**Vignettes.** The vignettes used were identical to the five vignettes used in Studies 3 and 4. In addition, however, there were supplementary details added. After rating the unfairness of the initial version of the vignette, a key detail was added, and the fairness of the situation was reassessed. These details were designed to be compatible with irrational strategies – specifically, they offered the participants opportunities for victim derogation and blame. For example, in the vignette about being the victim of a random act of violence while walking home at night, the additional detail compatible with irrational strategies was “As they were leaving, the three friends who got into a cab asked Timothy if he wanted to jump in with them. His place wasn’t too far out of the way for the direction they were headed. Timothy said no thanks, he was happy to walk on such a nice night.” See Appendix C for a full list of vignettes and additional details.

**Just world beliefs.** As in previous studies, we used two different just world beliefs scales, the BJW-D and the BJW-P. Also as in previous studies, instructions warned participants about the similarity between scales to avoid confusion and maintain participant attention. The two scales demonstrated good to excellent internal reliability in our sample ( $\alpha = .943$  and  $\alpha = .855$ , respectively).

**Fairness Ratings.** Twice for each vignette, participants were asked to rate the unfairness of the situation described. First, they were asked to rate the unfairness on a 7 point scale ranging from *Extremely Unfair* (1) to *Extremely Fair* (7). After giving that rating and reading the vignette’s accompanying details, participants were asked to rate

how much the additional details changed their judgment about the fairness of the situation, from *Not at All* (1) to *Much More Fair* (5).

**Attention Check.** The attention check used in this study was identical to the one used in previous studies.

### **Procedure.**

After accepting the MTurk HIT, participants answered a series of demographic questions. Participants were then asked to read the series of vignettes, again presented in fixed order. After reading each vignette, participants were asked to report the degree to which they believed the events depicted in the vignette were unjust. After answering that question, an additional detail was provided regarding the vignette, and participants were asked how much their judgment of the unfairness of the situation had changed, given the additional detail. Participants then completed both the BJW-D and BJW-P Scales. Finally, participants were presented with the single item attention check.

### **Results**

As in the previous studies, we began by aggregating means for each participant on both BJW-D ( $M = 3.78$ ,  $SD = 1.43$ ) and BJW-P ( $M = 6.07$ ,  $SD = .798$ ). Also as in previous studies, we examined gender differences on our two BJW scales. Consistent with Studies 3 and 4, we found that male participants ( $M_{male} = 4.01$ ) scored higher on BJW-D than female participants ( $M_{female} = 3.53$ ;  $t(289) = 2.92$ ,  $p = .004$ ). Contrary to Studies 3 and 4, however, we found no significant difference in BJW-P scores between males ( $M_{male} = 6.03$ ) and females ( $M_{female} = 6.12$ ;  $t(290) = -.955$ ,  $p = .340$ ).

We also averaged within participant to calculate an average of first judgments of fairness for all vignettes (i.e., initial judgments;  $M = 2.19$ ,  $SD = 1.24$ ), as well as the

average amount participants rated their fairness judgments to have changed when presented with additional details (i.e., second judgments;  $M = 1.87$ ,  $SD = .830$ ). For individual vignette means of initial and second fairness judgments, see Table 11.

Next, we examined the correlations amongst the two BJW scales and participants' initial and second fairness judgments. Missing data were handled using listwise deletion, with a missing data rate of 0.41%. BJW-D again demonstrated a small negative correlation with BJW-P ( $r(291) = -.165$ ,  $p = .005$ ). Additionally, both initial judgments ( $r(291) = .445$ ,  $p < .001$ ) and second judgments ( $r(291) = .437$ ,  $p < .001$ ) were significantly correlated with BJW-D. That is, the higher a participant was in BJW-D, the more fair they initially rated the events described in the vignettes to be, and the more they reported having increased how fair they thought the events were when details compatible with irrational strategies were introduced.

BJW-P was significantly and negatively correlated with both the initial fairness judgment ( $r(292) = -.452$ ,  $p < .001$ ) and second fairness judgment ( $r(292) = -.404$ ,  $p < .001$ ). That is, the higher participants were in BJW-P, the more unfair they believed the events depicted in the vignettes to be, and the less likely they were to change their judgments as a function of additional details. It is worth noting that, overall, initial fairness ratings and willingness to judge events as more fair after the provision of additional information were highly correlated ( $r(292) = .781$ ,  $p < .001$ ). That is, there was a strong relation between how fair participants considered the events depicted in the vignettes to be, and how willing they were to consider the events to be more fair after being presented with information compatible with victim blame and derogation.

Next, we regressed the initial fairness judgment on BJW-D, BJW-P, and the interaction term of the two. We found a significant interaction ( $t(289) = -6.09$ ,  $b = -.352$ ,  $p < .001$ ). Participants who were high in BJW-D and low in BJW-P initially judged the vignettes as more fair than other participants, both those who were high in both BJW-D and BJW-P and participants who were low in BJW-D, regardless of BJW-P (see Figures 21 and 22).

Finally, we regressed the second judgment, that is, the change in judgment of fairness in response to additional details, on BJW-D, BJW-P, and the interaction term of the two, and again we found a significant interaction ( $t(289) = -5.41$ ,  $b = -.218$ ,  $p < .001$ ). The pattern closely mirrored the pattern of the previous interaction, in which those high in BJW-D and low in BJW-P reported much more change in their fairness judgment than any other combination (see Figures 23 and 24).

## **Discussion**

Before discussing the primary results, it is worth addressing the initial fairness ratings, as this study is the only instance in which participants rated the overall fairness of each of the vignettes. Furthermore, this is a more informative test of the combined effects of descriptive and prescriptive beliefs in a just world than those from earlier studies (i.e., Studies 2a and 2b), because rather than just listing events, we described the characters and the context surrounding them. This presumably increased the emotional impact of the stories, which is critical to evoking the Justice Motive (Lerner, 2003).

As before, we can clarify the meaning of these results by contrasting a traditional understanding with one informed by the components of a homeostatic mechanism. Looking strictly at the correlations between BJW-D and initial fairness ratings, we can



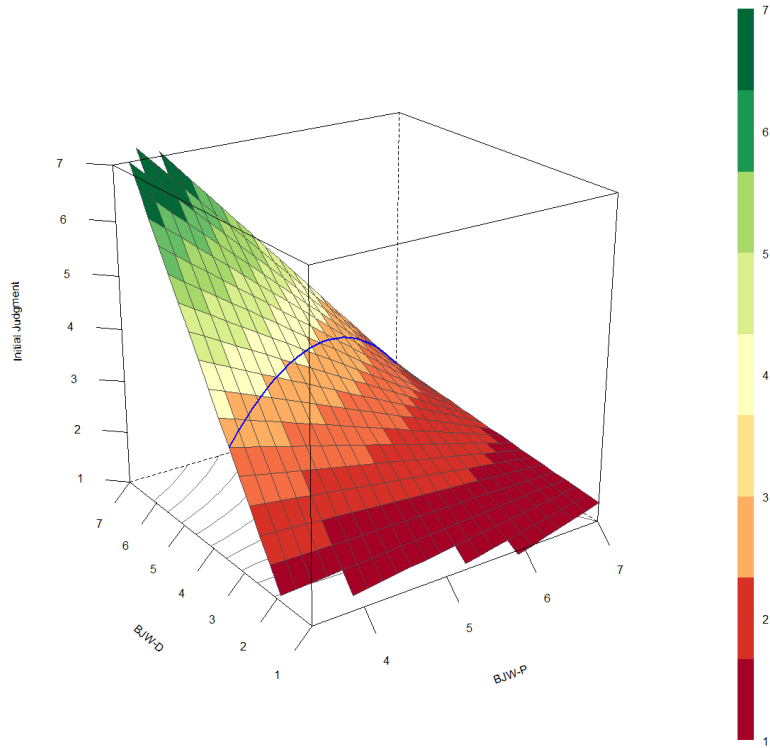
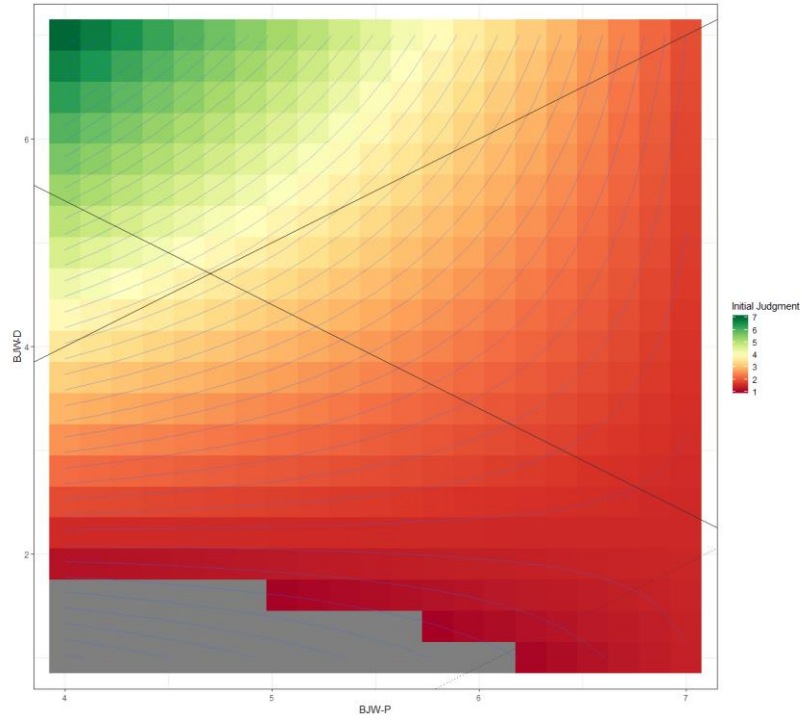
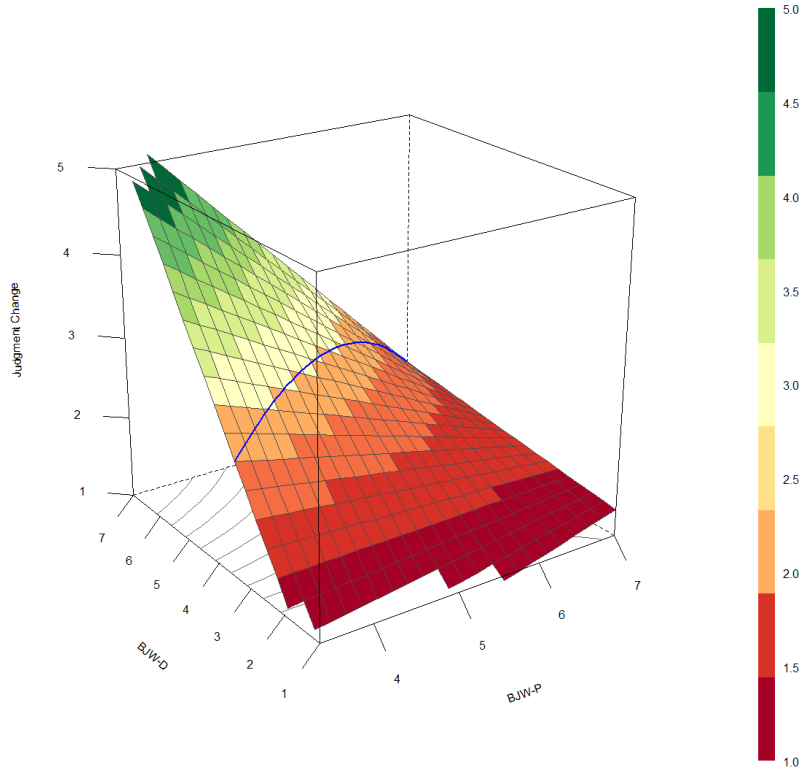


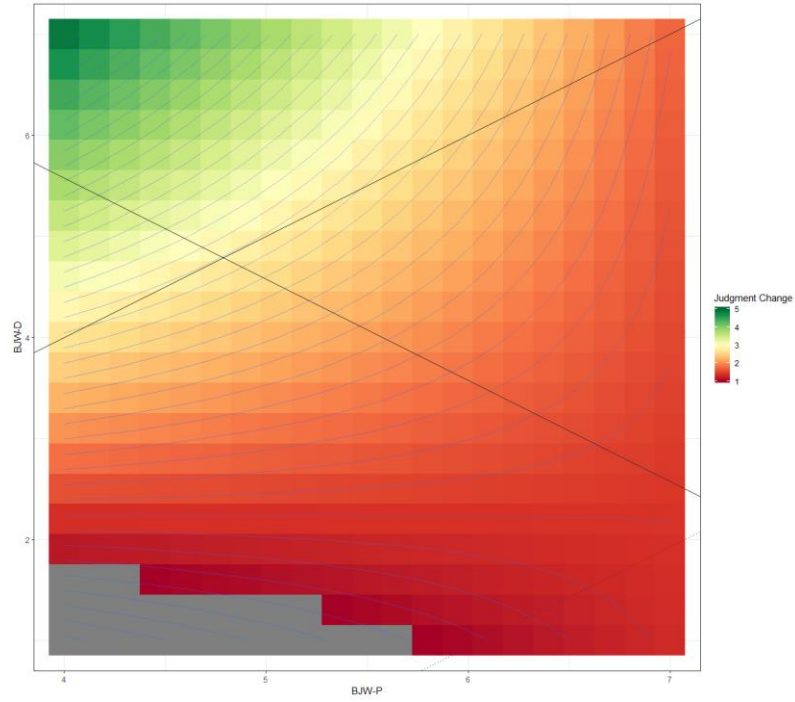
Figure 21. Saddle plot predicting initial judgments of vignette fairness with BJW-D, BJW-P, and interaction



*Figure 22.* Contour map predicting initial judgments of vignette fairness with BJW-D, BJW-P, and interaction



*Figure 23.* Saddle plot predicting change in judgment of vignette unfairness after the presentation of additional information with BJW-D, BJW-P, and interaction



*Figure 24.* Contour map predicting change in judgment of vignette unfairness after the presentation of additional information with BJW-D, BJW-P, and interaction

see that a traditional interpretation would suggest that a stronger belief in a just world predicted a higher fairness judgment. That is, those who believed the world is just reported that the events depicted in the vignettes were more fair, or at least significantly less unfair, than those who believed the world is unjust. Using strictly a descriptive BJW, we would likely interpret this as a protective mechanism against threats to the BJW.

Again, however, we can understand more clearly what is happening by looking at the interaction of descriptive and prescriptive beliefs. In doing so, we can see that not all individuals who reported believing that the world is just also believed the events depicted in the vignettes did not represent instances of injustice. Rather, it was only those who reported strong beliefs about how just the world is without a corresponding strong belief about how just the world should be who considered these events to be relatively fair. For those who held a strong belief about how just the world is and also believed that the world should be fair, the events were rated as similarly unfair compared to those who reported a belief that the world is unjust (see Table 13 for predicted values at 1 SD above and below the means for both BJW-D and BJW-P).

Examining the willingness of participants to embrace irrational strategies for maintaining the belief in a just world similarly demonstrates the value of accounting for beliefs about how just the world should be. Examining just the correlation between descriptive just world beliefs and the change in judgment caused by the additional piece of information consistent with irrational strategies, the results were supportive of a traditional conception of the Justice Motive, in that those with a strong belief in a just world demonstrated a willingness to embrace irrational strategies as a means of maintaining their beliefs. That is, the stronger the belief in a just world, the more people

Table 13. Initial Fairness Judgments as Predicted by BJW-D and BJW-P at  $\pm 1$  SD in Study 5

		Prescriptive BJW		
		-1 SD	Mean	+1 SD
	+1 SD	3.58	2.73	1.87
Descriptive BJW	Mean	2.59	2.13	1.68
	-1 SD	1.59	1.54	1.49

reported having their judgments changed as a result of the additional, irrational strategy congruent information. On its own, this could be construed as support for the idea that the stronger the Justice Motive, the more individuals will embrace any options available to them to maintain this belief.

This interpretation changes significantly, however, when we again examine the concurrent effects of both descriptive and prescriptive just-world beliefs. Looking at Figures 23 and 24, we can see that the relation between BJW and acceptance of irrational strategies predicted by Justice Motive theory was present only when people held both a strong descriptive belief in a just world and a low prescriptive belief in a just world. Looking at Table 14, we can see that this specific effect was evident even when examining plus and minus one standard deviation from the mean of each just world belief measure, as it was only the individuals who were high in descriptive beliefs and low in prescriptive beliefs who seized on the opportunity to use the irrational strategies, which led them to judge the events depicted in the vignettes as moderately more just.

These findings are very interesting from a homeostatic model perspective. If it were the case that the Justice Motive functioned as originally conceptualized, then we should have found that those who rated the events as the most unfair also found the irrational strategies most compelling. If we incorporate understanding from the individual difference in BJW literature, however, then we should have found that those who were high in BJW were the most likely to change their judgments when incorporating the irrational strategy information provided. Instead, what we found was that there are two completely different and incompatible means of believing that the world is just (that is, reporting a high BJW-D). The first way, characteristic of the high BJW-D, low BJW-P

Table 14. Change in Fairness Judgments (More Fair) as Predicted by BJW-D and BJW-P at  $\pm 1$  SD in Study 5

		Prescriptive BJW		
		-1 SD	Mean	+1 SD
	+1 SD	2.74	2.22	1.71
Descriptive BJW	Mean	2.10	1.82	1.57
	-1 SD	1.46	1.44	1.42



individuals, is one in which people generally felt the events were not unfair to begin with, but who still willingly embraced opportunities for victim blame and derogation, even without the presumed homeostatic motivation required to do so. The second way, characteristic of the high BJW-D, high BJW-P individuals, is one in which these people described the events as unfair, yet still refrained from capitalizing on the opportunity to utilize irrational strategies as a means of restoring their just world beliefs. This suggests that differences in the effector portion of the homeostatic system (the portion responsible for restoring homeostasis when the control center detects a variable that violates the boundaries of the maintenance range) is not responsible for individual differences in descriptive just world beliefs, as previously thought. Rather, that relation was driven by those who reported believing that the world is just, without feeling that it is important for the world to be just (high BJW-D, low BJW-P).

### **General Discussion**

Overall, the two primary goals of this program of research were successful. We found considerable evidence that there are different ways to believe in a just world, and that these differences can be captured by measuring the degree to which people believe the world should be fair in addition to the degree to which they believe the world is fair. Critically, we also found significant evidence of the independence of BJW-D and BJW-P. In several of our earlier studies, these scales were uncorrelated, although the sample sizes were small. Even though we found significant correlations with larger samples in Studies 3, 4, and 5, they were small ( $r = \sim .150$ ), accounting for only about 2% of the variance. More importantly, we ran two separate factor analyses, both of which found that the items for each scale loaded cleanly on their own scale with no significant cross-loadings

on the other scale. Given the typical variation in repeated factor analyses in different samples, this is strong evidence that our scales are measuring separate underlying factors.

These studies suggest that those who are high in Belief in a Just World can be so while holding very different beliefs about justice. Specifically, within those who reported a high descriptive belief in a just world, we found differences amongst people in terms of their support for social hierarchies, beliefs about what events are unfair, how unfair they judged these events to be, how frequently unfair events happen, their memory for instances of injustice, and their willingness to embrace irrational strategies, particularly victim blame and derogation, as a means of maintaining the belief in a just world in the face of justice threats.

To better understand these findings, we will briefly review some fundamental aspects of what it means to measure a motivation. Then we will discuss what our findings tell us about the different ways there are to believe in a just world, and the different ways there are to disbelieve in one. To do this, we will first examine our findings as they relate to individuals who are high in BJW-D and low in BJW-P, then use these individuals as a point of contrast to understand those who are high in both BJW-D and BJW-P. Then we will discuss what our findings tell us regarding individuals who are low in BJW-D but high in BJW-P. We will then use our discussions of all three of these groups to better understand the low BJW-D, low BJW-P individuals. Finally, we will consider what our research can tell us about what it means to have a weak vs. strong Justice Motive, before discussing the limitations of this work, and future directions that may be fruitful to explore.

### **Measurement of Motivation**

First, it is critical to review why our novel findings would be undetectable without the inclusion of a measure of how just people think the world should be, in addition to a measure of how just the world is. In the broader just world literature, there is a long history of developing more specific just world belief scales, which attempt to remedy issues with general BJW scales by being more specific about who or what the concept of justice is being applied to, such as the self vs. others (Lipkus et al., 1996; Stroebe, Postmes, Täuber, Stegeman, & John, 2015), or the time scale on which justice is functioning, such as immediate vs. immanent justice (e.g., Callan, Sutton, Harvey, & Dawtry, 2014). It is important to distinguish our prescriptive BJW scale from these other scales. Previous alternative BJW scales have been efforts to address issues with the measurement of general just world beliefs by developing specific (i.e., non-general) scales to increase the resolution with which we can understand inconsistencies in historical findings regarding general just world beliefs using more and more specific just world beliefs. That is, they are based on the idea that we can understand the general beliefs better by understanding the specific beliefs on which general beliefs are based.

This is not to disparage these types of scales. These efforts have produced many meaningful results and significantly advanced our understanding of just world beliefs. But whereas they increased understanding by developing more specific BJW scales, we sought to address a critical gap in the efforts to accurately measure general just world beliefs. This gap is essential to the concept of a “Justice Motive”.

By definition, a motivation requires a gap between the present state and a desired state (Kruglanski et al., 2002). As such, measuring the strength of a motivation without accounting for variance in the desired goal state severely inhibits the ability to draw

meaningful conclusions about that motivation. For example, imagine a “close relationships” researcher who seeks to use the strength of people’s dispositional motivation to be in a romantic relationship as a predictor of the number of dates a person goes on within a particular month. This researcher would likely find a weak relation between the strength of the motivation to be in a romantic relationship and how many dates people pursue. This weak relation would, at least in part, reflect the failure to account for those individuals who have a strong motivation to be in a relationship but whose dispositional motivation is situationally inactive as a result of the absence of a gap between the present and desired state (i.e., they are in a relationship). People who are strongly motivated to be in a relationship and are in a relationship generally do not go on many dates! A motivation, again by definition, is inactive when the goal state is achieved. This is analogous to how just world beliefs have typically been measured. A measure of beliefs about how just the world is without accounting for beliefs about how just the world should be similarly results in a weak relation, because descriptive BJW does not distinguish between those who are currently satisfied (the world matches their desired fairness) vs. dissatisfied (the world does not match their desired fairness).

### **Strong Descriptive but Weak Prescriptive Beliefs**

In examining the Justice Motive through this lens, we found a number of compelling and novel results, including that there are important differences among those who report a strong belief in a just world in how they hold and maintain this belief, depending on whether or not they believe the world should be just. Those who believe the world is just, but also are indifferent to whether or not the world should be just (high BJW-D, low BJW-P), demonstrate a number of beliefs that are consistent with the

traditional characterization of those with strong just world beliefs. They are high in SDO, RWA, and belief that the world is a meritocracy. They are also lower in their beliefs that the world should be a meritocracy, that negative life events happen frequently, and that when these events do happen, it is unjust. These individuals are most compellingly contrasted with the other group of people who report strong beliefs in a just world but who also strongly believe that the world should be fair (high BJW-D, high BJW-P). These latter individuals report some beliefs that are consistent with the previous group, but also demonstrate many beliefs and judgments that are contrary to what the literature predicts a high BJW individual believes. They report high RWA but low SDO, they believe the world is meritocratic but also believe more strongly that the world should be meritocratic, and they do not believe that negative life events happen very often but believe they are unfair when they do. Most importantly, in contrast to their high descriptive BJW counterparts, they judge events like those depicted in the vignettes to be unfair, and yet do not utilize irrational strategies when available to counter the threat to the BJW that is represented by these unjust events.

Given the typical conceptualization of the Justice Motive as a homeostatic motivation, these last results are among the most compelling findings of this research. The foundational work on the Justice Motive, and much research since then, has described the willingness to embrace irrational strategies as both indicative of the need to believe in a just world and fundamental to the maintenance of just world beliefs. In fact, the finding that was largely responsible for the birth of the individual difference literature was the finding that though almost everyone is willing to embrace rational strategies as a means of restoring their just world beliefs, only some people embrace irrational strategies

when they were available. This difference was hypothesized to be caused by differences in the strength of the motivation to believe in a just world. This raised the question of how we can measure the strength of the justice motive at the individual level, which spawned Rubin and Peplau's (1975) first individual differences measure of the belief in a just world.

Looking at all high BJW-D individuals together and ignoring BJW-P, our findings consistently support this interpretation. Inspecting the results of our BJW-D scale, that is, the version of the scale that corresponds to a traditional measure of the belief in a just world, we can see that, generally speaking, those with a high descriptive Belief in a Just World consider the negative things that happen to people to be less unfair and are more willing to embrace irrational strategies and adjust their judgments about the unfairness of a situation in light of additional information that is consistent with victim blame and derogation-based strategies for reducing the impact of threats to just world beliefs.

However, it is only when limiting ourselves to the interpretations allowed by measuring descriptive BJW that our findings match those predicted by Justice Motive Theory. When incorporating prescriptive BJW in addition to descriptive BJW, we see that, in fact, it is only high BJW-D, low BJW-P individuals who consider events such as sexual assault, theft, and racial profiling to be less unfair. High BJW-D, high BJW-P individuals, in contrast, appear quite similar to low BJW-D individuals in their willingness to label these events as unfair. If it is the case that all high BJW-D individuals possess a strong need to believe in a just world, then we would expect that high BJW-D, low BJW-P individuals would be relatively low in their need to embrace irrational strategies, given they did not perceive the events to be unfair to begin with, and high

BJW-D, high BJW-P individuals would be more motivated to embrace the opportunity to blame and derogate the character of the victims, because they reported the events to be unfair.

But this is actually the opposite of what we found. In fact, the high BJW-D, low BJW-P individuals were the only ones who demonstrated a willingness to embrace irrational strategies when the opportunity was presented, agreeing that, for example, a sexual assault that was preceded by flirting (or racial profiling that included incidental contact with a police officer) make the assault (or profiling) more fair. In contrast, despite being individuals that Justice Motive theory would predict are strongly motivated to blame and derogate the victims, high BJW-D, high BJW-P individuals were significantly less likely to do so compared to those who were high in BJW-D and low in BJW-P. In fact, the high BJW-D, high BJW-P individuals were hardly any more willing to embrace irrational strategies than those who were low in BJW-D. Taken together, this strongly suggests that it is not irrational strategies (i.e., variation in the effector portion of the homeostatic system) that is responsible for the maintenance of the BJW among all high BJW-D individuals. On the one hand, the high BJW-D individuals who were more willing to embrace irrational strategies were the ones who presumably needed them the least, and the high BJW-D individuals most in need of an opportunity to protect their BJW were the ones who rejected that opportunity.

This suggests that perhaps we need to look at another component of the homeostatic system in order to understand how these latter individuals maintain their BJW. Examining memory for justice-relevant details from these stories of injustice allowed us to see whether the boost in salience and memory for justice-relevant details

was equally present among all people, especially those with a high BJW. If differences in the effector portion of the homeostatic system (the portion responsible for restoring balance to the system when a violation of the maintenance range is detected) are not responsible for how people maintain their just world beliefs, then perhaps we can see evidence that people are attending to or remembering the justice-relevant details selectively, in a way that allows for this maintenance, particularly amongst those who were unwilling to embrace irrational strategies, yet still demonstrated a high BJW.

But again, this is not what we found. In fact, it was once again high BJW-D, low BJW-P individuals who stood out as unusual, demonstrating significant decrements in their ability to remember justice-relevant details. High BJW-D, high BJW-P individuals once again were basically indistinguishable from low BJW-D individuals, demonstrating just as reliable a memory for the justice-relevant details. This suggests that it is not a lack of attention to or retention of justice-relevant details that allow high BJW-D, high BJW-P individuals to maintain their just world beliefs.

In order to interpret these results, it is useful to consider additional motivations, other than the Justice Motive, that may lead to the expression of a high BJW. One well documented motivation for expressing a high BJW that is independent of the Justice Motive derives from findings that support the injunctive normativity of the BJW, that is, findings which suggest that individuals believe that people “should” express a high BJW. Alves and Correia (2008; 2010a) have found that people judge others more positively when they express a moderate or high BJW, and that, when trying to be likeable, people convey a moderate or high BJW. Additionally, people associate a moderate or high BJW with social utility, meaning that people generally believe that in order to present oneself



as competent, confident, intelligent, responsible, etc., one should report a strong belief in a just world. Together, these studies indicate that people generally find the expression of higher levels of BJW to be socially desirable, that people consider the expression of low BJW to be counter-normative, and that people are generally in agreement that if they were trying to present themselves in a positive light, they would express a high BJW.

Thus, it is known that a high BJW can be used as a means of maintaining a positive image, and our findings are consistent with the idea that this may be what the high BJW-D, low BJW-P individuals are doing. One key finding of ours that supports this interpretation is the high levels of SDO found exclusively within this particular subset of people. SDO has been found to relate positively to a willingness to use deception in signalling commitment to a group (Heylen & Pauwels, 2015). Those who are higher in SDO are more supportive of signalling commitment to a group when it serves their individual goals. More recently, Sinn and Hayes (2018) examined differences in the social adaptation strategies endorsed by those who are high in SDO. Higher SDO was related to the endorsement of both ruthless self-advancement and deception/manipulation as a means of managing one's rank in a social setting. More specifically, those higher in SDO more strongly endorsed deceptive self-promotion, the derogation of others, and the exclusion of others as means of advancing one's own rank. SDO was also negatively related to the endorsement of pro-social rank management strategies, including coalition building strategies, such as helping others and cultivating friendship, but also industriousness/knowledge-based strategies, such as displaying knowledge or obtaining additional education.

In addition to these rank management strategies, Sinn and Hayes (2018) also assessed the relation between SDO and life history speed. Life history speed refers to a general preference for a specific life strategy that falls on a continuum from “fast-life strategies” (i.e., short-term, low investment, low altruism, and high risk), which are optimally suited to a high variance, low resource environment, to “slow-life strategies”, which are the opposite. SDO was significantly correlated with life history speed, such that those who were higher in SDO reported a faster life history speed, suggestive of general social strategies that prioritize resource acquisition and deception over social connection and honesty. Taken together, these findings suggest that, given the uniquely high SDO amongst high BJW-D, low BJW-P individuals, it is plausible that these people are strategically reporting a high BJW as a means of deceptively presenting themselves in a socially acceptable light, while allowing for them to pursue selfish means independent of the justice of the situation presented.

This interpretation is also consistent with the uniquely high Justice Sensitivity scores reported by high-D, low-P individuals on the victim perspective subscale. Previous research has found that, although there is some degree of victim sensitivity that is related to a general sensitivity to injustice, the victim sensitivity subscale is also uniquely related to a number of self-related concerns (Gollwitzer, Schmitt, Schalke, Maes, & Baer, 2005). Specifically, those who scored higher on the JSSvic subscale were more likely to deny responsibility for participating in the mitigation of existing disadvantages, were less willing to participate in efforts to improve conditions for disadvantaged others, and had a heightened willingness to participate in immoral or counter-normative activities when it was to their benefit.

Finally, our interpretation of high-D, low-P individuals being manipulative in their report of a strong BJW is consistent with our findings regarding descriptive and prescriptive merit beliefs. We found that descriptive merit beliefs, that is, belief that the world currently functions as a meritocracy was positively related to descriptive BJW, whereas prescriptive merit beliefs, the belief that resources should be allocated according to merit, was positively related to BJW-P. The relatively low PMP scores for those low in prescriptive BJW is particularly interesting, because the PMP scale has no group based component to it and, therefore, no implications of changing status between groups. It is almost entirely workplace and school related (plus one general item). This is important, because the need to believe in a just world is supposedly rooted in the idea that the world is fair and orderly, and that efforts will be rewarded (e.g., Lerner, 1977; Hafer, 2000b), and yet those low in BJW-P (including those high in BJW-D) do not even support the idea that people should be recognized and rewarded for the work they do. This brings us back full circle, to the idea that these individuals may oppose such ideas because they prefer to achieve their own goals through manipulation and free-riding. In fact, a world in which people were only rewarded in proportion to their efforts would be a sub-optimal world in which to apply these individuals' preferred social strategies. This might provide a plausible explanation for why Hafer (2000b) found only a weak relation between long-term orientation and descriptive BJW. The greater long-term orientation of those with a strong justice motive may have been diluted by those who report believing the world is just, but who actually prefer a fast-life history strategy, the exact opposite of a desire for long-term planning.

In summary, those who are high in BJW-D and low in BJW-P are individuals who (like most people) know that there is social benefit to proclaiming a high BJW. They do this while supporting beliefs that are typically associated with dishonesty and willingness to deceive ingroup members. They report beliefs consistent with a preference for fast-life strategies, characterized by openness to cheating, desire to acquire resources, and a lack of long-term planning. Their high victim sensitivity suggests they are unwilling to participate in efforts to improve the lots of disadvantaged others, even though a rational strategy of this sort is supposed to be one of the most universal outcomes of a functioning Justice Motive. And they support hierarchy legitimizing beliefs, while simultaneously demonstrating a lack of support for equitable rewards for those who work the hardest. Labelling people like this as possessing a strong Justice Motive seems to violate several of the most fundamental components of the need to believe in a just world.

### **Strong Descriptive and Strong Prescriptive Beliefs**

How, then, do high BJW-D, high BJW-P individuals maintain their just world beliefs, if not through the components of the homeostatic system, as measured by studies 3, 4, and 5? Several of our findings, taken together, point to a plausible interpretation. First, it is noteworthy that these individuals are relatively insensitive to injustice, both in terms of victim sensitivity and general justice sensitivity. This is consistent with a homeostatic interpretation, in that it suggests that, even though these individuals may have a strong belief about how just the world should be, their insensitivity to injustice may make it harder for these individuals to *perceive* events as unjust. That is, even though their need to believe in a just world is strong when activated by an unjust event, their insensitivity to injustice makes it less likely that any given event will reach the

emotional threshold necessary to perceive a gap between how just the world is and how just they believe it should be. Second, the negative correlation between descriptive BJW and estimates of how often negative events happen to others, combined with the positive correlation between negative event unfairness ratings and prescriptive BJW, suggests that these individuals believe that negative events are unfair when they do happen, but that, overall, they do not happen very often. Finally, the correlation between prescriptive merit beliefs and prescriptive BJW suggests that they have stronger beliefs that rewards should be portioned out according to merit. That is, people should get outputs commensurate with their inputs.

The combination of these findings suggests that high BJW-D, high BJW-P individuals may be something akin to Justice Optimists. In a review of Dispositional Optimism, Carver and Scheier (2014) state that optimists generally have more vivid mental images of future positive events than pessimists, which creates a sense of pre-experiencing those events. Optimists are also less sensitive to and better able to disengage from pain, reducing their subjective experience of it. Finally, during difficult times, such as times of extended unemployment, optimists maintain higher life satisfaction, find more benefits to the situation, and more frequently apply problem-focused thinking to the situation. This may be analogous to the just world beliefs of the high BJW-D, high BJW-P individuals.

For these individuals, it may be that the experience of unjust events is real, but their relative insensitivity means that their subjective experience of these events is not as frequent or acute as for some others. Also, their general beliefs about the world are skewed towards positive instances in which people do get what they deserve, leading

them to believe that, overall, things are generally pretty fair. And just as a single negative outcome does not immediately convince an optimist that things are going to turn out badly forever, a single negative event, unjust though it may be, does not immediately convince these individuals that the world is generally unjust. Finally, viewed through the lens of Son Hing et al. (2011), we can take these reported beliefs as being genuine, because strong prescriptive merit beliefs indicate genuine support for a distributive justice principle that endorses challenges and changes to the status quo.

It could be argued that the fact that these individuals rated the events in the vignettes to be unfair is evidence that they are not justice optimists, but we disagree with this interpretation, because the events depicted in the vignettes were designed to be clear and poignant depictions of injustice. This overt injustice should be clear even to someone biased towards interpreting ambiguous events as just (as a Justice Optimist might). The perception of these events as specific and clear instances of injustice is not inconsistent or incompatible with a general belief that the world is or should be just. Put another way, it is not illogical or impossible to simultaneously hold the beliefs that unjust things sometimes occur but the world is generally just, any more than a general belief that the world is unjust implies a belief that instances of justice never occur.

### **Weak Descriptive but Strong Prescriptive Beliefs**

To this point, we have discussed different ways that people can believe in a just world. The reported studies also provide new insights into different ways that people can believe that the world is not just. First, we will consider individuals who have weak beliefs that the world is just, but strong beliefs that the world should be just (low BJW-D, high BJW-P).

These individuals seem particularly attuned to injustice. They believe that negative events happen to people regularly and that these events are unfair. They believe that people are regularly treated badly as a result of their gender or ethnicity. They have good memory for incidences of injustice, and readily label these events as unjust. When presented with the opportunity to use irrational strategies as a means of alleviating these concerns, they reject them, appearing to be unwilling to blame or derogate victims for the bad things that happen to them. This is further bolstered by the finding that this group demonstrates a uniquely high Justice Sensitivity, separating them from all others in the degree to which they are made uncomfortable by perceptions of injustice occurring both in general and specifically to others. Although they demonstrate the heightened victim sensitivity that was also found for high BJW-D, low BJW-P individuals, victim sensitivity can function either as a self-interested mechanism or as part of a general and genuine sensitivity to injustice (Gollwitzer et al., 2005). The fact that these individuals are sensitive to both injustice against themselves and injustice befalling others suggests that they are genuinely sensitive to injustice, as reflected in their uniquely high general Justice Sensitivity scores.

Beyond their judgments about individual instances of injustice, we also know that they are unsatisfied with the system as it functions in general, demonstrating a lack of support for all system justification related variables we measured: they believe that the world should be less hierarchical and that no group should have disproportionate power or access to resources compared to other groups; they are not traditionalists and do not concede that the dicta of authority are sufficient to determine when things are just and when they are not; and they do not believe that resources are distributed according to

merit, but rather that gender and ethnic identity systematically undermine meritocratic distributions.

At the same time, these individuals report strong beliefs about how the world should be. They show strong Preference for the Merit Principle, believing that everyone should receive outputs that are commensurate with their inputs. And, of course, they strongly believe that the world in general should be just. In short, these individuals reject everything we measured that says the world is fair and should stay the way it is, while embracing everything we measured that says the world is not fair and needs to change for the better.

In some ways, these individuals represent the traditional view of a weak justice motive, which assumes that in order to believe the world is unfair, you must have a weak motivation to believe in a just world. But, in fact, it seems that, though they may be less motivated than others to engage in irrational strategies as a means of believing in a just world, they are in fact more motivated than any other group to make the world just, which is, in fact, the primary means for restoring justice posited by early Justice Motive theorists (e.g., Lerner, 1980).

Recall, the Justice Motive, that is, the goal to achieve a Belief in a Just World, is an equifinal goal, and as such, there are many means that can be utilized to attain that goal. This does not suggest, however, that everyone has the same range of means available to them. Low BJW-D, high BJW-P individuals demonstrated in the current studies that there are certain means of believing in a just world that they are unwilling to use, including victim blame and derogation in specific instances, and any form of system justification at a broader level. Given that we also found them to be very sensitive to



injustice, it is plausible that these individuals actually see blaming the victim for something that was not their fault, or justifying an unjust system, as worsening injustice. Obviously, this would not help them to restore a belief in a just world.

It is also critical to remember that, in the context of an equifinal goal, the fewer means there are associated with a specific goal, the stronger the strength of association between any one means and a specific goal. For low-D, high-P individuals, who seem to have relatively few means for maintaining the belief in a just world, it may be that pursuing a more just world is the only means acceptable to them for achieving the goal of believing in a just world. Given that Justice Motive Theory would assume that people who are highly motivated to improve the world have a strong Justice Motive, it is plausible to view low BJW-D, high BJW-P individuals as possessing the strongest justice motive of all four combinations of BJW-D and BJW-P. That is, paradoxically, certain individuals who do not believe that the world is currently just are those who work the hardest to make the world just. To satisfy their motivation to believe in a just world, their only available option is to reject instances of injustice and pursue a different and better world. Though this interpretation differs from the traditional interpretation that the motivation to make the world more just is independent from the need to believe in a just world (because the traditional assumption is that everyone wants to make the world more just, if possible), it is actually consistent with conceptualizations of the Justice Motive, so long as we allow for the existence of variation in the range of means that are acceptable to individuals in their pursuit of the goal of believing in a just world.

One less clear aspect of our findings as they relate to these individuals is that in Study 5, they were very similar to the high BJW-D, high BJW-P individuals and to the

low BJW-D, low BJW-P individuals on their initial judgments of the unfairness of the vignettes, and their unwillingness to adopt irrational strategies as a means of restoring just world beliefs. We suspect, however, that floor effects may account for this pattern of similarity, because everyone except for the high BJW-D, low BJW-P individuals considered these vignettes to be unequivocal examples of injustice, and that the irrational strategies did little to restore justice. To detect differences between these three groups, we may need to increase the variability of the degree of injustice depicted in the vignettes. It would also be very interesting to examine differences in the willingness or enthusiasm to embrace rational strategies. Although it has traditionally been assumed that everyone is roughly equally willing to embrace rational strategies, the increased resolution of the combined BJW-D and BJW-P scales may reveal previously undetected differences. Specifically, this would allow us to investigate whether low BJW-D, high BJW-P individuals are particularly motivated to pursue rational means of restoring just world beliefs.

### **Weak Descriptive and Weak Prescriptive Beliefs**

The individuals in the remaining group are perhaps the most difficult to understand. These individuals report believing both that the world is not just (low BJW-D) and also that it does not matter (low BJW-P). Similar to low BJW-D, high BJW-P individuals, they believe that bad things regularly happen to other people, but unlike that other group, and similarly to high BJW-D, low BJW-P people, they do not think that these events are particularly unfair. They share the former group's belief that the world is not a meritocracy, but they share the latter group's belief that it should not necessarily be one. They offer no justification for the world as it exists, in that they do not believe that

the world functions better when some groups have more power than others and do not believe that traditional ways are better or that authority should be inherently trusted and respected. They are insensitive to justice in general, both in terms of others acting unjustly towards them and witnessing injustice occurring to others. Yet, when stark instances of injustice are presented to them, they are virtually indistinguishable from high BJW-D, high BJW-P and low BJW-D, high BJW-P individuals. They show the same memory for justice-relevant details, they rate the events as similarly unjust, and they are just as likely as those other groups to reject the opportunity to victim blame and derogate as a means of restoring their beliefs in a just world.

Though applying an exact label to this group is difficult with the limited information we have about them, it may be that these individuals could be described as something akin to justice realists. They believe that the world is unjust, but they indicate no evidence of compensatory beliefs. They simply accept that the world is unjust. Indeed, these individuals may offer us the clearest picture of what someone with a truly weak need to believe in a just world actually looks like. They are insensitive to injustice in general, but when they do detect it, they show no motivation to rectify it by any means, either rational or irrational. They demonstrate no motivation to justify the world or the current system, even though they readily confess to believing that the world is not just. Simply put, these individuals are the only ones who demonstrate none of the central components of the traditional conception of the need to believe in a just world, nor any of the components suggested by a homeostatic interpretation.

### **Conceptualizing Strong vs. Weak Motivation**

Our findings (as well as a more rigorous homeostatic perspective) suggest the need to reconceptualize what it means to have a strong or weak Justice Motive. Of particular interest are the findings regarding the high BJW-D, high BJW-P individuals. Given their strong beliefs in a just world, these individuals would typically have been characterized as having a strong need to believe in a just world. However, they show no evidence of several of the hallmarks of strong need to believe in a just world. In particular, they demonstrated an unwillingness to engage in victim blame and derogation as a means of alleviating threats to the belief in a just world. In contrast, those who do embrace these irrational strategies (the high BJW-D, low BJW-P individuals) report judging the events to be fair, which suggests that these instances of clear injustice are not threatening. Classifying both of these groups as having a strong Justice Motive seems misguided.

This confusion is further compounded by our earlier discussion about how to interpret the desire to make the world a more just place. Though the individual differences literature has typically drawn a distinction between the motivation to believe that the world is just (which is assumed to vary between individuals) and the motivation to make the world a more just place (which is assumed to be a preferred strategy of all individuals), we would argue that this distinction is inherently illogical, because the motivation to make the world a more just place is a fundamental component of Lerner's conceptualization of the justice motive.

These findings and theoretical concerns together point to a need to reconceptualize the Justice Motive. First, we need to refrain from interpreting a state belief (BJW-D) as the strength of a motive, by incorporating prescriptive beliefs. Though

there is much work still to be done to establish BJW-P's exact role in assessing the strength of the Justice Motive, incorporating it together with BJW-D generates novel hypotheses. For example, if prescriptive beliefs are a better reflection of the strength of the Justice Motive, then high BJW-D, high BJW-P individuals are people who have a strong motive to believe in a just world, but like someone who wants badly to be in a relationship and is currently in a relationship, the motivation is satisfied. We would not expect them to be active champions for change, nor to require elaborate compensatory mechanisms to satisfy their need to believe in a just world, because they already believe that it is just, presumably due to differences in things like general insensitivity to injustice. Although this would mean that these individuals' beliefs can sometimes serve a system-justifying purpose, this is not deliberate or intentional, as suggested by their rejection of ideas like those represented by SDO.

This reinterpretation would also allow us to identify the low BJW-D, high BJW-P individuals as possessing a strong Justice Motive. For some individuals, embracing irrational strategies as a means of restoring the belief in a just world is an inherently unjust act itself, meaning that these strategies exacerbate, rather than alleviate, the amount of injustice. But these individuals can still be classified as possessing a strong Justice Motive, because the perceived gap between how just the world is and how just it should be motivates them to seek the restoration of justice in the only way that they embrace, namely, making the world more just.

Accounting for the gap (or lack thereof) between the current state and desired state, a fundamental feature of goal functioning, allows a single Justice Motive process to repair two seemingly contradictory fractures in the literature. First, it addresses the

fracture between the Justice Motive and the BJW individual difference literatures, by allowing us to differentiate between those who believe in a just world because of a strong Justice Motive versus those who report believing in a just world to satisfy unrelated motivations. Second, it allows us to incorporate the desire to make the world more just as an important component of the Justice Motive, by allowing that someone can possess a strong Justice Motive and yet still report believing that the world is not just (low BJW-D and high BJW-P).

### **Limitations and Future Directions**

One potential limitation of this research is the use of fictional vignettes. It may be the case that because participants were reading stories about strangers with no indication that these things had ever happened, some or all participants did not experience activation of the emotional systems that are essential to the functioning of the Justice Motive (Lerner, 2003). There are two reasons, however, to think that this was not the case. First, the events were based on real-life events, several of which were either important news stories (e.g., racial profiling in coffee shops) or events that are known to happen with some regularity (e.g., sexual assault). Second, narrative stories, regardless of truth or fiction, are affectively engaging. The emotional experience of reading narrative fiction affects us not just while reading, but can also have emotional impacts that last beyond the reading of the story and into real life (Mar, Oatley, Djikic, & Mullin, 2011). So, though it is plausible that real events would impact individuals differently, it is also reasonable for us to assume that these vignettes were meaningfully impactful in the absence of evidence to the contrary.

Another possible shortcoming of these studies is based on the exploratory nature of the earlier studies (i.e., Studies 1a, 1b, 2a, and 2b). Given that we ended up splitting our sample amongst combinations of both of the other focused scales and the self focused scales, it is possible that we sacrificed the power necessary to detect interactions on top of those that we found. For example, with additional power in Study 2b, we may have found an interaction for RWA, rather than simply a correlation with BJW-D. We may also have found some interactions in terms of the combined ability of BJW-D and BJW-P to predict how often people believe negative events happen to other people or how unfair these events are when they occur.

As a nascent body of research, this research program leaves us with many questions. The most pressing need may be for work clarifying exactly what the components of the homeostatic system are and how to measure them carefully and reliably. This will be a difficult process, because of the inherent overlap between the three components and the lack of clarity in terms of the timeline on which the components function.

The maintenance range is particularly difficult to assess, because it interacts with the other components of the system. For example, it is hard to separate out the detection of injustice by the receptor system and the signal from the control center indicating that the information perceived represents a violation of that range, when both rely on the detection of injustice. Similarly, the effector system's ability to re-establish homeostasis is dependent on the receptor system's monitoring of the variable in relation to the maintenance range. Overall, when all three components are necessary but none are sufficient to activate the processes ascribed to the Justice Motive, it is difficult to parse

the independent contributions of each. In the future, if we can combine existing measures, such as the PMI and PMP, with our novel measures and validate their combined use, then we may be able to develop more sensitive means of selectively measuring each of the three homeostatic components independently.

It is possible, however, that we may require more advanced methods to accurately model the three independent components of the system. For example, Multinomial Modeling provides a way to measure the independent contributions of separate processes by setting up a series of dichotomous decisions in which different aspects of the decisions being made generate conflict between the components. By measuring a series of responses to these binary options (where the two conflicting options each represent a separate component), it is possible to account for the independent contributions of each process. In fact, the Justice Motive lends itself quite well to this process, because judgments of justice vs. injustice readily facilitate a binary response system.

### **Conclusion**

Overall, this research has provided compelling initial evidence that there are different ways to believe in a just world. In addition, it has demonstrated the utility of using a prescriptive BJW scale in conjunction with a traditional descriptive BJW scale, in order to differentiate between different patterns of belief. The inclusion of a prescriptive scale should prove useful in the future as a means to better understand and conceptualize the Justice Motive, and may facilitate a narrowing of the schism between the Justice Motive and the individual difference BJW literatures. Nonetheless, we would caution against using the four quadrants of belief patterns as anything more than a narrative device for discussing and understanding different combinations of BJWs. In conclusion,



although there is much work to be done in clarifying exactly what aspects of the Justice Motive are reflected in BJW-D and BJW-P, we believe that future researchers would benefit from using both scales when studying individual differences in BJW, and that not doing so would be sacrificing an opportunity to more clearly understand the different ways that people hold and maintain their Beliefs in a Just World.

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### **Appendix A – Self vs. Other Scales Inclusion/Exclusion**

In our initial exploratory studies, Studies 1a, 1b, 2a, and 2b, we included four versions of the BJW scales, descriptive and prescriptive beliefs for others, and descriptive and prescriptive beliefs for the self. These were included because we believed they may tap into different components of the Justice Motive in a way that would have given us some insight into how these belief systems reflect different combinations of genuine and motivated justice beliefs, as well as how these beliefs correspond to real world experiences. Generally, we administered the original scale (BJW-D) to everyone, in addition to one of the three additional scales. In one study (1b), we randomly administered any two of the four scales. This approach is the reason that the degrees of freedom are so uneven in some statistical tests in these studies (i.e., tests of BJW-D and measures given to everyone, such as SDO, reflect the full sample with DFs of ~300, whereas tests that include both BJW-D and BJW-P, or just BJW-P on its own, have DFs of about a third of the sample, or ~100).

After four studies, however, we concluded that the inclusion of the self scales made the results unwieldy and did not add meaningfully to interpretation, for two reasons. First, across samples, the two descriptive versions of the scale (self-other) and the two prescriptive versions of the scale (self-other) were very highly correlated (a minimum of  $r = .756$ ), suggesting that the pairs of scales were largely redundant. Second, the main difference in findings between the pairs of scales was the self-scales' (especially the BJW-DS scale's) consistent correlations with positive life experiences and their attendant fairness ratings, which suggests that BJW for the self is not a prevention-focused motivation (which should not respond to positive events). Overall, the self scales

did not help us better understand the descriptive and prescriptive components of the BJW. Because their inclusion did not meaningfully add to our understanding, and for reasons of space, we have excluded the results from the main text. Results are available upon request.

## Appendix B – Detailed Factor Analysis Results

### Study 2a

We examined the factorability of both the frequency of life experiences for the self scale and the fairness of life experiences for the self scale. A priori to factor analysis, we separated the scale into positive life events and negative life events subscales, in order to allow for independent evaluation of the impact of negative and positive events on a theoretically prevention-focused motivation. Principal components analysis was used because our primary goal in identifying factors was to compute composite scores for the underlying factors of the FLE-S and ULE-S.

First, we examined the positive life events for self subscale (PLE-S) of the FLE-S. The initial principal components analysis revealed three factors that exceeded the Eigenvalue > 1 criterion, with Eigenvalues of 2.29, 1.47, and 1.01 respectively. The first factor explained 32.71% of the variance, the second factor explained 20.93% of the variance, and the third factor explained 14.48% of the variance. Using varimax rotation in order to examine the loadings of each items on the hypothetical factors, we found that the three-factor structure yielded a solution that was uninterpretable. Because we were unable to infer any additional meaning from the factor structure of the PLE-S, we proceeded to treat it as a single factor throughout analysis.

Next, we examined the negative life events subscale of the FLE-S. Again using an Eigenvalue > 1 criterion, our initial analysis revealed four factors, with Eigenvalues of 3.71, 1.50, 1.10, and 1.02, respectively. The first factor explained 26.50% of the variance, the second factor explained 10.73% of the variance, the third factor explained 7.89% of the variance, and the final factor accounted for 7.32% of the variance. The varimax

rotated factor structure revealed that only two items loaded on the third factor, and four items loaded on the fourth factor, neither of which were interpretable. The lack of items loading on these factors, combined with their diminishing ability to explain further variance above and beyond the first two factors led us to force a two factor solution, which yielded a much more interpretable solution. The two factors Eigenvalues and variance explained were identical to that described above, but were much more clearly interpretable. Ten of the fourteen items demonstrated primary loadings above .50 with cross-loadings that did not exceed .35. After eliminating the four items that did not load on any factor, we ran a final principal components analysis with varimax rotation, again forcing a two factor solution. Cumulatively, the two factor solution accounted for 47.24% of the variance, with the first factor accounting for 32.71% of the variance, and the second factor accounting for 14.54% of the variance. All items in this analysis had primary loadings over .50 and cross-loadings below .35. Examining the factor loadings, the first factor appeared to describe instances of poor treatment in interpersonal contexts, such as suffering discrimination because of your religion or ethnicity, or having been bullied. As such, we refer to this factor as the interpersonal factor. The second factor appeared to describe instances of bad luck, or the unfortunate life events that are relatively likely to happen to most people eventually, such as having been in a car accident or having suffered a death in the family. As such, we refer to this factor as the bad luck factor.

We repeated this process with the ULE-S. However, because we were primarily interested in the impact of negative events, we only measured perceived unfairness for the negative events subscale. Using an Eigenvalue > 1 criterion, our initial analysis

revealed three factors, with Eigenvalues of 4.20, 2.25, and 1.01, respectively. The first factor explained 38.19% of the variance, the second factor explained 20.48% of the variance, and the third factor explained 9.16% of the variance. The varimax rotated factor structure revealed that only two items loaded on the third factor, both of which demonstrated cross-loadings of above .35. As such, combined with the relatively little additional variance explained by the inclusion of a third factor, we once again forced a two-factor solution, which demonstrated the same Eigenvalues described above.

Examining the factor structure revealed 10 out of 11 items with primary factor loadings above .50 and cross-loadings below .35. The remaining item had a primary loading of .44, and a low cross-loading of .18, so it remained included in the final two-factor solution. The interpretation of the factors of unfairness ratings of negative life events revealed a structure almost identical to that found for the frequency of these events, though with the factor order reversed. The first factor seemed to reflect the perceived unfairness of having been the victim of bad luck events, such as having food poisoning or having written an exam that was unreasonably difficult, whereas the second factor captured the perceived unfairness of having been treated badly by others in an interpersonal context, such as being harassed in a job setting or being the victim of an untrue rumour. Once again, we refer to these factors as the bad luck factor and the interpersonal factor, respectively. This parallel structure is particularly compelling in that there is no obvious reason to assume that people would parse the relatively concrete estimates of the frequency of negative life events and the more abstract concepts of how unfair these events are in the same way.

Finally, we examined the factorability of the items from the combined BJW-D and BJW-P scales. Using an Eigenvalue  $> 1$  criterion, our initial analysis revealed two factors, with Eigenvalues of 5.40 and 4.94, respectively. The first factor explained 38.54% of the variance and the second factor explained 35.32% of the variance. Again utilizing a minimum primary loading of .50 as a cutoff, both the unrotated factor structure and the varimax rotated factor structure revealed that the seven items in the BJW-D Scale loaded on the first factor, and the seven items of the BJW-P Scale loaded on the second factor. In the unrotated factor structure, items three and four of the BJW-D Scale demonstrated cross-loadings that slightly exceeded our cutoffs (i.e., .355 and .368). In the rotated solution, however, there are no cross-loadings that exceed .05, and no primary loadings below .722. This indicates a very clean loading of both the BJW-D and BJW-P items onto the matching factor.

### **Study 2b**

We examined the factorability of both the frequency of life experiences for others scale and the fairness of life experiences for others scale. A priori to factor analysis, we separated the scale into positive life events and negative life events subscales, in order to allow for independent evaluation of the impact of negative and positive events on a theoretically prevention-focused motivation. Principal components analysis was used because our primary goal in identifying factors was to compute composite scores for the underlying factors of the FLE-O and ULE-O scales.

First, we examined the positive life events for others subscale (PLE-O) of the FLE-O. The initial principal components analysis revealed two factors that exceeded the Eigenvalue  $> 1$  criterion, with Eigenvalues of 2.08 and 1.62 respectively. The first factor

explained 29.71% of the variance and the second factor explained 20.93% of the variance. Using varimax rotation in order to examine the loadings of each items on the hypothetical factors, we found that the two-factor structure yielded a solution that was uninterpretable. Because we were unable to infer any additional meaning from the factor structure of the PLE-O, we proceeded to treat it as a single factor throughout analysis.

Next, we examined the negative life events subscale of the FLE-O. Using an Eigenvalue > 1 criterion, our initial analysis revealed three factors, with Eigenvalues of 4.50, 1.28, and 1.07, respectively. The first factor explained 32.17% of the variance, the second factor explained 9.12% of the variance, and the third factor explained 7.65% of the variance. The varimax rotated factor structure revealed that only one item loaded on the third factor, making the third factor uninterpretable. The lack of items loading on this factor, combined with its relative inability to explain further variance above and beyond the first two factors led us to force a two factor solution, which again yielded a much more interpretable solution. The two factors' Eigenvalues and variance explained were identical to that described above, but were much more clearly interpretable. Eight of the fourteen items demonstrated primary loadings above .50 with cross-loadings that did not exceed .35. Another two items had significant loadings or very close (e.g., .478), but also had cross-loadings over .35. After eliminating the four items that did not load on any factor, we ran a final principal components analysis with varimax rotation which included the items with significant cross-loadings, and again forced a two factor solution. Cumulatively, the two factor solution accounted for 50.11% of the variance, with the first factor accounting for 37.64% of the variance, and the second factor accounting for 12.47% of the variance. Eight of ten items in this analysis had primary loadings over .50



and cross-loadings below .35. The first item only slightly violated the cutoffs, with a primary loading of .562 and a cross-loading of .384, whereas the eighth item demonstrated a primary loading of .530 and a cross-loading of .452. We opted to include the first item, which barely missed the cross-loading cutoff in the final aggregate factor score, but opted to eliminate the eighth item with ambiguous loading. Examining the factor loadings, they appear to represent concepts very similar to the factors in Study 2a. The first factor again appeared to describe instances of poor treatment in interpersonal contexts, such as suffering discrimination because of your religion or ethnicity, or having been bullied. As such, we will continue to refer to this factor as the interpersonal factor. The second factor again appeared to describe instances of bad luck, or the unfortunate life events that are relatively likely to happen to most people eventually, such as having been in a car accident or having suffered a death in the family. As such, we again refer to this factor as the bad luck factor. Descriptively, the items that did not load as cleanly in this sample seemed to be items that describe poor interpersonal treatment that is based on individual characteristics, but not group-membership. For example, in Study 2a, when estimating how often certain individuals had personally experienced specific events, being the victim of an untrue rumour loaded on the same factor as suffering discrimination based on gender. In Study 2b, being the victim of a rumour no longer loaded on the interpersonal factor.

We repeated this process with the ULE-O. In this study, we measured unfairness for both the PLE and NLE. We first examined the factor structure of the unfairness of positive life events. Using an Eigenvalue  $> 1$  criterion, our initial analysis revealed a single factor, with an Eigenvalue of 4.15, which explained 59.23% of the variance. As

such, we treated the positive life event unfairness for others scale (PEU-O) as unifactorial.

Next, we examined the negative life events subscale (NEU-O) of the ULE-O. Using an Eigenvalue  $> 1$  criterion, our initial analysis revealed three factors, with Eigenvalues of 6.28, 2.00, and 1.14, respectively. The first factor explained 44.85% of the variance, the second factor explained 14.27% of the variance, and the third factor explained 8.17% of the variance. The varimax rotated factor structure revealed that only two items loaded on the third factor, one of which demonstrated a cross-loading above .35. Though the third factor is interpretable as an academic event subscale (i.e., “received a lower grade than expected” and “written an exam that was unreasonably difficult”), given the limited utility in interpreting our results and the fact that the factor only had two loadings, one of which was significantly cross-loaded (.402), we again forced a two-factor solution, which demonstrated the same Eigenvalues for the first two factors described above. Eleven out of 14 items loaded cleanly on the two factors, with primary factor loadings above .50 and cross-loadings below .35. Two items slightly missed cutoffs, but demonstrated substantial differences in their loadings between primary and cross-loadings, and so were included in the final factor analysis. One item did not load on either factor, and was eliminated for the final factor analysis.

In our final factor analysis, we found Eigenvalues of 6.22 and 1.97, respectively. The first factor explained 47.86% of the variance, and the second factor explained 15.16% of the variance. The varimax rotated factor structure revealed that 11 out of the 13 items loaded cleanly on one factor or the other. The remaining two items only slightly missed cutoffs and loaded clearly on one factor or the other (Item 4 only had a primary

loading of .43 but a low cross-loading of .16, and Item 9 had a cross-loading of .39 but a primary loading of .74), and so both were included in the final calculation of aggregate factor scores. The interpretation of the factors of unfairness ratings of negative life events reveal a structure almost identical to that found for the frequency of these events. The first factor seemed to reflect the perceived unfairness of having been treated badly by others in an interpersonal context, such as being harassed in a job setting or being the victim of an untrue rumour, whereas the second factor captured the perceived unfairness of having been the victim of bad luck events, such as having food poisoning or having written an exam that was unreasonably difficult. Once again, we refer to these factors as the interpersonal factor and bad luck factor, respectively.

Finally, we again examined the factorability of the items from the combined BJW-D and BJW-P scales, in order to replicate the EFA results from Study 2a in a separate sample. Again using an Eigenvalue  $> 1$  criterion, our initial analysis revealed two factors, with Eigenvalues of 4.93 and 3.56, respectively. The first factor explained 35.24% of the variance and the second factor explained 25.46% of the variance. Again utilizing a minimum primary loading of .50 as a cutoff, both the unrotated factor structure and the varimax rotated factor structure revealed that the seven items in the BJW-D Scale loaded on the first factor, and six of the seven items of the BJW-P Scale loaded on the second factor. The sole exception on the BJW-P Scale demonstrated a primary loading of .443 and .440 in the unrotated and rotated factor solutions. There were no significant cross-loadings for any of the items, in either the unrotated or rotated factor structures. Overall, this again indicates a clean loading of both the BJW-D and BJW-P items onto their corresponding factor.

## Appendix C – Study Materials

### Studies 1a and 1b

#### Belief in a Just World Self vs. Other (Lipkus et al., 1996) – Descriptive

The following is a study of opinions about the good and bad things that happen to people.

The best answer to each question is your personal opinion. You may find yourself agreeing strongly with some of the statements, disagreeing just as strongly about others, and perhaps uncertain about others. Whether you agree or disagree with any statement, you can be sure that many people feel the same as you do.

Mark each statement in the right margin according to how much you agree or disagree with it. Circle +1, +2, +3, or -1, -2, -3, depending on how you feel in each case.

*-3 - +3 scale, strongly disagree – strongly agree*

#### Just World for Self Scale

1. I feel that the world treats me fairly.
2. I feel that I get what I deserve.
3. I feel that people treat me fairly in life.
4. I feel that I earn the rewards and punishments I get.
5. I feel that people treat me with the respect I deserve.
6. I feel that I get what I am entitled to have.
7. I feel that my efforts are noticed and rewarded.

#### Just World for Others Scale

1. I feel that the world treats people fairly.
2. I feel that people get what they deserve.
3. I feel that people treat each other fairly in life.

4. I feel that people earn the rewards and punishments they get.
5. I feel that people treat each other with the respect they deserve.
6. I feel that people get what they are entitled to have.
7. I feel that a person's efforts are noticed and rewarded.

**Belief in a Just World Self vs. Other (Lipkus et al., 1996) - Prescriptive****Just World for Self Scale**

1. I feel that the world should treat me fairly.
2. I feel that I should get what I deserve.
3. I feel that people should treat me fairly in life.
4. I feel that I should earn the rewards and punishments I get.
5. I feel that people should treat me with the respect I deserve.
6. I feel that I should get what I am entitled to have.
7. I feel that my efforts should be noticed and rewarded.

**Just World for Others Scale**

1. I feel that the world should treat people fairly.
2. I feel that people should get what they deserve.
3. I feel that people should treat each other fairly in life.
4. I feel that people should earn the rewards and punishments they get.
5. I feel that people should treat each other with the respect they deserve.
6. I feel that people should get what they are entitled to have.
7. I feel that a person's efforts should be noticed and rewarded.

**Social Dominance Orientation Scale-6 (Sidanius & Pratto, 1999)**

Below are a series of statements with which you may either agree or disagree. For each statement, please indicate the degree of your agreement or disagreement.

1-7 Scale, strongly disagree – strongly agree

1. Some groups of people are just more worthy than others.
2. We should do what we can to equalize conditions for different groups (R).
3. In getting what your group wants, it is sometimes necessary to use force against other groups.
4. If certain groups of people stayed in their place, we would have fewer problems.
5. We would have fewer problems if we treated different groups more equally (R).
6. To get ahead in life, it is sometimes necessary to step on other groups.
7. No one group should dominate in society (R).
8. Group equality should be our ideal (R).
9. All groups should be given an equal chance in life (R).
10. We must increase social equality (R).
11. Superior groups should dominate inferior groups.
12. It's probably a good thing that certain groups are at the top and other groups are at the bottom.
13. We must strive to make incomes more equal (R).
14. Sometimes other groups must be kept in their place.
15. It would be good if all groups could be equal (R).
16. Inferior groups should stay in their place.

**Right-Wing Authoritarianism Scale (Altemeyer, 2006)**

Below are a series of statements with which you may either agree or disagree. For each statement, please indicate the degree of your agreement or disagreement.

1-7 Scale, strongly disagree – strongly agree

1. The established authorities generally turn out to be right about things, while the radicals and protestors are usually just “loud mouths” showing off their ignorance.
2. Women should have to promise to obey their husbands when they get married.
3. Our country desperately needs a mighty leader who will do what has to be done to destroy the radical new ways and sinfulness that are ruining us.
4. Gays and lesbians are just as healthy and moral as anybody else.\*
5. It is always better to trust the judgment of the proper authorities in government and religion than to listen to the noisy rabble-rousers in our society who are trying to create doubt in people’s minds.
6. Atheists and others who have rebelled against the established religions are no doubt every bit as good and virtuous as those who attend church regularly. \*
7. The only way our country can get through the crisis ahead is to get back to our traditional values, put some tough leaders in power, and silence the troublemakers spreading bad ideas.
8. There is absolutely nothing wrong with nudist camps. \*
9. Our country needs free thinkers who have the courage to defy traditional ways, even if this upsets many people. \*
10. Our country will be destroyed someday if we do not smash the perversions eating away at our moral fiber and traditional beliefs.



11. Everyone should have their own lifestyle, religious beliefs, and sexual preferences, even if it makes them different from everyone else.\*

12. The “old-fashioned ways” and the “old-fashioned values” still show the best way to live.

13. You have to admire those who challenged the law and the majority’s view by protesting for women’s abortion rights, for animal rights, or to abolish school prayer. \*

14. What our country really needs is a strong, determined leader who will crush evil, and take us back to our true path.

15. Some of the best people in our country are those who are challenging our government, criticizing religion, and ignoring the “normal way things are supposed to be done.” \*

16. God’s laws about abortion, pornography and marriage must be strictly followed before it is too late, and those who break them must be strongly punished.

17. There are many radical, immoral people in our country today, who are trying to ruin it for their own godless purposes, whom the authorities should put out of action.

18. A “woman’s place” should be wherever she wants to be. The days when women are submissive to their husbands and social conventions belong strictly in the past. \*

19. Our country will be great if we honor the ways of our forefathers, do what the authorities tell us to do, and get rid of the “rotten apples” who are ruining everything.

20. There is no “ONE right way” to live life; everybody has to create their own way. \*

21. Feminists should be praised for being brave enough to defy “traditional family values.\*

22. This country would work a lot better if certain groups of troublemakers would just shut up and accept their group's traditional place in society.

*Note.* \* Indicates that the item is to be reverse scored

**Preference for the Merit Principle (Davey et al., 1999)**

Instructions: Please indicate the extent to which you agree or disagree with each of the following statements by circling the appropriate number on the scale below.

1-7 Scale, strongly disagree – strongly agree

1. In work organizations, each employee ought to be named employee of the month at least once.
2. In organizations, people who do their job well ought to rise to the top.
3. It is wrong for an employer to give a job to someone they know without advertising the job to other candidates.
4. In life, people ought to get what they deserve.
5. The effort a worker puts into a job ought to be reflected in the size of a raise he or she receives.
6. When students are working on a group project, each member of the group ought to receive the same grade regardless of the amount of effort each team member puts in.
7. Promotion decisions ought to take into account the effort workers put into their job.
8. Members of a work team ought to receive different pay depending on the amount each person contributed.
9. Sometimes it is appropriate to give a raise to the worker who needs it, even if he or she is not the most hard-working.
10. Qualifications ought to be given more weight than seniority when making promotion decisions.
11. Between two equally smart students applying for the same job, the one who is the harder worker ought to always get the job.

12. When a bonus is given to a work team for good performance, the money ought to always be divided equally among the group members.

13. It is never appropriate to choose which student to hire by how much the student needs the job.

14. People ought to be able to get away with poor quality work in some circumstances.

15. If every person in an office has the same abilities, the promotion ought to always be given to the person who puts in the most effort.

Notes: Items 1, 6, 9, 12, and 14 are reverse scored.

**The Perceptions of Meritocracy Inventory (Garcia, 2001)**

The statements below concern issues related to work, rewards, and success in our society.

Unless otherwise stated: work includes mental or physical labour, rewards pertain to any combination of wages, perquisites (perks), benefits, and social status, and success refers to attaining a good income and/or social status. Please read the following statements and indicate your degree of agreement or disagreement by circling the number that corresponds with your opinion. All answers you provide will be kept confidential and cannot be traced back to you so please be as honest as you can.

Please respond to each statement by using the following code:

1 = strongly disagree

2 = moderately disagree

3 = slightly disagree

4 = neutral

5 = slightly agree

6 = moderately agree

7 = strongly agree

1. Gender has little to do with a person's wages.
2. Minority groups have fewer opportunities to achieve success than other Canadians do.
3. Uncontrollable factors often limit one's success, despite a person's best efforts.
4. With hard work people can easily move up from one social status to another.
5. It is very difficult for people from lower class families to achieve a higher status.
6. All people who work hard can improve their position in life.

7. People from wealthy families are more likely to succeed than are people from working-class families.
8. Hard work does not always pay off.
9. Individuals are responsible for their own financial success.
10. In our society, the rich get richer and the poor get poorer.
11. Many people who make clear and significant contributions are under-rewarded for their work.
12. Because of discrimination, race and ethnicity are important determinants of social position.
13. All people have equal opportunity to be financially successful.
14. Effort is the largest component of success.
15. In almost all professions or job positions, those who work the hardest will rise to the top.
16. Many occupations are under-paid.
17. Professional women typically earn less than their male counterparts do.
18. People's wages depend primarily on their ability and skill.
19. Many people's efforts go unnoticed and unrewarded.
20. People's salaries depend on how well they do their jobs.
21. Success is possible for anyone who is willing to work hard enough.
22. Many people earn far less than they are worth.
23. All people have equal opportunity to succeed.
24. Everyone can find work if they look hard enough.

Notes: Items 2, 3, 5, 7, 8, 10, 11, 12, 16, 17, 19, and 22 are reverse scored.

**Demographics**

Are you male or female?

-Male

-Female

Please tell us your age:

What is your approximate household income?

- \$0 – \$29,999
- \$30,000 - \$49,999
- \$50,000 - \$74,999
- \$75,000 - \$99,999
- \$100,000 - \$149,999
- \$150,000+
- I prefer not to answer this question

Which of the following best describes your political views?

- Strongly liberal
- Liberal
- Slightly liberal
- Moderate
- Slightly conservative
- Conservative
- Strongly conservative

**Study 2a****Belief in a Just World Self vs. Other (Lipkus et al., 1996) – Descriptive**

The following is a study of opinions about the good and bad things that happen to people.

The best answer to each question is your personal opinion. You may find yourself agreeing strongly with some of the statements, disagreeing just as strongly about others, and perhaps uncertain about others. Whether you agree or disagree with any statement, you can be sure that many people feel the same as you do.

Mark each statement in the right margin according to how much you agree or disagree with it. Circle +1, +2, +3, or -1, -2, -3, depending on how you feel in each case.

*-3 - +3 scale, strongly disagree – strongly agree*

**Just World for Self Scale**

1. I feel that the world treats me fairly.
2. I feel that I get what I deserve.
3. I feel that people treat me fairly in life.
4. I feel that I earn the rewards and punishments I get.
5. I feel that people treat me with the respect I deserve.
6. I feel that I get what I am entitled to have.
7. I feel that my efforts are noticed and rewarded.

**Just World for Others Scale**

1. I feel that the world treats people fairly.
2. I feel that people get what they deserve.
3. I feel that people treat each other fairly in life.
4. I feel that people earn the rewards and punishments they get.



5. I feel that people treat each other with the respect they deserve.
6. I feel that people get what they are entitled to have.
7. I feel that a person's efforts are noticed and rewarded.

**Belief in a Just World Self vs. Other (Lipkus et al., 1996) - Prescriptive****Just World for Self Scale**

1. I feel that the world should treat me fairly.
2. I feel that I should get what I deserve.
3. I feel that people should treat me fairly in life.
4. I feel that I should earn the rewards and punishments I get.
5. I feel that people should treat me with the respect I deserve.
6. I feel that I should get what I am entitled to have.
7. I feel that my efforts should be noticed and rewarded.

**Just World for Others Scale**

1. I feel that the world should treat people fairly.
2. I feel that people should get what they deserve.
3. I feel that people should treat each other fairly in life.
4. I feel that people should earn the rewards and punishments they get.
5. I feel that people should treat each other with the respect they deserve.
6. I feel that people should get what they are entitled to have.
7. I feel that a person's efforts should be noticed and rewarded.

**Social Dominance Orientation Scale-6 (Sidanius & Pratto, 1999)**

Below are a series of statements with which you may either agree or disagree. For each statement, please indicate the degree of your agreement or disagreement.

1-7 Scale, strongly disagree – strongly agree

1. Some groups of people are just more worthy than others.
2. We should do what we can to equalize conditions for different groups (R).
3. In getting what your group wants, it is sometimes necessary to use force against other groups.
4. If certain groups of people stayed in their place, we would have fewer problems.
5. We would have fewer problems if we treated different groups more equally (R).
6. To get ahead in life, it is sometimes necessary to step on other groups.
7. No one group should dominate in society (R).
8. Group equality should be our ideal (R).
9. All groups should be given an equal chance in life (R).
10. We must increase social equality (R).
11. Superior groups should dominate inferior groups.
12. It's probably a good thing that certain groups are at the top and other groups are at the bottom.
13. We must strive to make incomes more equal (R).
14. Sometimes other groups must be kept in their place.
15. It would be good if all groups could be equal (R).
16. Inferior groups should stay in their place.

**Frequency of Life Experiences Survey – Self Focused**

We are interested in how often people have experienced certain kinds of events, some positive and some negative. For each of the following events, please indicate whether you have experienced it NEVER, ONCE, A FEW TIMES, or MANY TIMES.

1-4 Scale, never – many times

1. Visited Europe
2. Been treated negatively by a supervisor or work colleague
3. Gone to a fun party
4. Suffered discrimination because of your gender or age
5. Suffered discrimination because of your religion or ethnicity
6. Won a prize in a competition or lottery
7. Received a lower grade in a course than you expected
8. Gone to the Emergency Department at a hospital
9. Attended a rock concert
10. Had food poisoning
11. Been involved in a car accident
12. Been harassed at a job or employment setting
13. Listened to music
14. Had a serious illness
15. Been the victim of an untrue rumor spread by someone else
16. Suffered a death in your family (parent, grandparent, brother or sister)
17. Won a marathon race
18. Written an exam that was unreasonably difficult

19. Had a romantic partner break up with you

20. Eaten an enjoyable meal at a restaurant

21. Been bullied

**Unfairness of Life Experiences Survey – Self Focused**

We are interested in people's judgments of the unfairness of some of the negative events listed earlier. For each of the following events, please rate whether you think it is VERY UNFAIR, SOMEWHAT UNFAIR, NEUTRAL, SOMEWHAT FAIR, or VERY FAIR.

1-5 Scale, very unfair – very fair

1. Receiving a lower grade in a course than you expected
2. Suffering discrimination based on gender, age, religion, or ethnicity
3. Being harassed at a job setting
4. Having food poisoning
5. Suffering a death in the family (parent, grandparent, brother, or sister)
6. Having a romantic partner break up with you
7. Being bullied
8. Being the victim of an untrue rumor spread by someone else
9. Having a serious illness
10. Being involved in a car accident
11. Being treated negatively by a supervisor or work colleague
12. Writing an exam that is unreasonably difficult

### Demographics

Your participation in this study is anonymous. Nonetheless, it would be helpful to us to know a few things about you, if you are willing to tell us.

What is your gender?

- Male
- Female
- Prefer not to answer

What is your age? \_\_\_\_\_

What country were you born in? \_\_\_\_\_

What is your race/ethnicity?

- African-American, Black, African, Caribbean
- Asian-American, Asian, Pacific Islander
- European-American, Caucasian
- Hispanic-American, Latino/a, Chicano/a
- Native American, Amerindian
- Bi-racial, Multi-racial
- Other
- Prefer not to answer

**Study 2b****Belief in a Just World Self vs. Other (Lipkus et al., 1996) – Descriptive**

The following is a study of opinions about the good and bad things that happen to people.

The best answer to each question is your personal opinion. You may find yourself agreeing strongly with some of the statements, disagreeing just as strongly about others, and perhaps uncertain about others. Whether you agree or disagree with any statement, you can be sure that many people feel the same as you do.

Mark each statement in the right margin according to how much you agree or disagree with it. Circle +1, +2, +3, or -1, -2, -3, depending on how you feel in each case.

*-3 - +3 scale, strongly agree – strongly disagree*

**Just World for Self Scale**

1. I feel that the world treats me fairly.
2. I feel that I get what I deserve.
3. I feel that people treat me fairly in life.
4. I feel that I earn the rewards and punishments I get.
5. I feel that people treat me with the respect I deserve.
6. I feel that I get what I am entitled to have.
7. I feel that my efforts are noticed and rewarded.

**Just World for Others Scale**

1. I feel that the world treats people fairly.
2. I feel that people get what they deserve.
3. I feel that people treat each other fairly in life.
4. I feel that people earn the rewards and punishments they get.



5. I feel that people treat each other with the respect they deserve.
6. I feel that people get what they are entitled to have.
7. I feel that a person's efforts are noticed and rewarded.

**Belief in a Just World Self vs. Other (Lipkus et al., 1996) - Prescriptive****Just World for Self Scale**

1. I feel that the world should treat me fairly.
2. I feel that I should get what I deserve.
3. I feel that people should treat me fairly in life.
4. I feel that I should earn the rewards and punishments I get.
5. I feel that people should treat me with the respect I deserve.
6. I feel that I should get what I am entitled to have.
7. I feel that my efforts should be noticed and rewarded.

**Just World for Others Scale**

1. I feel that the world should treat people fairly.
2. I feel that people should get what they deserve.
3. I feel that people should treat each other fairly in life.
4. I feel that people should earn the rewards and punishments they get.
5. I feel that people should treat each other with the respect they deserve.
6. I feel that people should get what they are entitled to have.
7. I feel that a person's efforts should be noticed and rewarded.

**Social Dominance Orientation Scale-6 (Sidanius & Pratto, 1999)**

Below are a series of statements with which you may either agree or disagree. For each statement, please indicate the degree of your agreement or disagreement.

1-7 Scale, strongly disagree – strongly agree

1. Some groups of people are just more worthy than others.
2. We should do what we can to equalize conditions for different groups (R).
3. In getting what your group wants, it is sometimes necessary to use force against other groups.
4. If certain groups of people stayed in their place, we would have fewer problems.
5. We would have fewer problems if we treated different groups more equally (R).
6. To get ahead in life, it is sometimes necessary to step on other groups.
7. No one group should dominate in society (R).
8. Group equality should be our ideal (R).
9. All groups should be given an equal chance in life (R).
10. We must increase social equality (R).
11. Superior groups should dominate inferior groups.
12. It's probably a good thing that certain groups are at the top and other groups are at the bottom.
13. We must strive to make incomes more equal (R).
14. Sometimes other groups must be kept in their place.
15. It would be good if all groups could be equal (R).
16. Inferior groups should stay in their place.

**Right-Wing Authoritarianism Scale (Altemeyer, 2006)**

Below are a series of statements with which you may either agree or disagree. For each statement, please indicate the degree of your agreement or disagreement.

1-7 Scale, strongly disagree – strongly agree

1. The established authorities generally turn out to be right about things, while the radicals and protestors are usually just “loud mouths” showing off their ignorance.
2. Women should have to promise to obey their husbands when they get married.
3. Our country desperately needs a mighty leader who will do what has to be done to destroy the radical new ways and sinfulness that are ruining us.
4. Gays and lesbians are just as healthy and moral as anybody else.\*
5. It is always better to trust the judgment of the proper authorities in government and religion than to listen to the noisy rabble-rousers in our society who are trying to create doubt in people’s minds.
6. Atheists and others who have rebelled against the established religions are no doubt every bit as good and virtuous as those who attend church regularly. \*
7. The only way our country can get through the crisis ahead is to get back to our traditional values, put some tough leaders in power, and silence the troublemakers spreading bad ideas.
8. There is absolutely nothing wrong with nudist camps. \*
9. Our country needs free thinkers who have the courage to defy traditional ways, even if this upsets many people. \*
10. Our country will be destroyed someday if we do not smash the perversions eating away at our moral fiber and traditional beliefs.

11. Everyone should have their own lifestyle, religious beliefs, and sexual preferences, even if it makes them different from everyone else.\*

12. The “old-fashioned ways” and the “old-fashioned values” still show the best way to live.

13. You have to admire those who challenged the law and the majority’s view by protesting for women’s abortion rights, for animal rights, or to abolish school prayer. \*

14. What our country really needs is a strong, determined leader who will crush evil, and take us back to our true path.

15. Some of the best people in our country are those who are challenging our government, criticizing religion, and ignoring the “normal way things are supposed to be done.” \*

16. God’s laws about abortion, pornography and marriage must be strictly followed before it is too late, and those who break them must be strongly punished.

17. There are many radical, immoral people in our country today, who are trying to ruin it for their own godless purposes, whom the authorities should put out of action.

18. A “woman’s place” should be wherever she wants to be. The days when women are submissive to their husbands and social conventions belong strictly in the past. \*

19. Our country will be great if we honor the ways of our forefathers, do what the authorities tell us to do, and get rid of the “rotten apples” who are ruining everything.

20. There is no “ONE right way” to live life; everybody has to create their own way. \*

21. Feminists should be praised for being brave enough to defy “traditional family values.\*

22. This country would work a lot better if certain groups of troublemakers would just shut up and accept their group's traditional place in society.

*Note.* \* Indicates that the item is to be reverse scored

**Preference for the Merit Principle (Davey et al.. 1999)**

Instructions: Please indicate the extent to which you agree or disagree with each of the following statements by circling the appropriate number on the scale below.

1-7 Scale, strongly disagree – strongly agree

1. In work organizations, each employee ought to be named employee of the month at least once.
2. In organizations, people who do their job well ought to rise to the top.
3. It is wrong for an employer to give a job to someone they know without advertising the job to other candidates.
4. In life, people ought to get what they deserve.
5. The effort a worker puts into a job ought to be reflected in the size of a raise he or she receives.
6. When students are working on a group project, each member of the group ought to receive the same grade regardless of the amount of effort each team member puts in.
7. Promotion decisions ought to take into account the effort workers put into their job.
8. Members of a work team ought to receive different pay depending on the amount each person contributed.
9. Sometimes it is appropriate to give a raise to the worker who needs it, even if he or she is not the most hard-working.
10. Qualifications ought to be given more weight than seniority when making promotion decisions.
11. Between two equally smart students applying for the same job, the one who is the harder worker ought to always get the job.

12. When a bonus is given to a work team for good performance, the money ought to always be divided equally among the group members.

13. It is never appropriate to choose which student to hire by how much the student needs the job.

14. People ought to be able to get away with poor quality work in some circumstances.

15. If every person in an office has the same abilities, the promotion ought to always be given to the person who puts in the most effort.

Notes: Items 1, 6, 9, 12, and 14 are reverse scored.



**The Perceptions of Meritocracy Inventory (Garcia, 2001)**

The statements below concern issues related to work, rewards, and success in our society.

Unless otherwise stated: work includes mental or physical labour, rewards pertain to any combination of wages, perquisites (perks), benefits, and social status, and success refers to attaining a good income and/or social status. Please read the following statements and indicate your degree of agreement or disagreement by circling the number that corresponds with your opinion. All answers you provide will be kept confidential and cannot be traced back to you so please be as honest as you can.

Please respond to each statement by using the following code:

1 = strongly disagree

2 = moderately disagree

3 = slightly disagree

4 = neutral

5 = slightly agree

6 = moderately agree

7 = strongly agree

1. Gender has little to do with a person's wages.
2. Minority groups have fewer opportunities to achieve success than other Canadians do.
3. Uncontrollable factors often limit one's success, despite a person's best efforts.
4. With hard work people can easily move up from one social status to another.
5. It is very difficult for people from lower class families to achieve a higher status.
6. All people who work hard can improve their position in life.

7. People from wealthy families are more likely to succeed than are people from working-class families.
8. Hard work does not always pay off.
9. Individuals are responsible for their own financial success.
10. In our society, the rich get richer and the poor get poorer.
11. Many people who make clear and significant contributions are under-rewarded for their work.
12. Because of discrimination, race and ethnicity are important determinants of social position.
13. All people have equal opportunity to be financially successful.
14. Effort is the largest component of success.
15. In almost all professions or job positions, those who work the hardest will rise to the top.
16. Many occupations are under-paid.
17. Professional women typically earn less than their male counterparts do.
18. People's wages depend primarily on their ability and skill.
19. Many people's efforts go unnoticed and unrewarded.
20. People's salaries depend on how well they do their jobs.
21. Success is possible for anyone who is willing to work hard enough.
22. Many people earn far less than they are worth.
23. All people have equal opportunity to succeed.
24. Everyone can find work if they look hard enough.

Notes: Items 2, 3, 5, 7, 8, 10, 11, 12, 16, 17, 19, and 22 are reverse scored.

**Justice Sensitivity Scale (Schmitt et al., 2005)**

Instructions: Below are a series of statements with which you may either agree or disagree. For each statement, please indicate the degree of your agreement or disagreement. Please remember that there are no right or wrong answers, and that your first responses are usually the most accurate.

**Please read each question carefully. Even though some questions may seem similar, each is different in important ways.**

1-7 Scale, strongly disagree – strongly agree

1. It bothers me when others receive something that ought to be mine.
2. It makes me angry when others receive an award which I have earned.
3. I can't easily bear it when others profit unilaterally from me.
4. I can't forget for a long time when I have to fix others' carelessness.
5. It gets me down when I get fewer opportunities than others to develop my skills.
6. It makes me angry when others are undeservingly better off than me.
7. It worries me when I have to work hard for things that come easily to others.
8. I ruminate for a long time when other people are being treated better than me.
9. It burdens me to be criticized for things that are being overlooked with others.
10. It makes me angry when I am treated worse than others.
11. It bothers me when someone gets something they don't deserve.
12. I am upset when someone does not get a reward he/she has earned.
13. I cannot easily bear it when someone unilaterally profits from others.
14. I can't forget it for a long time when someone else has to fix others' carelessness.

15. It disturbs me when someone receives fewer opportunities to develop his/her skills than others.
16. I am upset when someone is undeservingly worse off than others.
17. It worries me when someone has to work hard for things that come easily to others.
18. I ruminate for a long time when someone is being treated nicer than others for no reason.
19. It gets me down to see someone criticized for things that are overlooked with others.
20. I am upset when someone is being treated worse than others.
21. It disturbs me when I receive what others ought to have.
22. I have a bad conscience when I receive a reward that someone else has earned.
23. I cannot easily bear to unilaterally profit from others.
24. It worries me for a long time when others have to fix my carelessness.
25. It makes me sad when I receive more opportunities than others to develop my skills.
26. I feel guilty when I am better off than others for no reason.
27. It bothers me when things come easily to me that others have to work hard for.
28. I ruminate for a long time about being treated nicer than others for no reason.
29. It bothers me when someone tolerates things with me that other people are being criticized for.
30. I feel guilty when I receive better treatment than others.

**Frequency of Life Experiences Survey – Other Focused**

We are interested in how often people have experienced certain kinds of events, some positive and some negative. For each of the following events, please indicate how often you think the average person has the following experiences: NEVER, ONCE, A FEW TIMES, or MANY TIMES.

1-4 Scale, never – many times

1. Visited Europe
2. Been treated negatively by a supervisor or work colleague
3. Gone to a fun party
4. Suffered discrimination because of their gender or age
5. Suffered discrimination because of their religion or ethnicity
6. Won a prize in a competition or lottery
7. Received a lower grade in a course than they expected
8. Gone to the Emergency Department at a hospital
9. Attended a rock concert
10. Had food poisoning
11. Been involved in a car accident
12. Been harassed at a job or employment setting
13. Listened to music
14. Had a serious illness
15. Been the victim of an untrue rumor spread by someone else
16. Suffered a death in the family (parent, grandparent, brother or sister)
17. Won a marathon race

18. Written an exam that was unreasonably difficult
19. Had a romantic partner break up with them
20. Eaten an enjoyable meal at a restaurant
21. Been bullied

**Unfairness of Life Experiences Survey – Other Focused**

We are interested in people's judgments of the unfairness of some of the negative events listed earlier. For each of the following events, please rate whether you think it is VERY UNFAIR, SOMEWHAT UNFAIR, NEUTRAL, SOMEWHAT FAIR, or VERY FAIR.

1-5 Scale, very unfair – very fair

1. Visited Europe
2. Been treated negatively by a supervisor or work colleague
3. Gone to a fun party
4. Suffered discrimination because of their gender or age
5. Suffered discrimination because of their religion or ethnicity
6. Won a prize in a competition or lottery
7. Received a lower grade in a course than they expected
8. Gone to the Emergency Department at a hospital
9. Attended a rock concert
10. Had food poisoning
11. Been involved in a car accident
12. Been harassed at a job or employment setting
13. Listened to music
14. Had a serious illness
15. Been the victim of an untrue rumor spread by someone else
16. Suffered a death in the family (parent, grandparent, brother or sister)
17. Won a marathon race
18. Written an exam that was unreasonably difficult

19. Had a romantic partner break up with them

20. Eaten an enjoyable meal at a restaurant

21. Been bullied



### Demographic Questions

Your participation in this study is anonymous. Nonetheless, it would be helpful to us to know a few things about you, if you are willing to tell us.

What is your gender?

- Male
- Female
- Prefer not to answer

What is your age? \_\_\_\_\_

What country were you born in? \_\_\_\_\_

What is your race/ethnicity?

- African-American, Black, African, Caribbean
- Asian-American, Asian, Pacific Islander
- European-American, Caucasian
- Hispanic-American, Latino/a, Chicano/a
- Native American, Amerindian
- Bi-racial, Multi-racial
- Other
- Prefer not to answer

**Studies 3, 4, and 5****Belief in a Just World Scales**

**General Instructions.** The following is a study of opinions about the good and bad things that happen to people. The best answer to each question is your personal opinion. You may find yourself agreeing strongly with some of the statements, disagreeing just as strongly about others, and perhaps uncertain about others. Whether you agree or disagree with any statement, you can be sure that many people feel the same as you do.

Mark each statement in the right margin according to how much you agree or disagree with it. Circle +1, +2, +3, or -1, -2, -3, depending on how you feel in each case.

*-3 - +3 scale, strongly disagree – strongly agree*

**Descriptive Scale**

1. I feel that the world treats people fairly.
2. I feel that people get what they deserve.
3. I feel that people treat each other fairly in life.
4. I feel that people earn the rewards and punishments they get.
5. I feel that people treat each other with the respect they deserve.
6. I feel that people get what they are entitled to have.
7. I feel that a person's efforts are noticed and rewarded.

**Prescriptive Scale**

1. I feel that the world should treat people fairly.
2. I feel that people should get what they deserve.
3. I feel that people should treat each other fairly in life.

4. I feel that people should earn the rewards and punishments they get.
5. I feel that people should treat each other with the respect they deserve.
6. I feel that people should get what they are entitled to have.
7. I feel that a person's efforts should be noticed and rewarded.

**Vignettes**

**Vignette 1.** Simon had not seen Isabelle in several years, not since they graduated from Wayne State University in Detroit. But they had both ended up getting jobs in the Chicago area, and they had been good friends, so he was excited to see her again. She had gotten a job working at the University of Illinois Urbana-Champaign, which was several hours away from where he lived in Evanston, so he decided to drive. She lived on the third floor of a small walk up apartment near the university that didn't have any visitor parking spots, so Simon parked his car on the street.

The two friends spent the evening sharing drinks, reminiscing about their years in school, talking about who was where, and what everyone was doing for work. As the night wore on, they decided to watch a few episodes of 30 Rock, which they used to watch with their friends in the common room. Sometime during the third episode, Simon fell asleep on the couch, and Isabelle went to bed.

When Simon woke up in the morning, he realized he had left his wallet in the car. He went downstairs to get it, and when he went to open the driver's side door, he saw broken glass on the seat. He looked in the car, and his wallet and sunglasses were gone. He had \$150 in his wallet, but even worse, he always kept a note from his mother telling him that she loved him in his wallet. She had put it in his lunch the morning she died in a car accident, 15 years earlier. He sat down on the curb, and put his head in his hands, and thought about how he was going to replace his credit cards, the money he had lost, and most of all, the note he would never get back.

**Vignette 2.** Timothy was in a good mood. It was Saturday night, and he was out with his rec basketball team. His team, the Nighthawks, had been playing basketball together for a few years now, and had become close friends. On this particular Saturday, the Warriors were playing the Cavaliers in Game 2 of the NBA Finals, and everyone was excited to watch the game. The team had decided to watch the game at a sportsbar downtown, and even though the game ended up being pretty lopsided, everyone had a lot of fun.

It was getting late, about 1:00 in the morning, when the team decided to leave the bar. It was time for Timothy's favorite part of a night out, wandering the crowds in search of the perfect post-bar food. He and his friends walked out onto the street, laughing and joking as they passed first a burger place that no one wanted to eat at, then a cheap pizza chain that didn't sound too appetizing, before coming upon everyone's favorite burrito place. Timothy got excited, he loved a good burrito at the end of a night out.

After getting their burritos, the team split up and began wandering home. Three of Timothy's teammates got in a cab together, two started walking east, and another two headed south towards their homes. Timothy was the only one who lived north, but his apartment was only a 20 minute walk, and it was a nice night out, so he was happy to wander home by himself and eat his burrito.

As he was leaving downtown, up ahead, he saw a group of five men who sounded kind of worked up. He thought there was something a little unsettling about their general vibe from far away, but thought it would be weird to cross the road to avoid them. When he got closer, he could hear and see them more clearly, and he realized that they were laughing and talking about trying to throw a cat in front of a passing car, and were trying

to pick up a cat that was clawing and struggling not to be picked up. One of the men got ahold of the cat right as he reached the group, and as the man turned to throw the cat into the street, Timothy yelled for him to stop and grabbed his arm. The group closed around him, and started punching and kicking him.

The next thing Timothy knew, he woke up in the hospital. He hurt everywhere, and soon found out he had a broken arm, four broken ribs, a broken orbital bone in his face, and a badly dislocated knee. He had been found unconscious on the sidewalk by a stranger. Nobody saw anything or knew anything about the men who had attacked him. He laid in bed, thought about what had happened, and realized it was going to be a very long time before he would be able to play basketball again.

**Vignette 3.** Jeremy and Henry were out for a walk. Jeremy was a freelance video editor, and he had been introduced to Henry through a friend of a friend. Henry worked for a small event planning and promotional company, and often had need to produce short videos for clients in a relatively short timeframe. The two were meeting to talk about potential opportunities to collaborate, as Henry often had trouble finding someone who was able to create videos that were professional looking at the price his company wanted to pay. Jeremy thought that he would be able to give Henry and his company exactly what they were looking for.

Jeremy was excited at the prospect of working with Henry, not just for the paycheck or the opportunity, but because they were both African-American. Jeremy had spent a number of years in the industry, and had worked on ad campaigns for Dove Soap, Axe Body Spray, and Pizza Hut, as well as serving as the assistant to the third director on one of the lesser Fast and Furious movies. He loved his job, and had never been treated

badly because of his race, but he sometimes felt lonely and different. There were always other African-Americans on set, but rarely at the level he was working at. The questions and comments he got, and the tone in which they were delivered were never hostile, but revealed a certain lack of understanding about how his life was different.

So he was excited to be working with Henry. After the two of them walked around discussing possible ideas for about an hour, they decided to stop for coffee. As they entered the coffee shop, they were in the middle of an engaging discussion, so they sat down, and continued talking. After about 10 minutes, an employee came over and asked them if they were planning to order anything. They said yes, but decided they would finish this part of the conversation before they got up to order. Another 10 minutes later, two police officers entered the coffee shop, spoke briefly to one of the employees, and walked over to Jeremy and Henry.

The police officers told them they had to leave if they weren't going to order anything. Jeremy chuckled and said, it's okay, we're going to order something, we were just excited about what we were talking about. The lead officer didn't smile back, and told Jeremy it was time to go. He reached down and grabbed Jeremy's arm, and tried to pull him up. Jeremy pulled his arm away, and stood up with an angry look on his face. He was significantly taller than the officer. The police officer took a step back, said Jeremy was resisting arrest, and pulled out his pepper spray. As Jeremy recoiled slightly, and started to reassure him, the police officer sprayed him in the face. Jeremy grabbed his face, fell, and knocked over a table full of drinks next to him. The officers cuffed him and put him in the police car, telling him he was guilty of resisting arrest and being a public nuisance.

About eight hours later, Jeremy was allowed to leave the police station. Charges had been dropped, but his eyes burned, he had to pay \$250 in damages to the coffee shop, and he didn't know where things stood with Henry. As he walked home, he thought about the day, and hoped that Henry would still be interested in working with him, even after everything that had happened.

**Vignette 4.** Susan has been working at DeltaWave, a midsize market research company, for over three years. She started as a Junior Account Manager and within months was promoted to full Account Manager. After a year in that position, she was promoted to a Junior Sales Role, where again she excelled, until she was promoted to a full Sales Position, where she has been for about a year.

One of her co-workers, Colin, was hired at the same time as her, in the same position. He had followed a similar path as her, though he was never as good in any of the positions as she was, which was widely known amongst their co-workers and their direct supervisors at every phase. Colin lost clients frequently, entered data incorrectly, and failed to reach sales targets regularly. Susan wasn't perfect, of course, but her retention rate was significantly higher than Colin's, and she had only once missed her quarterly sales target.

Although Susan was clearly a better employee, Colin played on the company kickball team, which was organized by Philip, the VP of Sales and Customer Relations. Colin and Philip had become friendly, sharing a number of interests in common, including sports, craft beer, and that they both played guitar. Because Susan did not play kickball and had no interest in any of these things, she was often left out, and had far fewer opportunities to talk to the vice-president in charge of her area. She once overheard



Colin and Philip joking about how Megan, the CEO, was always cranky this time of the month, and a separate time, that Tammy in HR really needs to smile more.

All of this bothered her, but there was nothing she could do about it, and it didn't seem to matter too much. She was still being promoted regularly. However, one day, a Sales Team Leader position opened up, and Colin and she were in direct competition for it. Not only did the position come with a significant raise (almost exactly 20%), but with more opportunities for promotion, a Sales Team Leader retreat for a week in Mexico, more travel to the European and Australian branches of the company, and the use of a company car.

In spite of her superior performance at every position they had shared, and in spite of her superior preparation and interview, the final decision on the promotion was made by Philip, and he decided to promote Colin over Susan. To add insult to injury, not only did Susan now have to live with the knowledge that Colin was making more money than her in a position she was better suited for, but he was also assigned to her Sales Team. Colin was now her boss.

**Vignette 5.** Tina was excited. She was 24, and had just finished the second week of her first real job. Sure, she had been working since getting her art history degree, but not at anything she would call a career. As she liked to put it, she had an extensive collection of nametags and hair nets. But that had changed just a few weeks earlier, when she was out with a friend, Terrence, who worked for a small local ad agency. As they were walking through a park downtown, Terrence stopped to talk to a man on a bench, named Peter, who was the Creative Director at Terrence's company. Peter stood up to

talk to them, and after learning about Tina's background, told her they were looking for an Art Director/Graphic Designer/Layout Artist.

Tina has been taking graphic design courses online for fun since her third year in university. This opportunity was perfect. It was exactly the kind of job she had dreamed of finding, but hadn't actually looked for because she didn't believe it could've actually existed. After talking for a few minutes, Terrence said he needed to get going. He told Tina it was nice to meet her, and when she extended her hand to shake his, he ignored it and pulled her in close for a hug that lasted several seconds. After Terrence left, Tina turned to Chester and told him he thought that the hug was odd. Terrence said it was odd, but that Peter is a good guy, and that he was sure it didn't mean anything.

So here she was, Friday evening of her second week on the perfect job, and getting ready for her first work party. Peter was having the entire creative team to his house for a party, as well as some members of their marketing and sales teams. In total, about 20 people were expected to show up. Tina felt like she was finally making progress in her life, like she was building something worthwhile. She arrived at Peter's at 9:30, and there were already at least a dozen people there. Peter greeted her enthusiastically, and everyone was having a good time, eating, drinking and enjoying each other's company. As the evening wore on, Peter and Tina ended up talking off to the side. Tina had had a few drinks over the few hours she had been there, so she was relaxed and happy, but by no means drunk.

Peter asked Tina if she would like to see something interesting. She of course agreed, and he told her to come with him to his office. Once there, he closed the door, and began pointing out pictures on the wall of himself with some famous and powerful

people: Condoleeza Rice, Kiefer Sutherland, Al Gore. He pointed to a picture of himself with Gabe Kaplan, and Tina said she didn't know who he was. Peter laughed and said he supposed she wouldn't, that she's too young to know who he is.

When Tina turned around to look at Peter, he had moved very close to her. Their eyes were only inches apart, and most of the distance was caused by the fact that Peter was much larger than Tina. He said something about how much he liked her, and how glad he was that they were working together. As she began to agree, Peter kissed her. She was so shocked, she didn't react for several seconds, before pulling away, and just looking at Peter, trying to make sense of what was happening. Peter was almost 20 years older than Tina, and she had not even thought about Peter in a sexual way, other than how off-putting his hug had been. She definitely did not want to be doing this.

Peter put his hand on her shoulder, and gently started to apply pressure, clearly trying to guide her to the floor, to move her down. She resisted, and he said that he really liked working with her, and it would be too bad if things got weird during her probationary period. As her mind reeled trying to understand what was happening and what to do, Peter resumed the pressure on her shoulder. He guided her down to her knees and unzipped his pants. Tina began to quietly cry, but Peter didn't seem to notice. When she was done, he zipped up his pants and smiled at Tina. He told her that this had been fun, and he hoped they could work together again on other projects. He laughed at his own wordplay, and returned to the party. Tina went directly from Peter's office to the bathroom, and open-mouth sobbed while she tried to understand what had just happened. She stayed there until she could stop crying, cleaned herself back up, and returned to the party. She reflected on the parallels between how she felt then and how she had in the

weeks before she met Peter, and how quickly she was back in a situation where she had no idea what was next, but couldn't imagine it was going to be good.

**Study 3****Anagrams**

Below are some anagrams of some relatively common animals. Please unscramble the letters to form the name of an animal, and type the name of the animal into the box. You have a maximum of 5 minutes to complete all of them.

1. areb
2. reed
3. almc
4. ales
5. toga
6. aunt
7. paws
8. flow

**Memory Questions**Vignette #1

Justice-Relevant Questions:

1. How much money was in Simon's wallet?
2. What made the note in Simon's wallet so valuable to him?

Justice-Irrelevant Questions:

1. What kind of building did Simon's friend Isabelle live in?
2. Which university did Simon and Isabelle attend when they met?

Vignette #2

Justice-Relevant Questions:

1. What were the group of men doing when Timothy approached them?
2. List as many of the injuries that Timothy sustained as you can.

Justice-Irrelevant Questions:

1. What teams were playing in the sporting event that Timothy and his friends had gotten together to watch?
2. What food did Timothy eventually decide to buy after leaving the bar, but before walking home?

Vignette #3

Justice-Relevant Questions:

1. How much did Jeremy have to pay in damages to the coffee shop?
2. How long was Jeremy held by the police?

Justice-Irrelevant Questions:

1. Name as many of the companies that Jeremy worked on ad campaigns for as you can.
2. What movie series had Jeremy worked on as an Assistant to the Third Director?

#### Vignette #4

##### Justice-Relevant Questions:

1. To the nearest percentage point, how much was the raise that Susan was eligible for if she got the promotion?
2. What were the perks associated with the raise Susan was eligible for, aside from a pay raise? Name as many as you can think of.

##### Justice-Irrelevant Questions:

1. What sport did DeltaWave's company team play?
2. Name as many of the positions Susan had held at work as you can.

#### Vignette #5

##### Justice-Relevant Questions:

1. What did Peter do when he first met Tina that made her uncomfortable?
2. Where did Tina go after she left Peter's office, and what did she do there?

##### Justice-Irrelevant Questions:

1. Name as many of the celebrities that Peter had photographs with in his office as you can.
2. What was Tina's degree in?

**Study 4****National Justice Czar Instructions**

For this portion of the study, we want you to imagine that you have been assigned a new government position. Your title is the National Justice Czar. The country has made a bipartisan decision that, in an attempt to become a more just nation, a National Justice Czar position should be created. The Czar is responsible for hearing individual stories from citizens who believe that they have been treated unjustly.

Your job is to decide whether what happened to the petitioners is unjust, or merely misfortune. For example, losing your keys is a bad thing to have happen, but it would be hard to argue that the world is unjust because someone lost their keys.

The position is limited to assigning a maximum of \$10,000 in compensation to any one petitioner, so after reading a story about a petitioner, you will use a slider to assign the petitioner the amount of money that would best help to restore justice.

**National Justice Czar Judgment Questions**

Please use the slider below to indicate how much compensation you would offer this victim in order to restore justice to the world.

\$0 ----- \$10,000



**Opportunity to Give to Charity**

We have partnered with a charity called Children of War, whose mission is to offer live-saving medical treatment to children in war-torn regions of the world, who have been disabled or orphaned as a result of war.

If you would like to donate some or any of the \$1 you are being paid for this study, please enter the amount you would like to donate in the box below. When awarding compensation for completion of the study, we will adjust your compensation accordingly.

Children of War thanks you for your help!

## Study 5

### Initial Fairness Judgment Rating

We are interested in your personal judgment of the fairness or justice of the events described in the story you just read. Please rate how unfair or unjust the story you just read is.

1-7 Scale, extremely unfair – extremely fair

### Details Added to Stories

**Vignette #1.** When Simon had first arrived, Isabelle warned him that she had heard of a number of people having their cars broken into recently, and suggested he should make sure there's nothing valuable in the car. Tired from his drive and looking around for the bathroom, he was only half listening, and said he was sure it would be fine.

**Vignette #2.** As they were leaving, the three friends who got into a cab asked Timothy if he wanted to jump in with them. His place wasn't too far out of the way for the direction they were headed. Timothy said no thanks, he was happy to walk on such a nice night.

**Vignette #3.** After Jeremy pulled his arm away from the police officer, as he was standing up quickly, his arm caught the handle of the police officer's baton, pulling it out of his belt and sending it clattering to the ground.

**Vignette #4.** When Susan was 17, and first got her driver's license, she was texting while driving, and accidentally side-swiped a parked car, taking off the driver's side mirror. It was late and nobody was around, so she drove off without leaving a note. She never got caught.

**Vignette #5.** Tina was an individual who was known by most of her friends to be very comfortable with her sexuality. She believed that sex and love were separate things, and so she occasionally had casual sex with men she had no interest in having a relationship with. Though she had been professional at work, she had relaxed a little bit at the party, and had been generally fun and flirty at the party, up until the point when she was invited into Peter's office.

**Second Fairness Judgment Rating**

After reading the additional detail:

Please indicate the degree to which the additional details you just read change your judgment of how fair or unfair the original story was, from not at all to much more fair

1-5 Scale, not at all – much more fair

## **Curriculum Vitae**

### **EDUCATION**

**Doctorate**, Social Psychology, London, Ontario, 2019  
Advisor: Dr. James M. Olson

**Master of Science**, Social Psychology, London, Ontario, 2013  
Thesis: The Moderating Effects of Target Status on the Relation Between SDO and Fairness  
Advisor: Dr. James M. Olson

**Bachelor of Arts, Honours**, Psychology, Queen's University, Kingston, Ontario, 2007  
Thesis: The Effect of Active Driving Pedals on Sleepiness While Driving  
Advisor: Dr. Alistair W. MacLean

### **HONOURS AND AWARDS**

April 2017	Graduate Research Award Fund
Sept. 2016 – Aug. 2017	Ontario Graduate Scholarship Doctoral Award
April 2016	Western University Graduate Student Teaching Award Nominee
Dec. 2015	Western University Graduate Student Teaching Award Nominee
July 2015	SEXposium 2015 Award for Best PhD Student Talk
Sept. 2014 – Aug. 2015	Ontario Graduate Scholarship Doctoral Award
Sept. 2011 – Aug. 2017	Western Graduate Research Scholarship
April 2004 – April 2007	Dean's Honour List, Queen's University

### **PROFESSIONAL SERVICE**

Sept. 2015 – Sept. 2017	<b>Ph.D. Representative</b> , Western Social Psychology Area Committee, The University of Western Ontario
July 2016 – June 2017	<b>Graduate Student Representative</b> , Senate Subcommittee on Program Review, The University of Western Ontario

July 2015 – June 2017	<b>Graduate Student Representative</b> , Graduate Education Council Academic Policy Subcommittee, The University of Western Ontario
July 2015 – June 2017	<b>Social Sciences Graduate Student Representative</b> , Graduate Education Council, The University of Western Ontario
Sept. 2016 – Nov. 2016	<b>Interim Graduate Student Representative</b> , Senate Review Board Academic, The University of Western Ontario
Feb. 2014 – Aug. 2015	<b>Campus Representative</b> , Association for Psychological Science, The University of Western Ontario
Oct. 2013 – Sept. 2014	<b>Graduate Student Representative</b> , Psychology Department Workload and Resource Planning Committee, The University of Western Ontario
Sept. 2013 – Aug. 2016	<b>Psychology Councilor</b> , Society of Graduate Students, The University of Western Ontario
Sept. 2013 – Aug. 2015	<b>Journal Club Coordinator</b> , Western Social Psychology Area Committee, The University of Western Ontario
Sept. 2012 – Aug. 2013	<b>M.Sc. Representative</b> , Western Social Psychology Area Committee, The University of Western Ontario
Sept. 2006 – April 2007	<b>Merchandise Coordinator</b> , Psychology Departmental Student Council, Queen's University
Sept. 2006 – April 2007	<b>Webmaster</b> , Psychology Departmental Student Council, Queen's University

### **TEACHING EXPERIENCE**

Jan. 2019 – Apr. 2019	<b>Teaching Assistant</b> , University of Western Ontario PSYC 4224G Animal Cognition
Sept. 2018 – Dec. 2018	<b>Course Instructor</b> , King's University College at the University of Western Ontario PSYC 2065A The Psychology of Religion and Spirituality
Sept. 2017 – Dec. 2017	<b>Course Instructor</b> , King's University College at the University of Western Ontario PSYC 2065A The Psychology of Religion and Spirituality

Jan. 2017 – April 2017	<b>Tutorial Instructor</b> , University of Western Ontario PSYC 3723G Attitudes and Attitude Change
Sept. 2016 – Dec. 2016	<b>Course Instructor</b> , University of Western Ontario PSYC 2720A Introduction to Social Psychology
May 2016 – Aug. 2016	<b>Course Instructor</b> , University of Western Ontario PSYC 2720A Introduction to Social Psychology
Jan. 2016 – April 2016	<b>Tutorial Instructor</b> , University of Western Ontario PSYC 3723G Attitudes and Attitude Change
Sept. 2015 – Dec. 2015	<b>Tutorial Instructor</b> , University of Western Ontario PSYC 3724F The Science of Romantic Relationships
Jan. 2015 – April 2015	<b>Tutorial Instructor</b> , University of Western Ontario PSYC 3723G Attitudes and Attitude Change
Sept. 2014 – Dec. 2014	<b>Tutorial Instructor</b> , University of Western Ontario PSYC 2720B Introduction to Social Psychology
Jan. 2014 – April 2014	<b>Tutorial Instructor</b> , University of Western Ontario PSYC 3723G Attitudes and Attitude Change
Sept. 2013 – Dec. 2013	<b>Tutorial Instructor</b> , University of Western Ontario PSYC 3724F The Science of Romantic Relationships
Jan. 2013 – April 2013	<b>Tutorial Instructor</b> , University of Western Ontario PSYC 3723G Attitudes and Attitude Change
Sept. 2012 – Dec. 2012	<b>Teaching Assistant</b> , University of Western Ontario PSYC 2070B Social Psychology
Jan. 2012 – April 2012	<b>Tutorial Instructor</b> , University of Western Ontario PSYC 3723G Attitudes and Attitude Change
Sept. 2011 – Dec. 2011	<b>Teaching Assistant</b> , University of Western Ontario PSYC 2990A Applications of Psychology

### **REFEREED PUBLICATIONS**

Harmon-Jones, E., **Armstrong, J.**, & Olson, J. M. (2018). The Influence of Behavior on Attitudes. In *The Handbook of Attitudes, Volume 1: Basic Principles* (pp. 404-449). Routledge.

**Armstrong, J.,** Friesdorf, R., and Conway, P. (2018). Clarifying Gender Differences in Moral Dilemma Judgments: The Complementary Roles of Harm Aversion and Action Aversion. *Social Psychological and Personality Science*. doi: 10.1177/1948550618755873

Gawronski, B., Conway, P., **Armstrong, J.,** Friesdorf, R., & Hütter, M. (2018). Effects of Incidental Emotions on Moral Dilemma Judgments: An Analysis Using the CNI Model. *Emotion*. doi: 10.1037/emo0000399

Gawronski, B., **Armstrong, J.,** Conway, P., Friesdorf, R., & Hütter, M. (2017). Consequences, Norms, and Generalized Inaction in Moral Dilemmas: The CNI Model of Moral Decision-Making. *Journal of Personality and Social Psychology*, 113(3), 343-376. doi: 10.1037/pspa0000086

Gawronski, B., Conway, P., **Armstrong, J.,** Friesdorf, R., & Hütter, M. (2016). Understanding responses to moral dilemmas: Deontological inclinations, utilitarian inclinations, and general action tendencies. In J. P. Forgas, L. Jussim, & P. A. M. Van Lange (Eds.), *Social psychology of morality* (pp. 91-110). New York, NY: Psychology Press.

### **MANUSCRIPTS IN PREPARATION**

**Armstrong, J.,** and Olson, J. M. (in prep). *Save It for Another Time: Smartphone Usage and Transactive Memory*. Manuscript in preparation.

**Armstrong, J.,** Harris, E., and Olson, J. M. (in prep). *What Difference Does It Make?: Prefactual Potency and Moral Judgments*. Manuscript in preparation.

**Armstrong, J.,** Harris, E., and Campbell, L. (in prep). *Gender Bias in Metascience*. Manuscript in preparation.

**Armstrong, J.,** Stanton, S.C.E., and Campbell, L. (in prep). *The Vicarious Spotlight Effect*. Manuscript in preparation.

### **CONFERENCE PRESENTATIONS**

**Armstrong, J. B.,** & Olson, J. M. (2019, February). Understanding the Justice Motive: Descriptive vs. Prescriptive Belief in a Just World. Poster presented at the Society for Personality and Social Psychology Conference, Portland, OR.

**Armstrong, J. B.,** & Olson, J. M. (2018, March). Descriptive vs. Prescriptive Belief in a Just World. Poster presented at the Society for Personality and Social Psychology Conference, Atlanta, GA.

**Armstrong, J. B.,** & Olson, J. M. (2017, June). Save It for Another Time: Smartphones and Transactive Memory. Talk presented at the Canadian Psychological Association National Convention, Toronto, ON.

**Armstrong, J. B.,** & Olson, J. M. (2017, January). Save It for Another Time: Smartphones and Transactive Memory. Poster presented at the Society for Personality and Social Psychology Conference, San Diego, CA.

**Armstrong, J. B.,** Friesdorf, R., Conway, P., & Gawronski, B. (2016, May). The Effects of Action Aversion on Gender Differences in Moral Judgment. Poster presented at the Association for Psychological Science Conference, Chicago, IL.

**Armstrong, J. B.,** Friesdorf, R., Conway, P., & Gawronski, B. (2016, May). The Effects of Action Aversion on Gender Differences in Moral Judgment. Talk presented at the Western-Waterloo-Wilfred Laurier Annual Social Psychology Conference, Waterloo, ON.

**Armstrong, J. B.,** Stanton, S. C. E., & Campbell, L.J. (2016, January). The Vicarious Spotlight Effect. Poster presented at the Society for Personality and Social Psychology Conference, San Diego, CA.

**Armstrong, J. B.,** Stanton, S. C. E., & Campbell, L. J. (2015, July). The Vicarious Spotlight Effect. Talk presented at the Ontario Science Centre SEXposium, Toronto, ON.

**Armstrong, J. B.,** Stanton, S. C. E., & Campbell, L.J. (2015, June). Basking in Reflected Shame: Preliminary Evidence for a Vicarious Spotlight Effect. Poster presented at the Canadian Psychological Association Convention, Ottawa, ON.

**Armstrong, J. B.,** Stanton, S. C. E., & Campbell, L.J. (2015, May). Basking in Reflected Shame and Glory: Emerging Evidence for a Vicarious Spotlight Effect in Close Relationships. Poster presented at the Association for Psychology Science Conference, New York, NY.

**Armstrong, J. B.,** Stanton, S. C. E., & Campbell, L. J. (2015, May). The Vicarious Spotlight Effect. Talk presented at the Western-Waterloo-Wilfred Laurier Annual Social Psychology Conference, Waterloo, ON.

**Armstrong, J. B.,** Dryburgh, N., & Olson, J. M. (2015, February). Fair is Fair: Target Status, SDO, and Fair Allocation of a Scarce Resource. Poster presented at the Society for Personality and Social Psychology Conference, Long Beach, CA.

Barnes, K., **Armstrong, J. B.,** & Olson, J. M. (2015, February). Prescriptive versus Descriptive Belief in a Just World: Justice Principle or Hierarchy Legitimizing Belief. Poster presented at the Society for Personality and Social Psychology Conference, Long Beach, CA.



**Armstrong, J. B.,** Barnes, K., & Olson, J. M. (2014, June). And Justice for All (Especially Me): Prescriptive vs Descriptive Belief in a Just World. Poster presented at the Canadian Psychological Association Convention, Vancouver, BC.

**Armstrong, J. B.,** Dryburgh, N., & Olson, J. M. (2014, May). Fair Enough: Target Status, SDO, and Fairness. Poster presented at the Association for Psychology Science Conference, San Francisco, CA.

**Armstrong, J. B.,** Dryburgh, N., & Olson, J. M. (2014, February). Relatively Fair: Target Status, SDO, and Fairness. Poster presented at the Society for Personality and Social Psychology Conference, Austin, TX.

**Armstrong, J. B.,** & Olson, J. M. (2013, June). The Rich Get Richer: Social Dominance Orientation Predicts Unfairly Favourable Treatment. Poster presented at the Canadian Psychological Association Convention, Quebec City, QC.

**Armstrong, J. B.,** & Olson, J. M. (2013, May). Tough But Fair: Target Status Moderates the Relation Between Social Dominance Orientation and Fairness. Poster presented at the Association for Psychological Science Convention, Washington, DC.

**Armstrong, J. B.,** & Olson, J. M. (2013, May). Tough But Fair: Target Status Moderates the Relation Between Social Dominance Orientation and Fairness. Poster presented at the Western-Waterloo Annual Social Psychology Conference, Waterloo, ON.

**Armstrong, J. B.,** & Olson, J. M. (2013, January). The Prime We Need, Not the Prime We Deserve: Attainability Decreases Prosocial Motivation for Real but not Fictional Moral Exemplars. Poster presented at the Society for Personality and Social Psychology Conference, New Orleans, LA.

**Armstrong, J. B.** & MacLean, A. W. (2007, April). Active Pedals: The Effects of Exercise on Sleepiness While Driving. Poster presented at the Queen's University Psychology Capstone Honours Research Conference, Queen's University, Kingston, ON.

## **FUNDING**

\$750, Graduate Research Award Fund, May 2017 – April 2018, University of Western Ontario

\$15,000, Ontario Graduate Scholarship, Sept 2016 – Aug 2017, Government of Ontario

\$15,000, Ontario Graduate Scholarship, Sept 2014 – Aug 2015, Government of Ontario

**RESEARCH EXPERIENCE**

Sept. 2011 – July 2019      **University of Western Ontario**, Supervisor: J. M. Olson, Ph.D.

Sept. 2006 – April 2007      **Queen's University**, Supervisor: A. W. MacLean, Ph.D.

**MENTORING EXPERIENCE****Honors Student (Primary Supervisor)**

2016 – 2017      Elizabeth Harris (co-supervised with James Olson)

2013 - 2014      Nicole Dryburgh (co-supervised with James Olson)

**Research Assistants**

2016 – 2017      Michelle Alarcon Cespedes, Theodora Bogdan, Elizabeth Harris, Jessica Laraby, Frasia Morrison, James Ross, Huanhui Xu, Alexandra Zohorsky

2015 – 2016      Rasa Erfan, Paola Bonilla Gaitan, Elizabeth Harris, Matthew Johnston, Alisha Muchemi, Alexandra Skutovich

2014 – 2015      Paola Bonilla Gaitan, Jacob Newton, Bonita Wing Tung Lao

2013 – 2014      Paola Bonilla Gaitan, Jacob Newton, Bonita Wing Tung Lao

**SOCIETY MEMBERSHIP**

June 2016 – present      Society for the Improvement of Psychological Science

Jan. 2015 – present      The Society for the Teaching of Psychology

Jan. 2013 – present      Canadian Psychological Association

June 2012 – present      Association for Psychological Science

Dec. 2011 – present      Society for Personality and Social Psychology