

**Asymmetry in Belief in a Just World: Item Valence Skews Self-Reported Just-World
Beliefs**

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Table of Contents

List of Tables.....	6
Abstract.....	7
Declaration.....	8
Contribution Statement.....	9
Asymmetry in Belief in a Just World: Item Valence Skews Self-Reported Just-World Beliefs.....	10
The Belief in a Just World.....	10
The Bidimensional Model of BJW.....	12
Original BJW-self Scales.....	13
Skewness in the BJW Symmetry Assumption.....	14
The Adaptiveness of BJW-self.....	15
Psychological Constructs of Interest.....	16
The Present Study.....	19
Method.....	20
Participants.....	20
Procedure.....	21
Measures.....	22
Positive BJW-Self.....	22
Negative BJW-Self.....	22
Life Satisfaction.....	23
Optimism.....	23

Gratitude	23
Psychological Entitlement	24
Self-esteem.....	24
Social Desirability.....	25
Ethical Considerations	25
Statistical Analyses	25
CFA Analysis	26
Regression Assumptions	26
Hypotheses.....	26
Results.....	27
Scale Development	27
Confirmatory Factor Analysis.....	28
Reliability.....	30
Scores on Positive/Negative BJW-self.....	30
Associations Between Positive BJW-self and Outcome Measures.....	31
Associations Between Negative BJW-self and Outcome Measures	31
Discussion.....	32
Critical Evaluation of the Results	33
Two-factor Structure of BJW-self.....	33
Scores on the Positive/Negative BJW-self Scales	33
Positive BJW-self and the Outcome Measures	35

Negative BJW-self and the Outcome Measures.....	35
Interpretations of the Differential Associations	36
The Just-World Theory and BJW-self.....	37
Just-World Measurement	38
Just-World Literature	39
Strengths and Limitations of the Present Study.....	40
Future Research Directions	41
The Bidimensional Model of BJW-self	42
Cognitive Biases and the BJW-self Scales.....	42
Extensions of the Present Study.....	43
BJW-self Measurement.....	44
Conclusion	44
References.....	46
Appendices.....	53
Appendix A: Pre-registration	53
Appendix B: Recruitment Flyer	55
Appendix C: Survey.....	56
Appendix D: Expert Feedback.....	69
Table A1	69
Table A2	71
Table A3	73

Table A4:	75
Appendix E: Final Positive and Negative BJW-self Scales	77

List of Tables

Table 1: Iterative Model Modifications

Table 2: The Final CFA (Model 6) Factor Loadings

Table 3: Regression Coefficients for Predicting Positive BJW-Self

Table 4: Regression Coefficients for Predicting Negative BJW-Self

Abstract

The *just-world theory*, otherwise known as *belief in a just world* (BJW) states that individuals have a need to believe that the world is just, where individuals get what they deserve and deserve what they get (Lerner, 1980). The implicit *symmetry assumption* of the just-world theory is that individuals apply just-world beliefs equally to both positive and negative experiences, but this has rarely been tested. Thus, the present study aimed to determine whether the BJW symmetry assumption holds at a trait level. The just-world measure used to test this aim was the BJW-self scale, as it is associated with adaptive psychological outcomes. A positively valenced (Positive BJW-self), and a negatively valenced (Negative BJW-self) version of a common BJW-self scale were created. Participants ($N = 352$) completed an online self-report survey, which measured Positive BJW-self, Negative BJW-self, four outcome measures; life satisfaction, optimism, gratitude, psychological entitlement, and two control measures; self-esteem, and social desirability. Participants scored higher on Positive BJW-self than Negative BJW-self. Additionally, Positive BJW-self and Negative BJW-self were differentially associated with the outcome measures. The results suggest that Positive BJW-self and Negative BJW-self function as unique constructs. Implications of these results are that the symmetry assumption believed to underpin the just-world theory does not hold at a trait level, and that the present study's findings should be considered when interpreting research on BJW-self.

Declaration

This thesis contains no material which has been accepted for the award of any other degree or diploma in any University, and, to the best of my knowledge, this thesis contains no material previously published except where due reference is made. I give permission for the digital version of this thesis to be made available on the web, via the University of Adelaide's digital thesis repository, the Library Search and through web search engines, unless permission has been granted by the School to restrict access for a period of time.

September 2022

Contribution Statement

In writing this thesis, my supervisor and I collaborated to generate the preregistration, study design and to discuss the structure and content of the thesis. I conducted the literature search, completed the ethics application, recruited the participants, and wrote all aspects of the thesis to which my supervisor provided feedback on. My supervisor provided me with an example script for R studio, which I then modified to conduct the analysis. I completed the data analysis and an a priori power analysis for the regression model, and my supervisor conducted the a priori power analysis using a Monte Carlo simulation for the confirmatory factor analysis.

Asymmetry in Belief in a Just World: Item Valence Skews Self-Reported Just-World Beliefs

Lerner (1980) proclaims that the *just-world theory*, also known as *belief in a just world* (BJW), states that individuals have a need to believe that the world is “just”, and therefore individuals get what they deserve, and deserve what they get. This belief encourages individuals to search for meaning in their own experiences and the experiences of others. The *symmetry assumption* underpinning the just-world theory is that individuals apply just-world beliefs equally to both positive and negative outcomes. Subsequently, it is expected that the symmetry assumption holds in BJW self-report scales which measure individual differences in just-world beliefs at a trait level, although this has not been tested. The face validity of these scales indicate that the symmetry assumption is not measured as most of the items do not explicitly mention positive or negative events. Thus, the present study aimed to determine whether the BJW symmetry assumption holds at a trait level. A BJW-self scale, which is a measure of the extent to which an individual believes that they get what they deserve (Lipkus et al., 1996), was modified into a positively and negatively valenced version for the purposes of testing the symmetry assumption at a trait level. The aim was achieved by testing whether participants scores on the positively and negatively valenced BJW-self scales were equal, and by observing whether the two BJW-self scales had the same associations with life satisfaction, optimism, gratitude, and psychological entitlement.

The Belief in a Just World

Just-world reasoning was first observed in a study conducted by Lerner (1965). In this study, participants observed two workers complete an equal amount of work, yet they appraised the worker who received a monetary reward as more deserving of the money than the worker who received no reward. Lerner recognised that the participants judged others based on the outcomes they received. Furthermore, Lerner and Simmons (1966) exposed

participants to an innocent individual who was perceived to be receiving electric shocks due to responding incorrectly on a task. Findings revealed that participants engaged in derogation by rejecting and devaluing the victim. Lerner reasoned that the victim was derogated because the participants interpreted the victim's fate (i.e., electric shocks) as deserved. Thus, it was hypothesised that participants reasoned this way due to their need to believe in a just-world, which gave rise to the just-world theory.

Lerner (1977) theorised that an individual's belief in a just-world originates from the "personal contract." The contract begins to develop in childhood as children learn that delayed gratification and effort leads to rewarding long-term outcomes. Eventually, the individual establishes the personal contract, which is a commitment to the belief that present actions will lead to future outcomes in a predictable way (Dalbert, 2001). Therefore, the personal contract leads individuals to feel like they deserve, or are even entitled to, outcomes that they have worked for (Ellard et al., 2016). This sense of deservingness fostered by an individual's devotion to the personal contract forms the basis of the just-world theory (Ellard et al., 2016).

Lerner (1980) states that just-world beliefs apply to both positive and negative outcomes, which is referred to as the *symmetry assumption* (Kaliuzhna, 2020). That is, positive and negative outcomes are both believed to be deserved if the individual met the necessary preconditions for receiving that outcome. Thus, according to the BJW symmetry assumption, individuals have both positive and negative just-world beliefs. A "positive just-world belief" is the belief that an individual with a "good" character or who engages in positive behaviour deserves to receive a positive outcome. Alternatively, a "negative just-world belief" is the belief that an individual with a "bad" character or who engages in negative behaviour deserves to receive a negative outcome. Notably, there does not need to be a causal connection between an individual's character or behaviour and the outcome for

the outcome to be regarded as deserved, only a perceived connection. Additionally, incongruence between an individuals' character or behaviour, and the outcome (i.e., a good action met with a bad outcome) is perceived as undeserved. As there is a lack of research that has tested the BJW symmetry assumption, the present study was interested in determining whether individuals have equivalent positive and negative just-world beliefs at a trait level.

The Bidimensional Model of BJW

The strength of an individual's general belief in just world is measured using BJW-general scales, however, the *bidimensional model of BJW* indicates that just-world measurement can be subdivided into "self" and "other" (Bègue & Bastounis, 2003). Self-focused BJW (BJW-self) is the belief that oneself gets what one deserves (Lipkus et al., 1996). Other-focused BJW (BJW-other) is the belief that other individuals get what they deserve (Lipkus et al., 1996). The first measures of BJW-self and BJW-other were originally validated by Lipkus et al. (1996) and have since been widely accepted within the literature. The differentiation between these two measures is necessary in research as there is asymmetry in the way individuals perceive just-world experiences for themselves and others. Individuals generally believe the world is more just for themselves (Dzuka & Dalbert, 2002; Scholz & Strelan, 2021).

It is also necessary to differentiate between BJW-self and BJW-other in research as although they are both dimensions of the same construct, each is associated with different outcomes. BJW-other is associated with adverse social outcomes, such as victim derogation and harsh social attitudes (Bègue & Bastounis, 2003; Sutton et al., 2017). For example, Sutton and Douglas (2005) found that BJW-other, but not BJW-self, predicted harsh attitudes toward the poor. BJW-other is associated with discrimination against individuals who receive "negative" outcomes because such outcomes threaten the observer's belief in a just world,

and this threat is only alleviated by providing an unfavourable judgement to the individual (Bègue & Bastounis, 2003; Ellard et al., 2016).

Alternatively, BJW-self is renowned for its adaptiveness. BJW-self has been associated with many adaptive outcomes such as life satisfaction (Sutton & Douglas, 2005), wellbeing (Nartova-Bochaver et al, 2019), optimism (Scholz & Strelan, 2021), and self-esteem (Dzuka & Dalbert, 2002). Additionally, individuals with stronger BJW-self generally have better psychological outcomes after negative experiences (Bartholomaeus & Strelan, 2019 for review; Dalbert, 2001). As BJW-self has been shown to be an important aspect of adaptive functioning, it was the just-world measure selected to test the aim of the present study. Thus, the present study is interested in self-focused positive and negative just-world beliefs; the extent to which individuals believe that they deserve the positive and negative events they experience, respectively.

Original BJW-self Scales

The face validity of existing BJW-self scales provided motivation for the present study as the items do not appear to measure the symmetry assumption. Most of the items are *neutral*; neither positively nor negatively valenced (i.e., I feel that I get what I deserve; Lipkus et al., 1996), and therefore do not explicitly depict positive or negative just-world beliefs. Research investigating the factor structure of BJW-self scales has shown that the neutral items load similarly onto a singular latent factor, however, negatively valenced items (i.e., those focused on deserving punishment) do not (Lipkus et al., 1996; Sutton & Douglas, 2005). As most of the items within BJW-self scales are neutral, it is important to understand whether individuals think about positive or negative events, as this will help to ascertain whether the symmetry assumption is measured.

The interpretation bias may assist in understanding whether individuals think about positive or negative just-world beliefs when completing BJW-self scales. The interpretation

bias influences individuals to interpret ambiguous information in either a positive (positive interpretation bias) or negative (negative interpretation bias) way (Jopling et al., 2020).

Individuals with depression are more likely to have a negative interpretation bias (Everaert et al., 2017; Jopling et al., 2020), which may cause them to think about negative events when completing BJW-self scales. Alternatively, psychologically healthy individuals tend to have a positive interpretation bias (Jopling et al., 2020). Therefore, most individuals may think about positive events when completing BJW-self scales. Thus, BJW-self scales may measure positive self-focused just-world beliefs, suggesting that the symmetry assumption may not hold at a trait level.

Skewness in the BJW Symmetry Assumption

The first, and to this date, only, investigation of the BJW symmetry assumption was conducted by Kaliuzhna (2020), who found that individuals believed that they deserved positive just-world experiences more than negative just-world experiences. Using an experimental survey design, this study investigated the symmetry assumption within retrospective and prospective just-world reasoning. It was found that participants believed that deserved to receive a good outcome because of previously behaving well (i.e., positive retrospective justice), more than they deserved to receive a negative outcome because of previously behaving poorly (i.e., negative retrospective justice). Similarly, participants believed that they were more deserving of behaving well and receiving a positive outcome in the future (i.e., positive prospective justice) than behaving poorly and receiving a negative outcome in the future (i.e., negative prospective justice). Overall, there is evidence to suggest that the BJW symmetry assumption does not hold in retrospective and prospective justice reasoning. Additionally, participants disproportionately indicated that they deserved good things over bad things. However, it is unclear if these findings would be replicated at a trait

level (i.e., participants scoring higher on a positively valenced BJW-self scale than a negatively valenced BJW-self scale).

The Adaptiveness of BJW-self

Self-focused positive and negative just-world beliefs may not be equally adaptive for the individual. BJW-self is typically regarded as an adaptive trait and as a coping resource because high BJW-self is associated with the maintenance of mental health for individuals who have experienced natural disasters, physical and mental illness, and extended negative life circumstances (Bartholomaeus & Strelan, 2019 for review). BJW-self is theorised to be a coping resource as it promotes individuals to make an internal attribution for the cause of negative outcomes, further providing the individual with a sense of control and allowing the outcome to be interpreted in a meaningful way (Dalbert, 2001). Alternatively, BJW-self may not be adaptive for individuals who experience negative outcomes as it may inhibit them from attempting to change a negative situation due to the belief that it was deserved (Fetchenhauer et al., 2005). In circumstances where it is possible for the individual to change or remove themselves from a negative situation, BJW-self does not appear to function as a useful coping resource (Fetchenhauer et al., 2005). This evidence suggests that negative self-focused just-world beliefs are not adaptive.

Furthermore, cognitive processing therapy also indicates that negative self-focused just-world beliefs are not adaptive. Cognitive processing therapy is a treatment for individuals who have experienced harmful and traumatic events (Watkins et al., 2018). Victims of negative events may engage in self-blame and rationalise the event as one they deserved or one that was just in order to protect their just-world beliefs (Fetchenhauer et al., 2005; Lerner & Clayton, 2011). For example, a person who has experienced domestic violence may believe that they deserved the abuse due to something they believed they did wrong (Kaur & Garg, 2008; Watkins et al., 2018). Cognitive processing therapy guides the

individual to ‘accommodation’, the process of allowing new information to change existing maladaptive beliefs, which assists the individual to learn that they could not have prevented the experience from happening and thus, did not deserve it (Watkins et al., 2018). Therefore, by guiding individuals away from believing that they deserve negative outcomes, cognitive processing therapy indicates that negative self-focused just-world beliefs are not adaptive for the individual.

There are mixed findings concerning the adaptiveness of negative self-focused just-world beliefs, which is inconsistent with the literature. Research suggests that BJW-self is an adaptive trait as it is consistently associated with mental health and adaptive coping outcomes (Bartholomaeus & Strelan, 2019). As the symmetry assumption underpins just-world research, it is assumed that it is equally adaptive for individuals to believe that they deserve both good and bad outcomes. However, as there is literature suggesting that negative self-focused just-world beliefs are not adaptive, it is possible that positive self-focused just-world beliefs are responsible for the adaptiveness of BJW-self. This indicates that there may be a positive and negative dimension of BJW-self that function individually and therefore, the symmetry assumption may not hold at a trait level.

Psychological Constructs of Interest

To determine whether the symmetry assumption holds at a trait level, the present study established if there are a positive and negative dimension of BJW-self that function differently. This was achieved by observing whether self-focused positive and negative just-world beliefs, measured on positively and negatively valenced BJW-self scales, have differential associations with several outcome measures. Differential associations would reveal that positive and negative self-focused just-world beliefs function differently, and therefore the symmetry assumption does not hold at a trait level. The present study measured four outcome measures; life satisfaction, optimism, gratitude, psychological entitlement, and

two control measures; self-esteem and social desirability. These outcome measures were selected as life satisfaction and optimism have previously been associated with BJW-self, while gratitude and psychological entitlement were theorised to be differentially associated with self-focused positive and negative just-world beliefs. The focus will now be turned to the psychological constructs of interest.

Life satisfaction is defined by the extent to which an individual feels satisfied with their life in a general sense (Diener et al., 1985). BJW-self has been widely demonstrated to have a positive association with life satisfaction (Dalbert, 1999; Dzuka & Dalbert, 2002; Lipkus et al., 1996; Sutton & Douglas, 2005). This association contributes to BJW-self's reputation as an adaptive trait.

Optimism is an attitude reflecting a positive outlook on life and the general belief that good outcomes will occur (Correia & Vala, 2004). Optimism is considered to be a positive cognitive bias that regulates life satisfaction (Cummins & Nistico, 2002). Contrastingly, low optimism (i.e., pessimism) is an attitude that reflects a negative outlook on life and the belief that negative outcomes will typically occur (Andersen, 1990). BJW-self is positively correlated with optimism (Scholz & Strelan, 2021) and optimistic future-directed thinking (Sutton et al., 2017). These associations also bolster the perceived adaptiveness of BJW-self. However, low BJW-self has been associated with a pessimistic outlook towards future life satisfaction (Christandl, 2012).

Gratitude is a psychological state that encompasses thankfulness, appreciation of life, and gratefulness (Emmons & Shelton, 2002). Despite the rising interest in gratitude within positive psychology and an expanding recognition of its adaptiveness (e.g., happiness, peace of mind, and protecting against feelings of dissatisfaction; Emmons & Shelton, 2002; Emmons et al., 2019), the relationship between gratitude and BJW-self has not been explored. Watkins et al. (2004) proposed that a feature of gratitude is the ability to easily

recall pleasant events, rather than unpleasant events, that one has previously experienced. This proposition was supported as the researchers found that participants with high gratitude displayed a positive memory bias by recalling more positive than negative life events, however this may have been because grateful individuals encode life events more positively than less grateful individuals. Nonetheless, differential associations may exist between gratitude, and positive and negative self-focused just-world beliefs. Additionally, gratitude was selected as it opposes psychological entitlement, another construct measured in the present study. Gratitude is the opposite of entitlement as rather than wanting more and feeling dissatisfied with what one has, individuals with high gratitude are satisfied and thankful for what they have (Grubbs & Exline, 2016).

Psychological entitlement is a personality trait defined by heightened expectations and an increased sense of deservingness (Grubbs & Exline, 2016). Although entitlement has not previously been associated with BJW-self, it was selected to measure in the present study as Ellard et al. (2016) stated that a belief in a just world can lead individuals to feel entitled to outcomes that they believe they deserve. Individuals with high entitlement also have an increased sense of deservingness, view themselves as privileged, and believe they have the right to special treatment (Grubbs & Exline, 2016). For these reasons, it is possible that individuals with high entitlement may believe that they disproportionately deserve positive life events and not negative life events. Therefore, there is theoretical reason to believe that differential associations may exist between psychological entitlement, and positive and negative self-focused just-world beliefs.

Self-esteem reflects an individual's overall attitude towards themselves (Nartova-Bochaver et al., 2019) and was chosen as a control variable. This is because a participant's self-esteem may influence their reporting on other self-report measures and may confound the relationships being observed in the present study. Previous studies have similarly controlled

for self-esteem when looking at the associations between BJW-self and other psychological constructs, such as life satisfaction (Sutton & Douglas, 2005).

Social desirability in self-report scales is seen when participants provide “socially acceptable” responses that are not reflective of their true self (Hart et al., 2015). As such, social desirability was selected as a control variable because participants may respond to the psychological entitlement scale in a socially desirable way by downplaying their level of entitlement. Previous studies that have looked at the association between BJW-self and other psychological constructs (e.g., life satisfaction) have controlled for social desirability (Dzuka & Dalbert, 2002; Sutton & Douglas, 2005; Sutton et al., 2008).

The Present Study

The BJW symmetry assumption underpins the just-world theory, and subsequently, just-world measurement. However, the symmetry assumption has rarely been tested and there are reasons to believe that it does not hold at a trait level. The face validity of the scales does not signify that the symmetry assumption is accounted for, as the items are neither positively nor negatively valenced. Additionally, most individuals have the positive interpretation bias which suggests that the majority of participants are likely to think about positive events in response to ambiguous information, which may result in skewed responses to ambiguously worded items on BJW-self scales. Therefore, the aim of the present study was to test whether the BJW symmetry assumption holds at a trait level. To achieve this, the original BJW-self scale was modified to a positively valenced (Positive BJW-self) and a negatively valenced (Negative BJW-self) version. Hypothesis one (H1) was that Positive BJW-self and Negative BJW-self will exhibit a two-factor structure, where the two latent factors are weakly negatively correlated.

Moreover, Kaliuzhna (2020) identified skew in the BJW symmetry assumption at a state level as individuals disproportionately indicated that they deserve positive just-world

experiences more than negative just-world experiences. Therefore, hypothesis two (H2) was that participants will score higher on Positive BJW-self than Negative BJW-self.

Additionally, BJW-self has consistently been associated with adaptive psychological outcomes (Bartholomaeus & Strelan, 2019), while cognitive processing therapy indicates that negative self-focused just-world beliefs are not adaptive. Thus, it is theorised that Positive BJW-self is the adaptive dimension of BJW-self. Furthermore, as Positive BJW-self and Negative BJW-self are hypothesised to be two separate constructs, it is predicted that they will be differentially associated with the outcome measures.

Accordingly, hypothesis three (H3) was that Positive BJW-Self will have a positive association with life satisfaction, optimism, gratitude, and psychological entitlement.

Hypothesis four (H4) was that Negative BJW-self will have a negative association with life satisfaction, optimism, gratitude, and psychological entitlement. It was anticipated that self-esteem and social desirability might play a role in these associations, so they were controlled for when testing H3 and H4. Additionally, H3 and H4 were limited to the direction of the expected associations as the positive and negative valence of a BJW-self scale is a new idea, and therefore, there is no empirical basis on which to hypothesise about the strength of the associations. The results of this study are significant as they indicate whether the BJW symmetry assumption underlies the just-world theory at a trait level.

Method

Participants

Two a priori power analyses were conducted. A Monte Carlo simulation with 1000 repetitions, item loadings and errors based on a confirmatory factor analysis (CFA) conducted with existing data, an effect size estimate of $r = .25$, a sample size of 250, and an alpha level of $\alpha = 0.05$, specified a power level of 95.2%. As 95.2% of the simulations

produced a significant association between the factors, this suggests that 250 participants are suitable. Additionally, an a priori analysis was conducted for a regression model with five predictors, a Bonferroni corrected alpha level of $\alpha = 0.0125$, a power level of 0.80, and ΔR^2 values ranging from .03 to .05 (as reported by Jiang et al., 2016). This analysis indicated that 162 to 312 participants were required for the present study. Based on these results, the desired number of participants for the present study was $N = 300$.

Participants included in the study were required to be an Australian resident and over the age of 18. One participant under the age of 18 was removed from the sample. The final sample consisted of $N = 352$ (256 women, 88 males, five non-binary, and three who preferred not to say). The age of participants ranged from 18 to 70 ($M = 29.15$, $SD = 12.27$). Most participants identified as Australian (71%), while the remaining (29%) identified as having a mixed or non-Australian nationality. Additionally, most participants spoke English as their primary language (88.1%), while the remaining participants (11.9%) spoke a combination of English and a second language or primarily another language.

Procedure

A pre-registration for the study was submitted via AsPredicted which documents the planned hypotheses, research design and data analysis prior to commencing data collection (Appendix A). A cross-sectional correlational survey design was utilised for the present study. This design was selected as it is the most common method used to measure the adaptiveness of BJW-self (Dalbert, 2001; Furnham, 2003; Sutton et al., 2008). Qualtrics, an online survey platform, was used to create the survey and collect the data. Participants were recruited from the general population via snowball sampling, social media posts, and the distribution of flyers (Appendix B).

Upon opening the survey, participants were provided with an information sheet outlining the study's purpose, ethical information, and participation requirements. Those who sought to participate provided electronic informed consent. Participants began the survey by completing the Positive and Negative BJW-Self scales, which were randomised to control for order effects. Next, participants completed the scales pertaining to the outcome measures, the control measures, and demographic questions. Finally, participants were presented with a debrief on the purpose of the study. The full survey is available to view in Appendix C. Participants were not compensated for their participation; however, they were provided with the primary researcher's contact details to request a summary of the study's results.

Measures

Participants completed eight self-report scales and four questions that collected demographic information on age, nationality, primary language, and gender. The scores in each scale were averaged to create the final scale scores that were used in the multiple regression analyses. Participants rated their agreement to all items using Likert scales, where high scores denoted stronger agreement.

Positive BJW-Self

Positive BJW-self was measured with an 8-item scale (1 = *strongly disagree*, 7 = *strongly agree*). The items are positively valenced versions of the items in Lipkus et al.'s (1996) BJW-self scale. An example item is "I feel that I get the good things I deserve." McDonald's omega and Cronbach's alpha are outlined in the Results section.

Negative BJW-Self

Negative BJW-self was measured on an 8-item scale (1 = *strongly disagree*, 7 = *strongly agree*). The items are negatively valenced versions of the items in Lipkus et al.'s (1996) BJW-self scale. An example item is "I feel that I get the bad things I deserve." McDonald's omega and Cronbach's alpha are outlined in the Results section.

Life Satisfaction

Life satisfaction was measured using Diener et al.'s (1985) Satisfaction with Life Scale (SWLS), on a five-item scale (1 = *strongly disagree*, 7 = *strongly agree*). An example item is "In most ways my life is close to my ideal." Internal reliability of the SWLS in this study was high with a McDonald's omega and Cronbach's alpha of $\omega = .88$, $CI_{95\%} [.86, .90]$ and $\alpha = .88$, $CI_{95\%} [.86, .90]$, respectively. These results are comparable to previous studies that found a Cronbach's alpha of $\alpha = .84$ (Sutton & Douglas, 2005), $\alpha = .82$ (Correia & Vala, 2004), and $\alpha = .74$ (Jiang et al., 2016).

Optimism

Optimism was measured using Scheier et al.'s (1994) Life Orientation Test Revised (LOT-R), a 10-item scale (1 = *I disagree a lot*, 5 = *I agree a lot*). Of the 10 items, three measured optimism and three measured pessimism. The items measuring pessimism (three, seven, and nine) were reverse scored. An example item representing optimism is "I'm always optimistic about my future." The LOT-R displayed an acceptable level of internal reliability as the McDonald's omega and Cronbach's alpha were $\omega = .77$, $CI_{95\%} [.72, .81]$ and $\alpha = .77$, $CI_{95\%} [.74, .81]$, respectively. These results are comparable to a previous study that observed a Cronbach's alpha of $\alpha = .70$ (Scholz & Strelan, 2021).

Gratitude

Gratitude was measured using McCullough et al.'s (2002) Gratitude Questionnaire – 6 (GQ-6), a 6-item scale (1 = *strongly disagree*, 7 = *strongly agree*). An example item is “If I had to list everything that I feel grateful for, it would be a very long list.” Items three and six were reverse scored. Acceptable internal reliability was found in the GQ-6 with a McDonald’s omega and a Cronbach’s alpha of $\omega = .77$, $CI_{95\%} [.72, .81]$ and $\alpha = .77$, $CI_{95\%} [.73, .81]$, respectively. This was equivalent to the Cronbach’s alpha found in a previous study: $\alpha = .77$ (Strelan, 2007).

Psychological Entitlement

Psychological entitlement was measured on Campbell et al.'s (2010) Psychological Entitlement Scale (PES), a 9-item scale (1 = *strong disagreement*, 7 = *strong agreement*). An example item is “Great things should come to me.” Item five was reverse scored. McDonald’s omega and Cronbach’s alpha for the PES was $\omega = .85$, $CI_{95\%} [.82, .87]$ and $\alpha = .82$, $CI_{95\%} [.80, .85]$, respectively. This alpha coefficient is similar to the Cronbach’s alpha found by the developers of the scale: $\alpha = .85$ (Campbell et al., 2010).

Self-esteem

Self-esteem was measured on Rosenberg’s (1965) Rosenberg Self-esteem Scale (RSES), a 10-item scale (1 = *strongly disagree*, 4 = *strongly agree*). An example item is “At times I think I am no good at all.” Items two, five, six, eight, and nine, were reverse scored. High internal consistency was observed for the RSES as the McDonald’s omega and Cronbach’s alpha were $\omega = .90$, $CI_{95\%} [.88, .92]$ and $\alpha = .89$, $CI_{95\%} [.88, .91]$, respectively. These results align with previous studies that observed a Cronbach’s alpha of $\alpha = .89$ (Sutton & Douglas, 2005) and $\alpha = .80$ (Correia & Vala, 2004).

Social Desirability

Social desirability was measured using Hart et al.'s (2015) Balanced Inventory of Desirable Responding Short Form (BIDR-16), a 16-item scale (1 = *not true*, 7 = *very true*). The 16 items within the BIDR-16 were derived from the original 40-item BIDR (Paulhus, 1984). The BIDR-16 displays superior fit for a two-factor model which confirms that it reflects the two dimensions (i.e., self-deceptive enhancement and impression management) present within the original BIDR (Hart et al., 2015). An example item is "I am a completely rational person." The instructions stated to reverse score half of the items and then code scores 1-5 as zero and scores 6 and 7 as 1, so the range of social desirability scores was 1-16 (Paulhus, 1984). In the present study, instead of reverse scoring the items that were required to be reverse scored, scores 1 and 2 were coded as 1 and scores 3-7 were coded as zero. For the other items, scores 6 and 7 were coded as 1, and scores 1-5 were coded as zero. Acceptable internal reliability was identified for the BIDR-16 as the McDonald's omega and Cronbach's alpha were $\omega = .73$, $CI_{95\%} [.68, .78]$ and $\alpha = .73$, $CI_{95\%} [.69, .77]$, respectively.

Ethical Considerations

The study was approved by the Human Research Ethics Committee at the University of Adelaide. The information sheet provided to participants outlined that participation in the study was voluntary, participation could be withdrawn at any time, and that the data collected is anonymous and confidential. Contact information of the researchers and resources to contact in the event of distress or ethical complaints were provided (Appendix C).

Statistical Analyses

Statistical analyses were conducted on RStudio 2022.02.0. Exclusion criteria included observations where scores were missing on any given measure (listwise deletion) and observations where participants reported being under the age of 18.

CFA Analysis

CFA analysis was used to test H1. Prior to running the CFA, a Mardia's test of multivariate normality was conducted with the 16 items that were selected to use. This test indicated that the items deviated from normality in both skewness and kurtosis. Therefore, Maximum Likelihood Estimation (a robust estimation procedure) was selected to use for the CFA.

Adequate model fit was determined using the cut-off criteria suggested by Marsh et al., (2004). Adequate fit is represented by a comparative fit index (CFI) and Tucker-Lewis index (TLI) $>.90$, a root-mean-square error of approximation (RMSEA) $<.08$, and a standardized root mean square residual (SRMR) $<.08$. Excellent fit is denoted by a CFI and TLI $>.95$, RMSEA $<.06$, and SRMR $<.08$. It was decided that if the CFA did not show adequate fit to the data, iterative model modification would be conducted (i.e., allowing item cross-loadings and item removal).

Regression Assumptions

All assumptions were met for both regression models. That is, multicollinearity was found to absent, linearity was confirmed between the predictor and outcome variables, both models had normally distributed residuals, homoscedasticity was present, and no external sources of variance were observed.

Hypotheses

An independent samples t-test was used to test H2, to determine whether participants scored higher on Positive BJW-self than Negative BJW-self. H3 and H4 were tested using two separate multiple regression analyses to investigate the association between Positive BJW-self and Negative BJW-self with life satisfaction, optimism, gratitude, and

psychological entitlement. Self-esteem, social desirability, and the non-target BJW-Self scale were included as control variables in both regressions.

Results

Scale Development

The main goal of this study was to ascertain if the BJW symmetry assumption holds at a trait level. To achieve this, Lipkus et al.'s (1996) original BJW-self scale was adapted to create a positively (Positive BJW-self) and negatively (Negative BJW-self) valenced version. For the Positive BJW-self scale, the original just-world items were adapted to depict positive just-world experiences. Likewise, for the Negative BJW-self scale, the original just-world items were adapted to depict negative just-world experiences. The only modifications made were to the valence of the items, not to the original meaning. Thus, the Positive BJW-self scale measures the extent to which an individual believes that they deserve positive just-world experiences, while the Negative BJW-self scale measures the extent to which an individual believes that they deserve negative just-world experiences.

The Positive BJW-self and Negative BJW-self scales underwent expert review to ensure that they were accurate positively and negatively valenced versions of the original items. Five experts in the BJW research field who were from various cultural backgrounds (i.e., Australian, American, German, Turkish, and Russian) were contacted. They were provided with two tables, which included the original BJW-self items alongside the positively and negatively valenced versions of the items, and a column to leave feedback. Four of the five experts provided feedback on the tables provided (Appendix D). Feedback consisted of comments about item clarity, and wording used that did not make sense in other cultures. The

originally developed items were refined in light of the feedback and the final Positive and Negative BJW-self scales were finalised (Appendix E).

Confirmatory Factor Analysis

A baseline CFA model was estimated with the data. Positive BJW-self and Negative BJW-self exhibited a two-factor structure, but this was not a clean fit. Thus, iterative model modifications were conducted (Table 1). The modification indices informed the changes that were made. The first modifications made were to allow the error terms of Positive BJW-self items four and eight to correlate, allow the error terms of Negative BJW-self items three and four to correlate, and allow the error terms of Positive BJW-self items one and two to correlate. The next modification made was to allow Negative BJW-self item one to cross load with Positive BJW-self. The final modification was the removal of Positive BJW-self item eight due to a low factor loading (i.e., 0.35), which meant that the correlation between the error terms of Positive BJW-self items four and eight was also removed. Model six showed adequate fit to the data, meeting Marsh et al.'s (2004) cut-off criteria. Factor loadings for the items measuring Positive BJW-self and Negative BJW-self in Model six were moderate to high (Table 2). A basic latent correlation between Positive BJW-self and Negative BJW-self revealed that the two constructs were weakly positively correlated (0.12).

Table 1*Iterative model modification*

Model	χ^2	df	<i>p</i> value	CFI	TLI	RMSEA	90% CI	SRMR	Description
CFA Model 1	415.854	103	0	0.856	0.833	0.093	0.084, 0.102	0.074	Baseline model with no modifications.
CFA Model 2	352.327	102	0	0.885	0.865	0.083	0.074, 0.093	0.068	Allow the error terms of Positive BJW-self item 4 and item 8 to correlate.
CFA Model 3	314.908	101	0	0.902	0.883	0.077	0.068, 0.087	0.067	Allow the error terms of Negative BJW-self item 3 and item 4 to correlate.
CFA Model 4	286.735	100	0	0.914	0.897	0.073	0.063, 0.083	0.066	Allow the error terms of Positive BJW-self item 1 and item 2 to correlate.
CFA Model 5	263.348	99	0	0.925	0.909	0.069	0.059, 0.079	0.059	Allow Negative BJW-self item 1 to cross load with Positive BJW-self.
CFA Model 6	215.510	86	0	0.936	0.922	0.065	0.054, 0.076	0.058	Remove: Positive BJW-self item 8 and the correlation between error terms of items 4 and 8.

Table 2*The final CFA (Model six) Factor Loadings*

Item	Pos BJW-self	Neg BJW-self	Error
Pos item 1	.746		0.034
Pos item 2	.727		0.04
Pos item 3	.759		0.034
Pos item 4	.449		0.054
Pos item 5	.608		0.045
Pos item 6	.696		0.041
Pos item 7	.699		0.039
Neg item 1	.226	.613	0.057, 0.046
Neg item 2		.769	0.037
Neg item 3		.608	0.049
Neg item 4		.703	0.041
Neg item 5		.532	0.053
Neg item 6		.783	0.034
Neg item 7		.424	0.054
Neg item 8		.627	0.042

Reliability

Positive BJW-self and Negative BJW-self both displayed high internal reliability.

McDonald's omega and Cronbach's alpha for Positive BJW-self was $\omega = .85$, $CI_{95\%} [.83, .88]$ and $\alpha = .86$, $CI_{95\%} [.83, .88]$, respectively. McDonald's omega and Cronbach's alpha for Negative BJW-self was $\omega = .85$, $CI_{95\%} [.82, .88]$ and $\alpha = .85$, $CI_{95\%} [.83, .87]$, respectively.

Scores on Positive/Negative BJW-self

H2 was supported as participants scored significantly higher on the Positive BJW-self scale than the Negative BJW-self scale. An independent samples t-test was statistically significant, $t(704) = -10.65$, $p < .05$). Participants scored on average 0.88 units higher on the

Positive BJW-self scale ($M = 4.68$, $SD = 1.03$) than the Negative BJW-self scale ($M = 3.82$, $SD = 1.11$).

Associations Between Positive BJW-self and Outcome Measures

The first multiple linear regression analysis was conducted with Positive BJW-self as the outcome variable, with life satisfaction, optimism, gratitude, and psychological entitlement, as predictor variables.¹ Negative BJW-self, self-esteem, and social desirability were entered as control variables. The regression was significant $F(8, 344) = 31.83$, $p < .05$, with a Multiple R^2 of 0.423. This model accounted for 42.3% of the variance in Positive BJW-self. Positive BJW-self was significantly associated with all of the outcome measures of interest, however, had the strongest association with life satisfaction, followed by optimism. Individual estimates are reported in Table 3.

Table 3

Regression Coefficients for Predicting Positive BJW-self

	<i>b</i>	β	Std. Error	<i>p</i> Value
Neg BJW-Self	0.186	.201	0.04	<.001
Life Satisfaction	0.241	.347	0.04	<.001
Optimism	0.301	.239	0.073	<.001
Gratitude	0.127	.116	0.054	<.05
Entitlement	0.081	.086	0.041	<.05
Self-esteem	0.129	.075	0.106	.226
Social Desirability	-0.004	-.01	0.016	.826

Associations Between Negative BJW-self and Outcome Measures

¹ A sensitivity analysis was conducted. When testing the linearity of the Positive and Negative BJW-self regression models, both plots displayed the three largest outliers falling outside -2 and 2. A sensitivity analysis was conducted to determine if removal of the six outliers had a significant impact on the multiple regression results. Most of the regression estimates did not change in their significance values, however self-esteem in the Negative BJW-Self model became significant. As most of the findings did not change, to be consistent with the pre-registration, I retained the multivariate outliers.

The second multiple linear regression analysis was conducted with Negative BJW-self as the outcome variable, with optimism, life satisfaction, gratitude, psychological entitlement, as predictor variables. Positive BJW-self, self-esteem, and social desirability were entered as control variables. The regression was significant $F(8, 344) = 6.787, p < .05$, with a Multiple R^2 of 0.148. This model accounted for 14.8% of the variance in Negative BJW-self. Negative BJW-self was significantly associated with optimism and psychological entitlement.

Individual estimates are reported in Table 4.

Table 4

Regression Coefficients for Predicting Negative BJW-self

	<i>b</i>	β	Std. Error	<i>p</i> Value
Pos BJW-Self	0.319	.296	0.068	<.001
Life Satisfaction	0.002	.003	0.054	.966
Optimism	-0.303	-.224	0.096	<.001
Gratitude	0.074	.063	0.071	.294
Entitlement	0.108	.108	0.053	<.05
Self-esteem	-0.338	-.184	0.138	<.05
Social Desirability	-0.049	-.126	0.021	<.05

Discussion

The present study aimed to determine whether the previously untested, implicit symmetry assumption of the just-world theory, holds at a trait. Based on previous literature and theory, it was hypothesised that the BJW symmetry assumption does not hold at a trait level as Positive BJW-self and Negative BJW-self are two different constructs, and therefore would be differentially associated with the outcome measures of interest: life satisfaction, optimism, gratitude, and psychological entitlement. In support of H1, Positive BJW-self and Negative BJW-self exhibited a two-factor structure after several model modifications. The

two constructs were weakly positively correlated, which did not support H1. H2 was supported as participants scored higher on the Positive BJW-self scale than the Negative BJW-self scale. H3 was also supported as Positive BJW-self was positively associated with life satisfaction, optimism, gratitude, and psychological entitlement. However, the size of the association between Positive BJW-self and psychological entitlement was trivial. H4 was partly supported as Negative BJW-self was negatively associated with optimism. Though, Negative BJW-self was positively associated with psychological entitlement and not associated with life satisfaction or gratitude, which did not support H4. Although H4 was not completely supported, Positive BJW-self and Negative BJW-self still exhibited differential associations with the outcome measures of interest. This shows that Positive BJW-self and Negative BJW-self function as unique constructs, and therefore the BJW symmetry assumption does not hold a trait level.

Critical Evaluation of the Results

Two-factor Structure of BJW-self

CFA revealed that Positive BJW-self and Negative BJW-self exhibited a two-factor structure after several model modifications. Model six met Marsh et al.'s (2004) cut-off criteria for adequate model fit. Additionally, the items measuring Positive BJW-self and Negative BJW-self displayed moderate to high factor loadings, which supports that the items strongly contribute to measuring the two constructs. These findings indicate a bidimensional model of BJW-self, which has not been previously proposed.

Scores on the Positive/Negative BJW-self Scales

The observed scores on the positively and negatively valenced BJW-self scales are comparable to findings by Kaliuzhna (2020). On average, participants in the present study

“slightly agreed” with the Positive BJW-self scale items and “slightly disagreed” with the Negative BJW-self scale items. Thus, at a trait level, individuals agree that they deserve positive just-world outcomes and do not believe that they deserve negative just-world outcomes. Similarly, Kaliuzhna (2020) measured the symmetry assumption at a state level and found that participants believed they deserved positive retrospective justice, positive prospective justice, and positive outcomes, more than their respective negative counterparts. Therefore, participants in the present study likely scored higher on the positively valenced BJW-self scale because the items explicitly depicted deserving positive just-world outcomes. Effectively, the present study replicated Kaliuzhna’s (2020) findings at a trait level. The results from both studies support that the symmetry assumption does not hold underpin the just-world theory because individuals believe that they are more deserving of positive, rather than negative, just-world outcomes.

Additionally, individuals may have scored higher on the Positive BJW-self scale than the Negative BJW-self scale because most individuals are generally optimistic and have cognitive biases that distort how they interpret and predict events (Mezulis et al., 2004; Sharot, 2011; Taylor & Brown, 1988). Psychologically healthy individuals have the self-serving attributional bias, which is the cognitive process of attributing the cause of positive events to oneself and the cause of negative events to external factors (Mezulis et al., 2004). Psychologically healthy individuals also have the optimism bias, which is the overestimation that positive events will occur and the underestimation that negative events will occur (Sharot, 2011). According to these biases, most participants may have slightly agreed with the Positive BJW-self scale items because they attributed positive just-world outcomes to themselves or because they overestimated the occurrence of receiving positive events in the future. Moreover, participants may have slightly disagreed with the Negative BJW-self scale

items because they do not attribute negative outcomes to themselves or because they underestimated the likelihood of receiving negative events in the future.

Positive BJW-self and the Outcome Measures

The associations observed between Positive BJW-self and the outcome measures of interest in the present study, are compared to the just-world literature. Positive BJW-self had small positive associations with life satisfaction and optimism. Similarly, researchers have observed moderate to large positive associations between BJW-self and life satisfaction (Dalbert, 1999; Dzuka & Dalbert, 2002; Lipkus et al., 1996; Sutton & Douglas, 2005), and moderate associations between BJW-self with optimism (Scholz & Strelan, 2021) and optimistic future directed thinking (Sutton et al., 2017).

A small positive association was found between Positive BJW-self and gratitude. BJW-self has not previously been associated with gratitude; however, this finding is comparable to a study that found a small positive association between BJW-general and gratitude (Jiang et al., 2016). The positive association between Positive BJW-self and gratitude also aligns with the results of a study which found that grateful individuals recalled more positive than negative life events and rated the positive events more favourably (Watkins et al., 2004). The associations observed between Positive BJW-self, life satisfaction, optimism, and gratitude, indicate that positive self-focused just-world beliefs are adaptive.

Negative BJW-self and the Outcome Measures

The associations observed between Negative BJW-self and the outcome measures are also compared to the just-world literature. Negative BJW-self was not associated with life satisfaction or gratitude. These associations differ from past research that has shown BJW-

self is positively associated with life satisfaction (Dzuka & Dalbert 2002; Sutton & Douglas, 2005), and that BJW-general shares a small positive association with gratitude (Jiang et al., 2016). Furthermore, Negative BJW-self was positively associated with psychological entitlement, although there is no existing research to compare this relationship to.

Nonetheless, this finding indicates that negative self-focused just-world beliefs are associated with feeling increasingly deserving of special treatment and privileges. As entitlement is generally regarded as an undesirable trait, the association between Negative BJW-self and entitlement suggests that Negative BJW-self is not adaptive.

Additionally, Negative BJW-self shared a small negative association with optimism, suggesting that strong negative self-focused just-world beliefs are associated with low optimism (i.e., pessimism). This finding is not supported by previous research which indicates that BJW-self is positively associated with optimism (Scholz & Strelan, 2021). The association between Negative BJW-self and pessimism indicates that Negative BJW-self functions similarly to low BJW-self. This is because low BJW-self shares a positive association with a pessimistic attitude towards future life satisfaction (Christandl, 2012). Thus, Negative BJW-self and low BJW-self are both associated with pessimistic beliefs. Negative BJW-self was not positively associated with the adaptive psychological constructs measured in this study (i.e., life satisfaction, optimism, and gratitude), but was positively associated with an undesirable trait (i.e., entitlement), suggesting that it is not an adaptive trait to have.

Interpretations of the Differential Associations

Some research indicates that self-esteem can influence one's sense of deservingness. Callan et al., (2014) found that participants who experienced a "bad" outcome due to luck or recalled negative life experiences reported lower self-esteem than participants who

experienced a “good” outcome due to luck or recalled positive life experiences. Reductions in self-esteem due to bad luck, recalling negative life experiences, or failure, were associated with beliefs about being deserving of negative outcomes. Therefore, participants in the present study with high self-esteem may have scored higher on the positively valenced BJW-self scale than participants with low self-esteem. However, the differential associations between Positive BJW-self and Negative BJW-self with the outcome measures were not due to self-esteem as this was measured and controlled for in the present study.

The differential associations observed between Positive BJW-self and Negative BJW-self with the outcome measures indicate that it is not equally adaptive for an individual to believe that they deserve both positive and negative outcomes. The renowned adaptiveness of BJW-self (Bartholomaeus & Strelan, 2019), paired with the BJW symmetry assumption, led to the supposition that it is adaptive for individuals to believe that they deserve both the positive and negative outcomes they receive. Contrary to this, the findings from the present study suggest that Positive BJW-self, but not Negative BJW-self, is the “adaptive” dimension of BJW-self. This is supported by previous literature and cognitive processing therapy, which indicate that negative self-focused just-world beliefs are not adaptive because they can prevent an individual from changing a negative circumstance and lead to maladaptive self-blame (Fetchenhauer et al., 2005; Lerner & Clayton, 2011; Watkins et al., 2018). Therefore, positive self-focused just-world beliefs may be exclusively responsible for the renowned adaptiveness of BJW-self.

Implications of the Present Findings

The Just-World Theory and BJW-self

The results of the present study have implications for the just-world theory. The symmetry assumption believed to underpin the just-world theory was found not to hold at a

trait level; individuals do not believe they equally deserve both good and bad outcomes. The finding that Positive BJW-self and Negative BJW-self do not share the same associations with other constructs indicates that there are two dimensions of BJW-self. This was also supported by the CFA model which revealed that Positive BJW-self and Negative BJW-self had a two-factor structure. Thus, BJW-self may be best represented as two different dimensions (i.e., Positive BJW-self and Negative BJW-self). Previously, the bidimensional model of BJW was created as researchers highlighted the importance of differentiating between BJW-self and BJW-other due to their differential associations with other psychological outcomes. Similarly, it may also be necessary to differentiate between Positive BJW-self and Negative BJW-self within just-world research as they also have differential associations with other psychological constructs.

Just-World Measurement

The findings of the present study have implications for just-world measurement. As the symmetry assumption is believed to underpin the just-world theory, it is expected that the symmetry assumption holds in BJW self-report scales. However, the present findings revealed that Positive BJW-self and original BJW-self share similar associations with life satisfaction and optimism, while Negative BJW-self did not exhibit these same associations. The comparable associations seen between Positive BJW-self and original BJW-self suggest that the original BJW-self scale measures the 'positive' dimension of BJW-self; the extent to which individuals believe that they deserve positive just-world outcomes. Therefore, individuals likely draw upon positive events when completing original BJW-self scales.

Future researchers should consider that the use of just-world scales that largely comprise of neutral items may activate the positive or negative interpretation bias. Psychologically healthy individuals typically have the positive interpretation bias which leads

them to interpret ambiguous information positively, while individuals with depression usually have the negative interpretation bias which leads them to interpret ambiguous information negatively (Jopling et al., 2020). The present sample was drawn from the general population, so it can be assumed that most were psychologically healthy. As findings from this study indicate that individuals likely think about positive events when completing the original BJW-self scale, it appears that the ambiguity of the scale items may activate the positive interpretation bias. Future researchers should be aware that the use of ambiguous just-world scales may activate the positive or negative interpretation bias and inhibit the BJW symmetry assumption from being measured.

Furthermore, future researchers should consider using positively and negatively valenced versions of BJW self-report scales to accurately measure just-world beliefs. Modifying the BJW-self scale items to depict a positive and negative valence in the present study revealed that there are a positive and negative dimension of BJW-self that function differently. As most just-world scales are largely neutral (Dalbert, 1999; Lipkus et al., 1996), it is possible that the item ambiguity is concealing that the just-world construct in question may also have a positive and negative dimension. Thus, it is suggested that future researchers consider using a positively and negatively valenced version of just-world scales to measure the unique functioning of positive and negative just-world beliefs and ensure that the symmetry assumption is measured.

Just-World Literature

The findings of the present study have implications for the interpretation of just-world literature pertaining to BJW-self. Instead of holding the belief that the symmetry assumption underpins the just-world theory, researchers interpreting existing research should consider that original BJW-self scales may be measuring the positive dimension of BJW-self and that

the symmetry assumption does not hold at a trait level. As such, when interpreting studies that suggest high BJW-self is adaptive because it is associated with adaptive psychological outcomes or because it is associated with improved coping after a negative experience, researchers should consider that these associations may have occurred because participants made positive reflections when completing the BJW-self scale. To illustrate, a study by Xie et al. (2011) found that BJW-self was associated with hope after an earthquake. In light of the present study's findings, high BJW-self may have been associated with hopefulness after the earthquake because participants believed that they generally receive the good outcomes they deserve, despite having just experienced an earthquake. Thus, BJW-self may have been related to hope because participants thought about good events when completing the BJW-self scale. The results of the present study are important as they may be used to interpret and add clarity to the literature.

Strengths and Limitations of the Present Study

This study is the first to test the implicit symmetry assumption of the just-world theory at a trait level, which is important as the symmetry assumption has been implicitly assumed since the beginning of just-world research (Lerner, 1980). This study also extends the work of Kaliuzhna (2020) and therefore contributes to the progression of research into the BJW symmetry assumption. A cross-sectional survey design was an appropriate choice for this study as it was manageable within the time constraints of the study and enabled the aim of the study to be achieved — the differential associations observed between the newly developed just-world scales and the outcome measures of interest revealed that the symmetry assumption does not hold at a trait level. Unlike other psychological research, this study was not limited by a cross-sectional design as it did not seek to establish causal relationships.

The results of the present study have good external validity due to the use of a strong sample. The sample comprised of a wide range of age groups and various cultural

backgrounds. Additionally, the size of the sample exceeded the sample sizes suggested by the a priori power analyses, which strengthens the validity of the findings. In contrast to psychological research that is limited by the use of samples that are predominantly psychology students, the sample used was a strength of this study. However, it was not entirely representative of the general population as the participants were disproportionately female, Australian, and English-speaking.

Furthermore, within psychological research, the use of self-report data has been criticised due to concerns about the introspective ability of participants and dishonesty due to the social desirability bias. The self-report data collected in the present study may be limited as individuals vary in their ability to evaluate themselves accurately. However, socially desirable responding should not affect the results of this study as this was controlled for.

A limitation of the present study is the use of convergent evidence to draw an inference from the results. Specifically, based on the finding that Positive BJW-self and original BJW-self share comparable associations with life satisfaction and optimism, it was inferred that BJW-self scales likely measure the positive dimension of BJW-self and therefore individuals are likely thinking about positive events when completing BJW-self scales. Yet, based on the results of the present study, the type of events that individuals think about when they complete BJW-self scales is still unknown.

Another limitation of the present study is that measures of BJW-other and BJW-general, which also measure BJW at a trait level, were not used to test the symmetry assumption. Therefore, the ability to draw a definitive conclusion that the symmetry assumption does not hold a trait level is limited because it has only been indicated within one type of just-world measure. Moreover, the present study could not determine whether there are self-other differences in positive and negative just-world beliefs.

Future Research Directions

The Bidimensional Model of BJW-self

The present study's findings revealed that BJW-self has a positive and negative dimension. As this is the first study to have observed BJW-self as bidimensional, the two-factor structure of Positive BJW-self and Negative BJW-self should be further validated. Previous studies have primarily focused on the adaptiveness of BJW-self (Bartholomaeus & Strelan, 2019; Dalbert, 2001). Thus, it is recommended that future researchers utilise the Positive and Negative BJW-self scales when investigating the associations that BJW-self shares with other adaptive constructs, and when examining BJW-self as a coping resource for individuals who receive negative events. In line with the present findings, future studies should validate the bidimensional model of BJW-self by illustrating the unique adaptiveness of Positive BJW-self and Negative BJW-self.

Cognitive Biases and the BJW-self Scales

As the self-serving bias and the optimism bias appeared to provide an explanation for differential scoring on the Positive and Negative BJW-self scales, it is relevant for upcoming studies to evaluate whether these biases truly influence scoring on these scales. An individual's attributional style may be measured with Peterson et al.'s (1982) Attributional Styles Questionnaire, which characterises individuals who make more internal attributions for positive events and external attributions for negative events, as having a "positive explanatory style" or the "self-serving attributional bias." Conversely, individuals who make more internal attributions for negative events and external attributions for positive events, have a "negative explanatory style." The optimism and pessimism biases can be measured by comparing an individual's perceived probability of themselves experiencing various positive and negative life events, to the perceived probability of an average individual (equivalent in sex and age) experiencing those same events (Weinstein, 1980). Psychologically healthy

individuals typically display the self-serving bias and the optimism bias (Mezulis et al., 2004; Sharot, 2011), whereas individuals with depression generally have a negative explanatory style and the pessimism bias (Peterson et al., 1982; Sharot, 2011). Therefore, it is necessary to compare these two groups in order to understand whether cognitive biases influence scores on the positively and negatively valenced BJW-self scales.

Extensions of the Present Study

Future research should test whether the symmetry assumption holds within the bidimensional model of BJW. It has become increasingly common for researchers to measure the bidimensional model of BJW as there are self-other differences in just-world beliefs (Bègue & Bastounis, 2003). Therefore, upcoming studies should replicate the present study's design with Lipkus et al.'s (1996) BJW-other scale and compare the findings to the results of the present study to assess self-other differences in positive and negative just-world beliefs. Sutton et al. (2008) observed that self-other differences in just-world beliefs do not simply exist because individuals generally perceive the world as more just for themselves, but because privileged individuals acknowledge that their lives are generally more just than others with certain demographic profiles. Similarly, self-other differences in positive and negative just-world beliefs may depend on the other-reference group. Feather (2006) proposed that according to Heider's (1958) balance principle; negative just-world experiences that occur to a liked individual or a member from one's ingroup, and positive just-world experiences that occur to a disliked individual or a member from one's outgroup, are both perceived as unbalanced, which does not align with the BJW symmetry assumption. Thus, future research could explore whether self-other differences in positive and negative just-world beliefs are influenced by ingroup favouritism or the demographics of the other-reference group.

BJW-self Measurement

Future research should seek to determine whether individuals think about neutral, positive, or negative events when completing BJW-self scales as findings from the present study indicate that individuals likely think about positive events. A narrative response question, similar to one used by Hoolihan and Thomas (2020), could measure the events that individuals thought about while completing a BJW-self scale. The events may be coded as neutral, positive, or negative. Researchers should also establish whether the interpretation bias is accountable for these thoughts. The positive and negative interpretation biases may be measured with Borna et al.'s (2011) Ambiguous Scenario Task. Again, it is recommended that future studies compare psychologically healthy individuals and individuals with depression as they generally have the positive interpretation bias and negative interpretation bias, respectively (Jopling et al., 2020). This research should reveal whether individuals think about positive or negative events when completing BJW-self scales and whether the interpretation bias influences such thoughts, to determine whether the ambiguity of the scale items prevents the symmetry assumption from being measured.

Conclusion

The aim of the present study was to determine whether the BJW symmetry assumption holds at a trait level, which was tested using an original BJW-self scale. The present study revealed that Positive BJW-self and Negative BJW-self had a two-factor structure after several model modifications. Additionally, higher scores on the Positive BJW-self scale, and differential associations between Positive BJW-self and Negative BJW-self with the outcome measures, indicated that the symmetry assumption does not hold at a trait level. Thus, individuals do not have equal positive and negative just-world beliefs for the self, and it is not equally adaptive for individuals to believe that they deserve both good and bad

outcomes, as previously assumed. The findings of the present study have three main implications: original BJW-self scales may measure the positive dimension of BJW-self, the symmetry assumption believed to underpin the just-world theory does not hold at a trait level, and the present study's findings should be considered when interpreting research on BJW-self. Future studies should validate the bidimensional model of BJW-self, determine the influence of cognitive biases on the Positive and Negative BJW-self scales, evaluate self-other differences in positive and negative just-world beliefs, and confirm whether most individuals think about positive events when completing BJW-self scales. Finally, future researchers intending to conduct just-world research should consider using positively and negatively valenced versions of BJW self-report scales to ensure that positive and negative just-world beliefs are both measured.

References

- Andersen, S. M. (1990). The Inevitability of Future Suffering: The Role of Depressive Predictive Certainty in Depression. *Social Cognition, 8*(2), 203–228.
<https://doi.org/10.1521/soco.1990.8.2.203>
- Bartholomaeus, J., & Strelan, P. (2019). The adaptive, approach-oriented correlates of belief in a just world for the self: A review of the research. *Personality And Individual Differences, 151*, Article 109485. <https://doi.org/10.1016/j.paid.2019.06.028>
- Bègue, L., & Bastounis, M. (2003). Two spheres of belief in justice: extensive support for the bidimensional model of belief in a just world. *Journal of Personality, 71*, 435-463.
<https://doi.org/10.1111/1467-6494.7103007>
- Berna, C., Lang, T., Goodwin, G., & Holmes, E. (2011). Developing a measure of interpretation bias for depressed mood: An ambiguous scenarios test. *Personality And Individual Differences, 51*(3), 349-354. <https://doi.org/10.1016/j.paid.2011.04.005>
- Callan, M., Kay, A. C., & Dawtry, R. J. (2014). Making Sense of Misfortune: Deservingness, Self-esteem, and Patterns of Self-defeat. *Journal of Personality and Social Psychology, 107*(1), 142-162. <https://doi.org/10.1037/a0036640>
- Campbell, W. K., Bonacci, A. M., Shelton, J., Exline, J. J., & Bushman, B. J. (2004). Psychological Entitlement: Interpersonal Consequences and Validation of a Self-Report Measure. *Journal of Personality Assessment, 83*(1), 29-45.
https://doi.org/10.1207/s15327752jpa8301_04
- Christandl, F. (2012). The Belief in a Just World as a Personal Resource in the Context of Inflation and Financial Crises. *Applied Psychology, 62*(3), 486-518.
<https://doi.org/10.1111/j.1464-0597.2012.00489.x>

- Correia, I., & Vala, J. (2004). Belief in a just world, subjective well-being and trust of young adults. In C. Dalbert & H. Sallay (Eds), *The justice motive in adolescence and young adulthood: Origins and consequences* (pp. 85-97). Routledge.
- Cummins, R. A., & Nistico, H. (2002). *Journal of Happiness Studies*, 3(1), 37-69.
<https://doi.org/10.1023/a:1015678915305>
- Dalbert, C. (1999). The world is more just for me than generally: About the personal belief in a just world scale's validity. *Social Justice Research*, 12(2), 79-98. <https://doi.org/10.1023/A:1022091609047>
- Dalbert, C. (2001). *The justice motive as a personal resource: Dealing with challenges and critical life events*. Kluwer Academic/Plenum Publishers. <https://doi.org/10.1007/978-1-4757-3383-9>
- Diener, E., Emmons, R. A., Larsen, R. J., & Griffin, S. (1985). The Satisfaction with Life Scale. *Journal of Personality Assessment*, 49, 71-76.
- Dzuka, J., & Dalbert, C. (2002). Mental Health and Personality of Slovak Unemployed Adolescents: The Impact of Belief in a Just World. *Journal of Applied Social Psychology*, 32(4), 732-757. <https://doi.org/10.1111/j.1559-1816.2002.tb00240.x>
- Ellard, J. H., Harvey, A., & Callan, M. J. (2016). The Justice Motive: History, Theory, and Research. In C. Sabbagh & M. Schmitt (Eds.), *Handbook of Social Justice Theory and Research* (pp. 127–143). Springer, New York. https://doi.org/10.1007/978-1-4939-3216-0_7
- Emmons, R. A., & Shelton, C. (2002). Gratitude and the Science of Positive Psychology. In C. R. Snyder & S. J. Lopez (Eds), *Handbook of Positive Psychology* (pp. 459-466). Oxford University Press.

- Emmons, R. A., Froh, J., & Rose, R. (2019). Gratitude. In M. W. Gallagher & S. J. Lopez (Eds), *Positive Psychological Assessment: A Handbook of Models and Measures* (2nd ed., pp. 317-332). <https://doi.org/10.1037/0000138-020>
- Everaert, J., Podina, I. R., & Koster, E. H. W. (2017). A comprehensive meta-analysis of interpretation biases in depression. *Clinical Psychology Review, 58*, 33-48. <https://doi.org/10.1016/j.cpr.2017.09.005>
- Feather, N. T. (2006). Deservingness and emotions: Applying the structural model of deservingness to the analysis of affective reactions to outcomes. *European Review of Social Psychology, 17*(1), 38-73. [10.1080/10463280600662321](https://doi.org/10.1080/10463280600662321)
- Fetchenhauer, D., Jacobs, G., & Belschak, F. (2005). Belief in a Just World, Causal Attributions, and Adjustment to Sexual Violence. *Social Justice Research, 18*(1), 25-42. <https://doi.org/10.1007/s11211-005-3369-1>
- Furnham, A. (2003). Belief in a just world: Research progress over the past decade. *Personality and Individual Differences, 34*(5), 795-817. [https://doi.org/10.1016/S0191-8869\(02\)00072-7](https://doi.org/10.1016/S0191-8869(02)00072-7)
- Grubbs, J. B., & Exline, J. J. (2016). Trait entitlement: A cognitive-personality source of vulnerability to psychological distress. *Psychological Bulletin, 142*(11), 1204–1226. <https://doi.org/10.1037/bul0000063>
- Hart, C., Ritchie, T., Hepper, E., & Gebauer, J. (2015). The Balanced Inventory of Desirable Responding Short Form (BIDR-16). *SAGE Open, 5*(4). <https://doi.org/10.1177/2158244015621113>
- Heider, F. (1958). *The psychology of interpersonal relations*. John Wiley & Sons Inc. <https://doi.org/10.1037/10628-000>
- Hoolihan, E., & Thomas, K. (2020). The relationships between bonding social capital, personal belief in a just world and well-being: an analysis of a diverse student

sample. *Social Psychology of Education*, 23(6), 1609-1626.

<https://doi.org/10.1007/s11218-020-09596-6>

Jiang, F., Yue, X., Lu, S., Yu, G., & Zhu, F. (2016). How Belief in a Just World Benefits Mental Health: The Effects of Optimism and Gratitude. *Social Indicators Research*, 126(1), 411–423. <http://doi.org/10.1007/s11205-015-0877-x>

Jopling, E., Wilson, J., Burke, M., Tracy, A., & LeMoult, J. (2020). Positive interpretation bias across the psychiatric disorders. In T. Aue & H. Okon-Singer (Eds), *Cognitive Biases in Health and Psychiatric Disorders* (pp. 99-117). Elsevier Academic Press. <https://doi.org/10.1016/b978-0-12-816660-4.00005-2>

Kaliuzhna, M. (2020). Symmetries and asymmetries in the belief in a just world. *Personality and Individual Differences*, 161, Article 109940.

<https://doi.org/10.1016/j.paid.2020.109940>

Kaur, R., & Garg, S. (2008). Addressing domestic violence against women: an unfinished agenda. *Indian Journal of Community Medicine: Official Publication of Indian Association of Preventive & Social Medicine*, 33(2), 73–76.

<https://doi.org/10.4103/0970-0218.40871>

Lerner, M. J. (1965). Evaluation of performance as a function of performer's reward and attractiveness. *Journal of Personality and Social Psychology*, 1(4), 355-360.

<https://doi.org/10.1037/h0021806>

Lerner, M. J., & Clayton, S. (2011). *Justice and self-interest: Two fundamental motives*. Cambridge University Press. <https://doi.org/10.1017/CBO9780511976698>

Lerner, M. J., & Simmons, C. H. (1966). Observer's reaction to the "innocent victim": Compassion or rejection?. *Journal of Personality and Social Psychology*, 4(2), 203-210. <https://doi.org/10.1037/h0023562>

- Lerner, M. J., (1977). The justice motive: Some hypotheses as to its origins and forms. *Journal of Personality*, 45(1), 1-52. <https://doi.org/10.1111/j.1467-6494.1977.tb00591.x>
- Lerner, M. J., (1980). *The Belief in a Just World: A Fundamental Delusion*. Springer. <https://doi.org/10.1007/978-1-4899-0448-5>
- Lipkus, I. M., Dalbert, C., & Siegler, I. C. (1996). The Importance of Distinguishing the Belief in a Just World for Self Versus for Others: Implications for Psychological Well-Being. *Personality and Social Psychology Bulletin*, 22(7), 666-677. <https://doi.org/10.1177/0146167296227002>
- Marsh, H., Hau, K., & Wen, Z. (2004). In Search of Golden Rules: Comment on Hypothesis-Testing Approaches to Setting Cutoff Values for Fit Indexes and Dangers in Overgeneralizing Hu and Bentler's (1999) Findings. *Structural Equation Modeling: A Multidisciplinary Journal*, 11(3), 320-341. https://doi.org/10.1207/s15328007sem1103_2
- McCullough M. E., Emmons, R. A., Tsang J. A., (2002). The Grateful Disposition: A Conceptual and Empirical Topography. *Journal of Personality and Social Psychology*, 82(1), 112-127. <https://doi.org/10.1037/0022-3514.82.1.112>
- Mezulis, A., Abramson, L., Hyde, J., & Hankin, B. (2004). Is There a Universal Positivity Bias in Attributions? A Meta-Analytic Review of Individual, Developmental, and Cultural Differences in the Self-Serving Attributional Bias. *Psychological Bulletin*, 130(5), 711-747. <https://doi.org/10.1037/0033-2909.130.5.711>
- Nartova-Bochaver, S., Donat, M., & Rüprich, C. (2019). Subjective Well-Being From a Just-World Perspective: A Multi-Dimensional Approach in a Student Sample. *Frontiers in Psychology*, 10. Article 1739. <https://doi.org/10.3389/fpsyg.2019.01739>

- Paulhus, D. (1984). Balanced Inventory of Desirable Responding. *PsycTests Dataset*.
<https://doi.org/10.1037/t08059-000>
- Peterson, C., Semmel, A., von Baeyer, C., Abramson, L. Y., Metalsky, G. I., & Seligman, M. E. P. (1982). The attributional Style Questionnaire. *Cognitive Therapy and Research*, 6(3), 287-299. <https://doi.org/10.1007/bf01173577>
- Rosenberg, M. (1965). Rosenberg Self-Esteem Scale. *PsycTests Dataset*.
<https://doi.org/10.1037/t01038-000>
- Scheier, M. F., Carver, C. S., & Bridges, M. W. (1994). Distinguishing optimism from neuroticism (and trait anxiety, self-mastery, and self-esteem): A re-evaluation of the Life Orientation Test. *Journal of Personality and Social Psychology*, 67, 1063-1078.
- Scholz, D., & Strelan, P. (2021). In control, optimistic, and resilient: Age-related effects of living in a just world among adolescents. *Personality and Individual Differences*, 171, Article 110474. <https://doi.org/10.1016/j.paid.2020.110474>
- Sharot, T. (2011). The optimism bias. *Current Biology*, 21(23), R941-R945.
<https://doi.org/10.1016/j.cub.2011.10.030>
- Strelan, P. (2007). The prosocial, adaptive qualities of just world beliefs: Implications for the relationship between justice and forgiveness. *Personality and Individual Differences*, 43(4), 881-890. <https://doi.org/10.1016/j.paid.2007.02.015>
- Sutton, R. M., & Douglas, K. (2005). Justice for all, or just for me? More evidence of the importance of the self-other distinction in just-world beliefs. *Personality and Individual Differences*, 39(3), 637-645. <https://doi.org/10.1016/j.paid.2005.02.010>
- Sutton, R. M., Douglas, K., Wilkin, K., Elder, T., Cole, J., & Stathi, S. (2008). Justice for Whom, Exactly? Beliefs in Justice for the Self and Various Others. *Personality and Social Psychology Bulletin*, 34(4), 528-541.
<https://doi.org/10.1177/0146167207312526>

- Sutton, R. M., Stoeber, J., & Kamble, S. V. (2017). Belief in a just world for oneself versus others, social goals, and subjective well-being. *Personality and Individual Differences, 113*, 115-119. <https://doi.org/10.1016/j.paid.2017.03.026>
- Taylor, S. E., & Brown, J. D. (1988). Illusion and well-being: A social psychological perspective on mental health. *Psychological Bulletin, 103*(2), 193-210. <https://doi.org/10.1037/0033-2909.103.2.193>
- Watkins, L. E., Sprang, K. R., & Rothbaum, B. O. (2018). Treating PTSD: A Review of Evidence-Based Psychotherapy Interventions. *Frontiers in Behavioral Neuroscience, 12*, Article 258. <https://doi.org/10.3389/fnbeh.2018.00258>
- Watkins, P. C., Grimm, D. L., & Kolts, R. (2004). Counting your blessings: Positive memories among grateful persons. *Current Psychology, 23*(1), 52-67. <https://doi.org/10.1007/s12144-004-1008-z>
- Weinstein, N. D. (1980). Unrealistic optimism about future life events. *Journal of Personality and Social Psychology, 39*(5), 806–820. <https://doi.org/10.1037/0022-3514.39.5.806>
- Xie, X., Liu, H., & Gan, Y. (2011). Belief in a Just World When Encountering the 5/12 Wenchuan Earthquake. *Environment and Behavior, 43*(4), 566-586. <https://doi.org/10.1177/0013916510363535>

Appendices

Appendix A: Pre-registration



Intuitive Perceptions of Justice for the Self: Associations with Optimism/Pessimism, Life Satisfaction, Psychological Entitlement

Author(s)

Created: 04/05/2022 05:28 PM (PT)

Public: 04/05/2022 11:10 PM (PT)

1) Have any data been collected for this study already?

No, no data have been collected for this study yet.

2) What's the main question being asked or hypothesis being tested in this study?

This study aims to understand whether people respond the Lipkus et al.'s (1996) Belief in a Just World (BJW)-self scale in the same way when the items of the scale are explicitly written to focus on the positive or negative aspects of the just world. We will examine associations between the newly developed positive and negative scales and four outcomes: optimism, life satisfaction, psychological entitlement, and gratitude. We suspect that self-esteem and social desirability will play a role in these associations and so we plan to measure and control for them when testing hypotheses 3 and 4.

Formally, our hypotheses are:

H1: Positive and Negative BJW-self measures will exhibit a two-factor structure, where the two latent factors are weakly negatively correlated.

H2: Participants will report higher scores of Positive BJW-self compared to Negative BJW-self.

H3: Positive BJW-Self will have a positive association with optimism, life satisfaction, psychological entitlement and gratitude.

H4: Negative BJW-self will have a negative association with optimism, life satisfaction, psychological entitlement and gratitude.

As the positive and negative valence of BJW-self measurement is a new idea, we do not have an empirical basis on which to make hypothesis about the strength of the associations with optimism, life satisfaction, psychological entitlement, and gratitude. Therefore, we limit hypotheses H3 and H4 to the direction of the expected associations.

3) Describe the key dependent variable(s) specifying how they will be measured.

1. Positive BJW-self will be measured on an 8-item questionnaire adapted from Lipkus et al. (1996). Participants will rate their agreement on a 7-point Likert-type scale from (1 = strongly disagree) to (7 = strongly agree).

2. Negative BJW-self will be measured on an 8-item questionnaire adapted from Lipkus et al. (1996). Participants will rate their agreement on a 7-point Likert-type scale from (1 = strongly disagree) to (7 = strongly agree).

3. Optimism and pessimism will be measured on a 10-item questionnaire from Scheier et al. (1994). Participants will rate their agreement on a 5-point Likert-type scale from (1 = I disagree a lot) to (5 = I agree a lot).

4. Life satisfaction will be measured on a 5-item questionnaire from Diener et al. (1985). Participants will rate their agreement on a 7-point Likert-type scale from (1 = strongly disagree) to (7 = strongly agree).

5. Psychological entitlement will be measured on a 9-item questionnaire from Campbell et al. (2010). Participants will rate their agreement on a 7-point Likert-type scale from (1 = strong disagreement) to (7 = strong agreement).

6. Gratitude will be measured on a 6-item questionnaire from McCullough et al. (2002). Participants will rate their agreement on a 7-point Likert-type scale from (1 = strongly disagree) to (7 = strongly agree).

7. Self-esteem will be measured on a 10-item questionnaire from Rosenberg (1965). Participants will rate their agreement on a 4-point Likert-type scale from (1 = strongly disagree) to (4 = strongly agree).

8. Social desirability will be measured on a 16-item questionnaire from Claire et al. (2015). Participants will rate their agreement on a 7-point Likert-type scale from (1 = not true) to (7 = very true).

4) How many and which conditions will participants be assigned to?

As this is an observational correlational design, participants will not be assigned to conditions.

5) Specify exactly which analyses you will conduct to examine the main question/hypothesis.

To test H1, we will use Confirmatory Factor Analysis (CFA). Adequate model fit will be determined using the cut-off criteria suggested by Marsh et al. (2004). Comparative fit index (CFI) and Tucker-Lewis index (TLI) > .90, root-mean-square error of approximation (RMSEA) < .08, and standardized root mean square residual (SRMR) < .08 will be considered to show adequate fit. CFI and TLI > .95, RMSEA < .06, and SRMR < .08 denote excellent fit. If the CFA does not



show adequate fit to the data we will begin iterative model modification (including allowing correlated item errors, item cross-loadings, and item removal). Should the CFA model prove too restrictive we will employ Exploratory Structural Equation Modelling (ESEM). The same fit criteria and model modification steps (if required) will be applied to the ESEM model. Coefficient alpha and McDonald's Omega will be estimated for the two new scales as measures of internal consistency reliability. To test H2, an Independent samples t-test will be used to determine if there is a significant difference between the Positive BJW-Self and Negative BJW-Self scores in the anticipated direction. To test H3 and H4 the associations between the Positive and Negative BJW-self scales and outcome measures will be examined using a correlation matrix and regression analysis applied to manifest scale scores.

6) Describe exactly how outliers will be defined and handled, and your precise rule(s) for excluding observations.

We will employ listwise deletion and exclude all incomplete observations. Any observations that show signs of in-line or pattern responding (e.g., all responses are 7) will be removed.

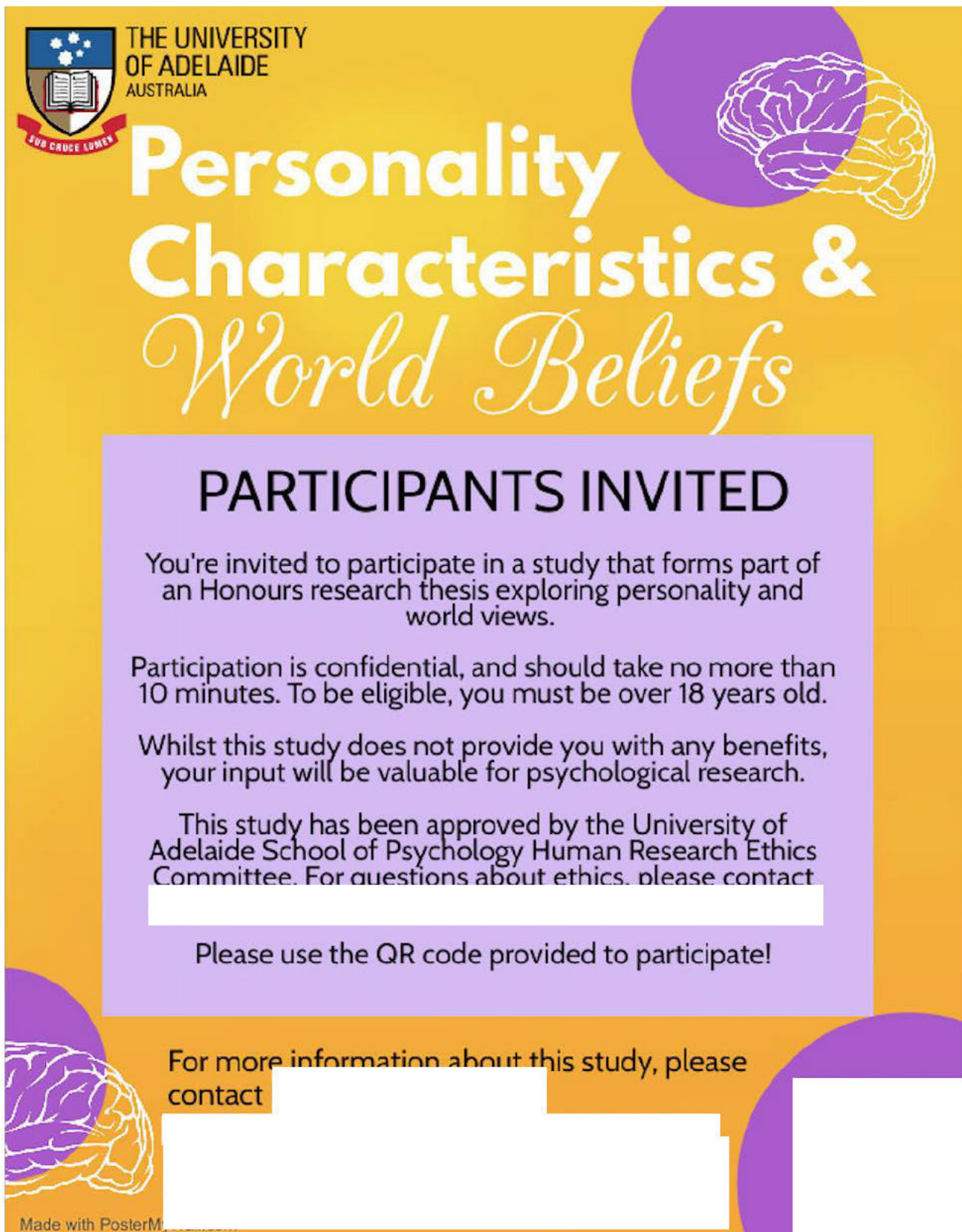
7) How many observations will be collected or what will determine sample size? No need to justify decision, but be precise about exactly how the number will be determined.


We aim to collect a sample a total of 300 participants, which is a compromise between several power analysis findings. A Monte Carlo simulation (1000 iterations; with item loadings and errors based on a CFA conducted with existing data on BJW-self held by the second author) indicated that, with a sample size of 250 and an effect size estimate (correlation between the two factors) of $r = -.25$, that 95.2% of the simulations returned a significant association between the factors at $\alpha = 0.05$ (i.e., power of 95.2%). Additional a priori analyses indicate that for a regression model with five predictors with a power level of 0.80, and a Bonferroni corrected alpha level of $\alpha = 0.0125$, the total sample required ranged between 162 and 312 based on ΔR^2 values ranging from .03 to .05 (as reported by Jiang et al., 2016).

8) Anything else you would like to pre-register? (e.g., secondary analyses, variables collected for exploratory purposes, unusual analyses planned?)

Prior to data collection, the newly develop Positive and Negative BJW-self scales will be sent to and reviewed by a panel of experts in the BJW field. This is to ensure that the new items genuinely reflect the original items, have high face validity, and relate to the intended construct. Feedback from the panel will be used to refine the positive and negative items before data is collected.

Appendix B: Recruitment Flyer



 THE UNIVERSITY OF ADELAIDE AUSTRALIA
SUB CRUCE LOMER

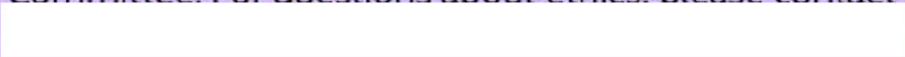
Personality Characteristics & World Beliefs

PARTICIPANTS INVITED



You're invited to participate in a study that forms part of an Honours research thesis exploring personality and world views.

Participation is confidential, and should take no more than 10 minutes. To be eligible, you must be over 18 years old.

Whilst this study does not provide you with any benefits, your input will be valuable for psychological research.

This study has been approved by the University of Adelaide School of Psychology Human Research Ethics Committee. For questions about ethics, please contact 

Please use the QR code provided to participate!

For more information about this study, please contact 


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Appendix C: Survey

Personality Traits and World Beliefs

Welcome!

You have been invited to participate in a study about personality and world beliefs. Participation involves the completion of eight questionnaires that measure your attitudes toward positive/ negative situation and personality characteristics, as well as four demographic questions. This survey should take no longer than ten minutes to complete. Whilst this study will not provide you with any benefits, your input will be valuable to psychological research.

Participation in this study is anonymous. For first-year students participating for course credit at the University of Adelaide, your Student ID and Research participation ID will not be stored with the data you provide in this study.

This study is being conducted by _____ and will form the basis of a Honours research thesis at the University of Adelaide, under the supervision of _____

This study has been approved by the University of Adelaide's School of Psychology Human Research Ethics Committee. Participation in this study is completely voluntary and you may withdraw at any point with no negative consequences. If you have any questions about ethics, please contact _____

If the study causes you any distress, please contact a trusted person or medical practitioner. For more immediate support, please contact Lifeline Australia on 13 11 14 or emergency services on 000 in the case of an emergency. If you are an enrolled student at the University of Adelaide, you may contact the university's counselling service on 8313 5663 or email at counselling.centre@adelaide.edu.au.

The survey is easiest to complete on a laptop or desktop computer but you can complete it on your mobile device.

PLEASE MAKE SURE YOU DO THIS STUDY IN A QUIET PLACE WHERE YOU CAN CONCENTRATE.

Thank you for taking the time to complete the survey and for your involvement in this project.

In agreeing to participate in this project, I state that:

- I am 18 years or above and reside in Australia.

- I understand that participation in the project is entirely voluntary and I may withdraw from the research project at any stage and that this will not impact negatively on me now or in the future.
- I understand that while information gained during the study may be published, I will not be identified, and my personal information will remain confidential.
- I understand that personal information about me that is collected over the course of this project will be stored securely and will only be used for purposes that I have agreed to.
- I give consent for my anonymous data collected in this study to be deposited in a public repository (the Open Science Framework) so it can be used for future research and learning.

Do you give consent to participate in this study?

Yes

No

Q4 The questions below ask you to think about the views that you have of yourself and attitudes towards things you may desire in life. Using the scale below, please indicate your agreement with each item. Please be open and honest in your responding.

	Select Option						
	Strong disagreement	Moderate disagreement	Slight disagreement	Neither agree nor disagree	Slight agreement	Moderate agreement	Strong agreement

I honestly
feel I'm just
more
deserving
than others.

Great things
should come
to me.

If I were on
the Titanic, I
would
deserve to be
on the first
lifeboat.

I demand the
best because
I'm worth it.

I do not
necessarily
deserve
special
treatment.

I deserve
more things
in my life.

People like
me deserve
an extra
break now
and then.

Things
should go
my way.

I feel
entitled to
more of
everything.

Q5 This next scale asks you to think about your day to day feelings. Using the scale below, please indicate your agreement with each item. Please be open and honest in your responding.

Try not to let your response to one statement influence your responses to other statements. There are no "correct" or "incorrect" answers. Answer according to your own feelings, rather than how you think "most people" would answer.

Select Option

	I disagree a lot	I disagree a little	I neither agree nor disagree	I agree a little	I agree a lot
In uncertain times, I usually expect the best.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It's easy for me to relax.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
If something can go wrong for me, it will.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I'm always optimistic about my future.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I enjoy my friends a lot.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It's important for me to keep busy.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I hardly ever expect things to go my way.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I don't get upset too easily.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I rarely count on good things happening to me.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Overall, I expect more good things to happen to me than bad.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q6 Now we would like you to think about your attitudes towards the things and people in your life. Using the scale below, please indicate your agreement with each item. Please be open and honest in your responding.

	Select Option						
	Strongly disagree	Disagree	Slightly disagree	Neutral	Slightly agree	Agree	Strongly agree

I have so much in life to be thankful for.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
If I had to list everything that I felt grateful for, it would be a very long list.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
When I look at the world, I don't see much to be grateful for.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am grateful to a wide variety of people.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
As I get older I find myself more able to appreciate the people, events, and situations that have been part of my life history.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Long amounts of time can go by before I feel grateful to something or someone.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q7 This scale asks you to think about your feelings towards yourself. Using the scale below, please indicate your agreement with each item. Please be open and honest in your responding.

	Select Option			
	Strongly disagree	Disagree	Agree	Strongly agree

On the whole, I am satisfied with myself.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
At times I think I am no good at all.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel that I have a number of good qualities.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am able to do things as well as most other people.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel I do not have much to be proud of.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I certainly feel useless at times.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel that I'm a person of worth, at least on an equal plane with others.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I wish I could have more respect for myself.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
All in all, I am inclined to feel that I am a failure.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I take a positive attitude toward myself.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

I sometimes try to get even rather than forgive and forget.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have said something bad about a friend behind his or her back.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
When I hear people talking privately, I avoid listening.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I never take things that don't belong to me.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I don't gossip about other people's business.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

You have completed the main part of the survey that measured your personality characteristics and world views! Now there are just a few quick questions about your demographic information remaining...

Q9 What is your gender?

- Female
- Male
- Non-binary
- Prefer not to answer

Q10 What is your age?

Q11 What nationality do you identify with?

Q12 What is your primary language?

You have completed the study!

This research project aims to understand if people view the fairness of their world differently when they think about positive and negative statements of justice, and how this relates to key areas of life; optimism, life satisfaction, gratitude, and entitlement. The study also looks at how self-esteem and social desirability may influence such relationships.

If completing this study has caused you distress in any way please discuss matters with a trusted friend, family member or medical practitioner. For more immediate support, please contact Lifeline Australia on 13 11 14 or emergency services on 000 in the case of an emergency. If you are an enrolled student at the University of Adelaide you can contact the university's counselling service on 8313 5663 or email at counselling.centre@adelaide.edu.au.

If you have any queries or complaints about this survey please contact either
or

Alternatively, you may contact _____ to discuss your
complaint or questions about ethics.

If you would like to be notified of the study's results, please contact _____ .

Thank you again for your participation, your input is highly appreciated.

Appendix D: Expert Feedback

Table A1

Feedback From the First Expert Review

Original BJW-Self Item	Positive BJW-Self Item	Does the Positive BJW-Self Item accurately reflect a positively valanced version of the original? Please highlight Yes or No, and share any and all comments you may have:
I feel that the world treats me fairly	I feel that the world treats me fairly; good deeds are rewarded	No – I think the new version is double-barreled and TREATMENT (process) is conceptually different from rewards (outcome)
I feel that I get what I deserve	I feel that I get the good things I deserve	Yes I think it is a fine item, but different from the original.
I feel that people treat me fairly in life	I feel that people treat me fairly in life; good is repaid with good	No. same comment as the first
I feel that I earn the rewards and punishments I get	I feel that I earn the rewards I get	Yes Same comment as the second
I feel that people treat me with the respect I deserve	When I act well, people treat me with the respect I deserve	Yes . same as above
I feel that I get what I'm entitled to have	I feel that I get the good things I'm entitled to have	Yes
I feel that my efforts are noticed and rewarded	I feel that my efforts are noticed and rewarded	Same wording.
I feel that when I meet with misfortune, I have brought it upon myself	I feel that when I meet with good fortune, I have brought it upon myself	Yes . Perhaps, I have “earned” it? But this also gets at thee distinction between merit and luck and deservingness. As is, these measures do not distinguish between these nuances

Original BJW-Self Items	Negative BJW-Self Items	Does the Negative BJW-Self Item accurately reflect a negatively valanced version of the original? Please highlight Yes or No, and share any and all comments you may have:
I feel that the world treats me fairly	I feel that the world treats me fairly; bad deeds are punished	Same comments as the positive one
I feel that I get what I deserve	I feel that I get the bad things I deserve	I think there will be several participants who would feel “not applicable” to these items and would leave them blank or select a middle/neutral one
I feel that people treat me fairly in life	I feel that people treat me fairly in life; bad is repaid with bad	Same as above
I feel that I earn the rewards and punishments I get	I feel that I earn the punishments I get	No. “earn”, where I live, is typically only mentioned in positive settings. This sounds odd from a USA-perspective
I feel that people treat me with the respect I deserve	When I act badly, people treat me with the disrespect I deserve	Fine, but I don’t think people think this way so I think this might be a high “error” item.
I feel that I get what I’m entitled to have	I feel that I get the bad things that I am due	Same as above
I feel that my efforts are noticed and rewarded	I feel that my laziness is noticed and penalised	Same as above
I feel that when I meet with misfortune, I have brought it upon myself	I feel that when I meet with misfortune, I have brought it upon myself	Yes I think this one is good

Table A2*Feedback from the Second Expert Review*

Original BJW-Self Item	Positive BJW-Self Item	Does the Positive BJW-Self Item accurately reflect a positively valanced version of the original? Please highlight Yes or No, and share any and all comments you may have:
I feel that the world treats me fairly	I feel that the world treats me fairly; good deeds are rewarded	Yes No - please comment: Are there two items? This is not completely clear to me. The first part is more general and might contain also negative things.
I feel that I get what I deserve	I feel that I get the good things I deserve	Yes No - please comment:
I feel that people treat me fairly in life	I feel that people treat me fairly in life; good is repaid with good	Yes No - please comment: Same comment as above.
I feel that I earn the rewards and punishments I get	I feel that I earn the rewards I get	Yes No - please comment:
I feel that people treat me with the respect I deserve	When I act well, people treat me with the respect I deserve	Yes No - please comment:
I feel that I get what I'm entitled to have	I feel that I get the good things I'm entitled to have	Yes No - please comment:
I feel that my efforts are noticed and rewarded	I feel that my efforts are noticed and rewarded	Yes No - please comment: Same wording.
I feel that when I meet with misfortune, I have brought it upon myself	I feel that when I meet with good fortune, I have brought it upon myself	Yes No - please comment:

Original BJW-Self Items	Negative BJW-Self Items	Does the Negative BJW-Self Item accurately reflect a negatively valanced version of the original? Please highlight Yes or No , and share any and all comments you may have:
I feel that the world treats me fairly	I feel that the world treats me fairly; bad deeds are punished	Yes No - please comment: Same comment as above in the positive part.
I feel that I get what I deserve	I feel that I get the bad things I deserve	Yes No - please comment:
I feel that people treat me fairly in life	I feel that people treat me fairly in life; bad is repaid with bad	Yes No - please comment: Same comment as above in the positive part.
I feel that I earn the rewards and punishments I get	I feel that I earn the punishments I get	Yes No - please comment:
I feel that people treat me with the respect I deserve	When I act badly, people treat me with the disrespect I deserve	Yes No - please comment:
I feel that I get what I'm entitled to have	I feel that I get the bad things that I am due	Yes No - please comment:
I feel that my efforts are noticed and rewarded	I feel that my laziness is noticed and penalised	Yes No - please comment:
I feel that when I meet with misfortune, I have brought it upon myself	I feel that when I meet with misfortune, I have brought it upon myself	Yes No - please comment: Same wording.

Table A3*Feedback from the Third Expert Review*

Original BJW-Self Item	Positive BJW-Self Item	Does the Positive BJW-Self Item accurately reflect a positively valanced version of the original? Please highlight Yes or No, and share any and all comments you may have:
I feel that the world treats me fairly	I feel that the world treats me fairly; good deeds are rewarded	Yes No - please comment: Are there two items? This is not completely clear to me. The first part is more general and might contain also negative things.
I feel that I get what I deserve	I feel that I get the good things I deserve	Yes No - please comment:
I feel that people treat me fairly in life	I feel that people treat me fairly in life; good is repaid with good	Yes No - please comment: Same comment as above.
I feel that I earn the rewards and punishments I get	I feel that I earn the rewards I get	Yes No - please comment:
I feel that people treat me with the respect I deserve	When I act well, people treat me with the respect I deserve	Yes No - please comment:
I feel that I get what I'm entitled to have	I feel that I get the good things I'm entitled to have	Yes No - please comment:
I feel that my efforts are noticed and rewarded	I feel that my efforts are noticed and rewarded	Yes No - please comment: Same wording.
I feel that when I meet with misfortune, I have brought it upon myself	I feel that when I meet with good fortune, I have brought it upon myself	Yes No - please comment:

Original BJW-Self Items	Negative BJW-Self Items	Does the Negative BJW-Self Item accurately reflect a negatively valanced version of the original? Please highlight Yes or No , and share any and all comments you may have:
I feel that the world treats me fairly	I feel that the world treats me fairly; bad deeds are punished	Yes No - please comment: Same comment as above in the positive part.
I feel that I get what I deserve	I feel that I get the bad things I deserve	Yes No - please comment:
I feel that people treat me fairly in life	I feel that people treat me fairly in life; bad is repaid with bad	Yes No - please comment: Same comment as above in the positive part.
I feel that I earn the rewards and punishments I get	I feel that I earn the punishments I get	Yes No - please comment:
I feel that people treat me with the respect I deserve	When I act badly, people treat me with the disrespect I deserve	Yes No - please comment:
I feel that I get what I'm entitled to have	I feel that I get the bad things that I am due	Yes No - please comment:
I feel that my efforts are noticed and rewarded	I feel that my laziness is noticed and penalised	Yes No - please comment:
I feel that when I meet with misfortune, I have brought it upon myself	I feel that when I meet with misfortune, I have brought it upon myself	Yes No - please comment: Same wording.

Table A4:*Feedback from the Fourth Expert Review*

Original BJW-Self Item	Positive BJW-Self Item	Does the Positive BJW-Self Item accurately reflect a positively valanced version of the original? Please highlight Yes or No, and share any and all comments you may have:
I feel that the world treats me fairly	I feel that the world treats me fairly; good deeds are rewarded	Yes No - please comment: Maybe, to make it milder: usually (or as a rule) , good deeds are rewarded Otherwise, it seems that this individual has somewhat like in-build counter and measures at each moment the balance between their investment and the answer.
I feel that I get what I deserve	I feel that I get the good things I deserve	Yes No - please comment: I feel that I get the good things as much as I deserve I feel that if I deserve the good things I get them
I feel that people treat me fairly in life	I feel that people treat me fairly in life; good is repaid with good	Yes No - please comment:
I feel that I earn the rewards and punishments I get	I feel that I earn the rewards I get	Yes No - please comment:
I feel that people treat me with the respect I deserve	When I act well, people treat me with the respect I deserve	Yes No - please comment:
I feel that I get what I'm entitled to have	I feel that I get the good things I'm entitled to have	Yes No - please comment:
I feel that my efforts are noticed and rewarded	I feel that my efforts are noticed and rewarded	Yes No - please comment: Same wording. I feel that my (good? kind?) efforts are noticed and rewarded It may happen that there are aggressive, destructive efforts – or not?
I feel that when I meet with misfortune, I have brought it upon myself	I feel that when I meet with good fortune, I have brought it upon myself	Yes No - please comment: I feel that when I meet with fortune, I have earned it

		What is a semantic shade of “brought it upon myself” – does it mean that I have earned, prepared this fortune with my previous good activities? Or am I a chosen lucky person? Not sure I feel and can distinguish these nuances, due to the lack of English
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Original BJW-Self Items	Negative BJW-Self Items	Does the Negative BJW-Self Item accurately reflect a negatively valanced version of the original? Please highlight Yes or No, and share any and all comments you may have:
I feel that the world treats me fairly	I feel that the world treats me fairly; bad deeds are punished	Yes No - please comment: I feel that the world treats me fairly; bad deeds are punished: usually (or as a rule) , good deeds are rewarded
I feel that I get what I deserve	I feel that I get the bad things I deserve	Yes No - please comment: I feel that I get the bad things as much as I deserve I feel that if I deserve the bad things I get them
I feel that people treat me fairly in life	I feel that people treat me fairly in life; bad is repaid with bad	Yes No - please comment:
I feel that I earn the rewards and punishments I get	I feel that I earn the punishments I get	Yes No - please comment: I feel that the punishments I get are earned by me
I feel that people treat me with the respect I deserve	When I act badly, people treat me with the disrespect I deserve	Yes No - please comment:
I feel that I get what I'm entitled to have	I feel that I get the bad things that I am due	Yes No - please comment:
I feel that my efforts are noticed and rewarded	I feel that my laziness is noticed and penalised	Yes No - please comment: Again, as my English is far from being perfect, I have some doubts. Are efforts an opposite to laziness or are good efforts an opposite to bad efforts? There are different oppositions. Are efforts always activities or intentions and praying as well?
I feel that when I meet with misfortune, I have brought it upon myself	I feel that when I meet with misfortune, I have brought it upon myself	Yes No - please comment: Same wording.

Appendix E: Final Positive and Negative BJW-self Scales

Original BJW-Self Items	Positive BJW-Self Items	Negative BJW-Self Items
I feel that the world treats me fairly	I feel that the world rewards me fairly	I feel that the world punishes me fairly
I feel that I get what I deserve	I feel that I get the good things I deserve	I feel that I get the bad things I deserve
I feel that people treat me fairly in life	I feel that people reward me fairly in life	I feel that people punish me fairly in life.
I feel that I earn the rewards and punishments I get	I feel that I earn the rewards I get	I feel that I warrant the punishments I get
I feel that people treat me with the respect I deserve	When I act well, people treat me with the respect I deserve	When I act badly, people treat me with the disrespect I deserve
I feel that I get what I'm entitled to have	I feel that I get the good things I'm entitled to have	I feel that I get the bad things that I am due
I feel that my efforts are noticed and rewarded	I feel that my efforts are noticed and rewarded	I feel that my laziness is noticed and penalised
I feel that when I meet with misfortune, I have brought it upon myself	I feel that when I meet with good fortune, I have earned it	I feel that when I meet with misfortune, I have brought it upon myself