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Further Evidence for the Latent Structure and Relationship Between Belief in a Just World and Subjective Well-Being: A Commentary on the Latent Factor Approach by Hafer et al. (2020)

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Abstract

Just-world research frequently indicates a relatively strong and positive relation between belief in a just world (BJW) and subjective well-being (SWB). Researchers argue that BJW provides people with beneficial, adaptive functions allowing them to sustain mental health and well-being. Furthermore, BJW is often divided into two dimensions (personal and general BJW) which are usually positively related to each other but also differently to SBW. Hafer et al., Social Justice Research proposed a latent factor approach to investigate the extent to which a common latent factor 'BJW' relates stronger to well-being than personal or general BJW. Building upon the approach of Hafer et al., Social Justice Research we propose a second-order-factor approach including first-order factors measured at the latent level using structural equation modeling. We analyzed this approach with two culturally different samples consisting of $N=482$ German participants and $N=569$ Iranian participants. Our results indicated strong positive relations between the latent second-order factors BJW and SWB and conceptually replicated the results of Hafer et al., Social Justice Research by using an approach that accounts for the measurement errors in the first- and second-order factors. Our findings support the assumptions of Hafer et al., Social Justice Research and the measurement of first- and second-order factors at the latent level and provide possible implications for just-world research.

Keywords Belief in a just world · Subjective well-being · Lantent factor approach · Cross-cultural research · Structural equation model

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Introduction

Strong evidence of the positive relationship between people's personal or general belief in a just world (BJW) and their well-being (see Schmitt et al., 2023 for a review) exists. However, little is known about whether a common latent BJW factor contributes to shared aspects of personal and general BJW and relates to people's well-being. Researchers often considered only personal or general BJW and possibly underestimated their common basis in this regard (see Hafer et al., 2020). Interestingly, Hafer et al. (2020) proposed a latent-factor approach to investigate the extent to which a common latent factor 'BJW' exists and the relationship between this latent BJW factor and well-being. We applied and extended the approach of Hafer et al. (2020). The extension consists of a second-order BJW factor that explains the shared aspects in the first-order factors personal and general BJW, both measured at the latent level using structural equation modeling (SEM). We aimed to test this extended approach and conceptually replicate the strong positive relationship between BJW and well-being at a latent level. We also aimed to provide further empirical evidence from two culturally different contexts, that is, Germany and Iran.

Theoretical Background

Belief in a Just World

Based on the just-world hypothesis and the justice motive theory (Lerner, 1980; Lerner & Simmons, 1966), people have a fundamental psychological need to believe that good things happen to people being good and doing good; this belief also includes that bad things happen to bad people who are punished for doing bad. Consequently, people deserve what they get and get what they deserve—and then the world is perceived as a just place. The tendency of people to believe in a just world represents a personal disposition with different extents between people (Dalbert, 2001; Hafer & Sutton, 2016). A strong BJW is useful for people to adapt to their social environment and experience the world as an orderly, controllable, and predictable place in which they can act and react in a socially appropriate way. Consequently, BJW provides people with important psychological functions such as the *trust* function (Dalbert, 2001; Dalbert & Donat, 2015).

People with a strong BJW are confident that others will treat them justly (for a review, Dalbert & Donat, 2015). They have the *trust* that their behavior and justice efforts will be justly rewarded in the future. Due to this confidence, BJW is positively connected with optimism and the maintenance of mental health (e.g., Bègue, 2002; Donat et al., 2016; Hafer, 2000; Kiral Ucar et al., 2022; Münscher et al., 2020; Nartova-Bochaver et al., 2019). Thus, researchers have frequently identified positive relations between BJW and subjective well-being (SWB). Conceptions of SWB typically highlight the subjective nature of well-being concerning people's cognitive and affective self-evaluations including emotional reactions, satisfaction of needs, and self-evaluated life satisfaction (Diener et al., 2002, p. 63). In line with this, research-

ers emphasize the necessity of considering affective (e.g., mood, emotions) as well as cognitive (e.g., life satisfaction) facets of SWB.

The positive relationship between BJW and SWB was consistent for a variety of indicators of well-being, across different age groups and cultural contexts, and even among people living under unfavorable circumstances (see Nartova-Bochaver et al., 2019; Schmitt et al., 2023). Some studies also tested the causal direction of this relationship in experimental (Bartholomaeus et al., 2023; Correia et al., 2009; Dalbert, 2002) and longitudinal settings (Schmitt et al., 2023), indicating its bidirectionality.

Theory and studies suggest that personal and general BJW are two inter-correlated but distinct dimensions of BJW (e.g., Dalbert, 1999; Lipkus et al., 1996) differently associated with SWB. *Personal* BJW (or BJW for self) is the conviction that a person's own life is just; *general* BJW (or BJW for others) represents the belief that the world in a broader sense is a just place (Dalbert, 1999). Across different circumstances and samples, personal BJW was more strongly related to beneficial outcomes such as well-being than general BJW (see Bartholomaeus & Strelan, 2019; Dalbert & Donat, 2015; Hafer & Sutton, 2016, for reviews).

The latent-factor Approach of Hafer et al. (2020)

Researchers investigating the relation between BJW and SWB so far mostly focused on separate (or unique) effects of personal or general BJW without considering the overlap between both dimensions (for a review, see Hafer et al., 2020). However, in his original conceptualization of BJW in the justice motive theory, Lerner (e.g., 1980) described BJW as a generalized tendency of people, which combines and integrates beliefs about the self and others. Thus, as Hafer et al. (2020) argue, such a generalized tendency can be understood as a latent BJW factor, indicated by both general and personal BJW. The authors interpret this latent BJW "as the degree to which people believe that the world that both they and others inhabit is just" (Hafer et al., 2020, p. 2). We agree with Hafer et al. (2020) that this latent BJW perspective fits with Lerner's (e.g., 1980) conceptualization of BJW and its psychological meaning; we also agree that this perspective focusing on shared aspects of personal and general BJW—rather than a separate consideration of each dimension—should be taken into account when examining the relationship between BJW and SWB. From this perspective, Hafer et al. (2020) expected that the association between the latent BJW and latent well-being factors would be even stronger than the connections usually shown between their respective indicators. In order to integrate both personal and general BJW into a coherent conviction of people regarding the justice of the world and to investigate the relation of this latent BJW to a latent SWB factor, Hafer et al. (2020) conducted two studies. The first study was a meta-analysis in which the authors investigated the size of the association between personal and general BJW across 51 articles, including 76 samples and 23,900 participants from 19 countries. The meta-analytic correlation coefficient between the two BJW dimensions was r_{meta} = 0.51 (95% CI [0.48, 0.56], $p < .001$). Hafer et al. (2020, p. 7) concluded, "that GBJW and PBJW can be conceptualized as joint indicators of an underlying (latent) tendency to view the world as a just place."

Accordingly, they proposed the latent BJW factor approach and investigated this underlying tendency in relation to SWB in Study 2 with a sample of $N = 311$ participants (Hafer et al., 2020). We focus on this latent-factor approach. Hafer et al. (2020) included BJW at a latent level, indicated by personal and general BJW, and its relation to a latent well-being factor, consisting of SWB and psychological well-being. The authors assessed BJW by using English versions of the seven-item Personal Belief in a Just World Scale and the six-item General Belief in a Just World Scale (Dalbert, 2001). They measured SWB by using the five-item Satisfaction with Life Scale (Diener et al., 1985) and the 20-item Positive and Negative Affect Schedule (Watson et al., 1988). Furthermore, psychological well-being was assessed by using a version of Scales of Psychological Well-Being (Diener et al., 2010) with 54 items, including six facets with nine items each. Before the conduction of latent SEMs, Hafer et al. (2020) formed composite measures of each scale by averaging the corresponding item ratings. The composite measures of personal and general BJW (manifest variables) indicated strong loadings on the latent BJW factor. The composite measures of SWB and psychological well-being (manifest variables) indicated strong loadings on the latent well-being factor. In the SEM, the two latent factors were highly positively correlated ($CORR_{\text{latent}} = 0.74$, $p < .001$), that is, people's strong tendency to believe in a just world corresponded with better well-being. This latent correlation was even stronger than any pairwise correlation between the individual manifest indicators of BJW and SWB. The authors also reported a residual correlation between latent general BJW and psychological well-being of − 0.34 ($p < .001$; Hafer et al., 2020, Figure 1, p. 10).

Hafer et al. (2020) discussed these findings and the latent BJW approach in light of advantages over approaches that only consider the personal or general BJW dimension. Such a latent BJW factor approach allows for investigating unique aspects of each BJW dimension and the shared ones which might better reflect the idea of BJW representing "a fundamental aspect of people's worldview" (Hafer et al., 2020, p. 12) and an important source of well-being.

The Current Study

We appreciate the approach of Hafer et al. (2020) and propose an extended latent BJW factor approach. In this sense, we measured personal and general BJW each at the latent level by the corresponding items and two SWB dimensions (affective and cognitive) also at the latent level by the corresponding items. Furthermore, we constructed the latent BJW factor to explain variance in the corresponding first-order factors personal and general BJW, and the latent SWB factor to explain variance in the corresponding first-order factors affective and cognitive SWB. The aim of the current study was to test this latent second-order factor approach in two culturally different countries.

Hafer et al. (2020; Study 2) tested their hypotheses in only one country and used a sample of the US-American culture, which is known for its individualistic orientation (Hofstede, 2024). We aimed to replicate and extend their study not only in an individualistic but also a collectivistic culture. People from individualistic cultures define their self in terms of self-realization, independence, uniqueness, and autonomy. In

contrast, people from collectivistic cultures define their self in terms of their dependence on the social environment, interpersonal relationships, connectedness, and harmony (Hofstede, 2024). We chose a German sample because Germany is known for its population with a predominantly individual mindset, and an Iranian sample since Iran is known for its population with a predominantly collectivistic mindset (Hofstede, 2024). Other cultural differences between both countries might be due to further culture dimensions such as 'power distance', 'motivation towards achievement and success', and 'long term orientation' (Hofstede, 2024) as well as different religiosity. The selection of a German and an Iranian sample partly based on convenience sampling; in part, the choice of sample was also based on considerations that there are hardly any findings from Iran on BJW and SWB and that data collection there is rarely possible; in addition, a study with an Iranian sample would offer a further validation option for the Persian BJW scales (Mikani et al., 2023).

Altogether, the relations of personal or general BJW to SWB could differ across cultures with varying orientations (for reviews, see e.g., Nartova-Bochaver et al., 2018; Nartova-Bochaver et al., 2019). In our view, it would be even more interesting, with such different cultures, to investigate if the common of personal and general GWG is important in explaining SWB. Similarly to Hafer et al. (2020), we expected the latent second-order BJW factor to be positively related to the latent second-order SWB in both countries.

Method

Sample and Procedure

Our model evaluation based on two samples: The German sample consisted of $N=482$ undergraduate university students. Their age ranged from 17 to 55 years ($M=22.70$, $SD=4.20$). Regarding gender, 67.6% identified as female, 30.3% as male, and 0.8% as diverse; 1.2% did not specify their gender. The Iranian sample consisted of $N=569$ university students from Iran. Their age ranged from 18 to 50 years ($M=23.50$; $SD=5.70$). Overall, 62.6% of the students identified as female and 34.4% as male; 3.0% declined to identify as either male or female. Among the participants, 70.3% were undergraduate students, 24.1% were master's students, and 5.6% ($n=32$) were Ph.D. students.

Data collection was similarly conducted online in both countries. Both samples were recruited partly by using a kind of snowball system in which participating students shared an online link with peers, and partly by inviting students in their classes to participate online. Students were assured that taking part in the research was voluntary and anonymous. Completing the online questionnaire took about 20 min. Online Resource 1 provides the data set.

Measures

In both countries, we used an online questionnaire to assess all demographic variables and psychological constructs relevant to the study. Each survey started with an

introduction to the research and the handling of the questionnaire; it also served to obtain informed consent from the participants. Participants indicated their responses to each of the scales below on a six-point scale ranging from 1 (*totally disagree*) to 6 (*totally agree*).

We measured *Personal BJW* using the Personal Belief in a Just World Scale (Dalbert, 1999; Mikani et al., 2023), with seven items capturing the belief that, overall, events in a person's life are just; sample item: "Overall, events in my life are just"; Cronbach's $\alpha_{Germany}=0.88$, $\alpha_{Iran}=0.88$, McDonald's $\omega_{Germany}=0.88$, $\omega_{Iran}=0.88$.

General BJW was assessed using the General Belief in a Just World Scale (Dalbert et al., 1987; Mikani et al., 2023), with six items that capture the belief that the world as a whole is a just place; sample item: "I think basically the world is a just place"; $\alpha_{Germany}=0.80$, $\alpha_{Iran}=0.77$, $\omega_{Germany}=0.80$, $\omega_{Iran}=0.78$.

To measure *subjective well-being*, we used the 13-item Trait Well-Being Inventory (Dalbert, 1992), which consists of the two subscales of *general life satisfaction* (i.e., cognitive SWB; seven items; e.g., "I am satisfied with my life"; $\alpha_{Germany}=.90$, $\alpha_{Iran}=.81$, $\omega_{Germany}=.90$, $\omega_{Iran}=.93$) and *mood level* (i.e., affective SWB; six items; e.g., "I consider myself a happy person"; two items were reversely coded"; $\alpha_{Germany}=0.88$, $\alpha_{Iran}=0.91$, $\omega_{Germany}=0.88$, $\omega_{Iran}=0.92$).

All items of the above-mentioned scales are presented in Online Resource 3 (Supplementary Table 1). Descriptive statistics such as means, standard deviations, and pairwise correlations between all items are presented in Online Resources 4 and 5 (Supplementary Tables 4 & 5). Additionally, we included the Cognitive Emotion Regulation Questionnaire (CERQ; Garnefski et al., 2001) in the data collection but did not examine it in the present work.

Statistical Analysis

We constructed our proposed statistical model including the latent first-order and second-order factors as follows: The latent factor personal BJW was constructed to explain variance in each of the corresponding seven items, and the latent factor general BJW to explain variance in the corresponding six items. The latent factor affective SWB was constructed to explain variance in each of the corresponding six items, and the latent factor cognitive SWB was constructed to explain variance in the corresponding seven items. These latent first-order factors in the model were identified by fixing the loading for a single item on each factor to 1 for model identification (measurement invariance tests yielded varying measurements across countries, see Online Resource 2 for details). The latent second-order factor BJW was constructed to explain the variances in both latent factors personal and general BJW, respectively, with the factor loadings constrained to 1 for identification purposes. The latent second-order factor SWB was constructed to explain the variances in the corresponding latent factors affective and cognitive SWB, respectively, with the factor loadings constrained to 1 for identification purposes.

Then, we extended the CFA model with the latent correlation path between the latent second-order factors BJW and SWB, following the idea of Hafer et al. (2020). We tested our proposed structural equation model (SEM) with the German sample (SEM1) and with the Iranian sample (SEM2).

In our proposed model (i.e., SEM1, SEM2), we did not include correlation terms between residual variances as we were interested in the common latent factor representing BJW and its relationship with SWB, in addition to psychometric suggestions (e.g., Breckler, 1990; Hermida, 2015). Online Resource 2 provides the details of SEM3 to SEM6, which include two residual correlation terms, respectively. This is because we used a different well-being measure in comparison to that presented by Hafer et al. (2020), who included a single residual correlation in their model. We added the residual correlation terms of personal BJW with affective SWB and general BJW with cognitive SWB to SEM3 and SEM4; we also added the residual correlation terms of personal BJW with cognitive SWB and general BJW with affective SWB to SEM5 and SEM6 (see Online Resource 2).

We used the R packages *lavaan* and WLSMV estimation (Rosseel, 2020; Rosseel et al., 2018) for the SEM and *psych* (Revelle, 2019) for descriptive statistics. The SEM is depicted in Fig. 1. The residual terms (small circles) represent the not-explained variance in each item, better known as the measurement error of each item and factor. Online Resource 2 provides R codes.

Results

The SEM1 fitted well to the data with χ^2 (296) = 432.092, CFI = 0.988, RMSEA = 0.031, 90% CI [0.025, 0.037], SRMR = 0.060. BJW was significantly and positively related to SWB with $CORR_{latent}$ = 0.663, 95% CI [0.562, 0.765]. The amounts of explained variance were in personal BJW 76.9%, in general BJW 35.7%, in affective SWB 71.2%, and in cognitive SWB 95.3%.

The SEM2 indicated an acceptable fit to the data with χ^2 (296) = 1531.601, CFI = 0.949, RMSEA = 0.086, 90% CI [0.082, 0.090], SRMR = 0.097. BJW was significantly and positively related to SWB with $CORR_{latent}$ = 0.656, 95% CI [0.593, 0.789]. The amounts of explained variance were in personal BJW 89.2%, in general BJW 70.1%, in affective SWB 49.8%, and in cognitive SWB 21.8%. Online Resource 2 provides the R codes and further results. Residual correlations between both BJW factors with both SWB factors in the German and Iranian sample (SEM3 to SEM6) are shown in Online Resource 6 (Supplementary Table 6).

No estimation problems or indications of local misfit were encountered in either sample. There were also no issues such as unplausible variances or residual covariances between indicators that were not accounted for by the model, neither within the first-order latent factors nor across factors. We additionally calculated manifest correlations between the composite scores of personal and general BJW, affective and cognitive SWB for comparability with past studies. All correlations were significantly positive, with moderate relationships between personal and general BJW ($r_{Germany}$ = 0.43, $p < .01$, r_{Iran} = 0.66, $p < .01$; see Online Resource 3, Supplementary Tables 2 & 3).

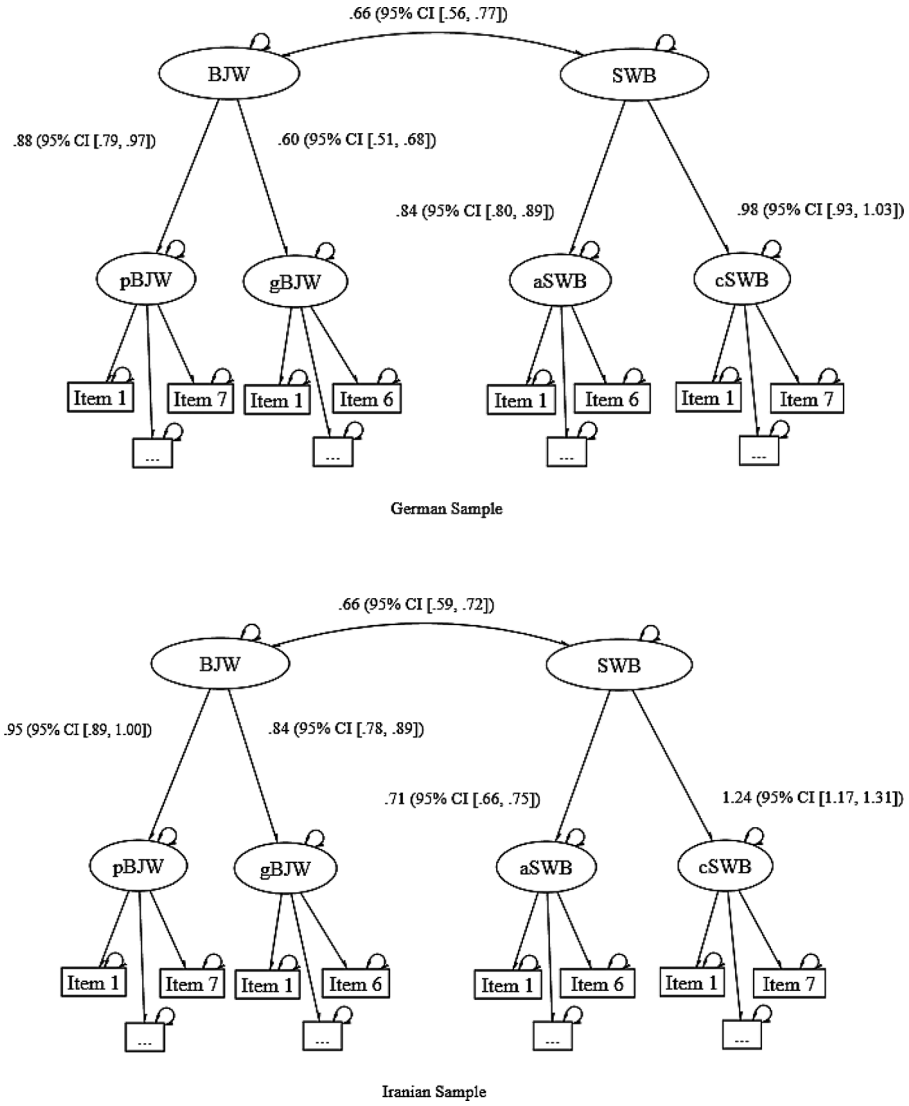

Fig. 1 Evaluated latent BJW factor approach with German and Iranian samples using structural equation modelling. *Note*. Values represent standardized loadings and correlation coefficients between BJW and SWB at latent level. pBJW = personal belief in a just world, gBJW = general belief in a just world, aSWB = affective subjective well-being (mood level), cSWB = cognitive subjective well-being (life satisfaction)

Discussion

In line with the results of Hafer et al. (2020), we showed that a latent second-order BJW factor comprising the shared aspects of personal and general BJW was strongly positively related to a latent second-order SWB factor combining the shared aspects of affective and cognitive SWB. People with a strong BJW have confidence that they will be treated fairly

by others and will not face unforeseen adverse circumstances (the trust function of BJW; Dalbert, 2001), that is, that they can see their personal world and the world at large as an orderly and predictable place. Consequently, this trust allows people with a strong BJW to maintain their mental health and a positive SWB.

As an extension to previous research and the study of Hafer et al. (2020), we measured personal and general BJW as well as affective and cognitive SWB a priori on a latent level which allowed us to consider measurement errors. These first-order latent factors then formed two second-order factors 'BJW' and 'SWB', which were strongly positively related in both samples, that is, in a German and Iranian sample. Interestingly, our findings revealed that the relationship between the second-order factors BJW and SWB was consistent across both cultural contexts, suggesting a degree of universality in this association. Considering the varying measurements and correlated residuals of the first-order factors across the countries provided in Online Resources 2 and 6, the latent first-order factors of personal or general BJW have something in common with cognitive or affective SWB that is not measured by the latent second-order factor BJW or SWB. This is noteworthy because previous research has indicated that the relationships of personal BJW and general BJW to SWB tended to vary across different cultural settings (for reviews, see e.g., Nartova-Bochaver et al., 2018; Nartova-Bochaver et al., 2019). These studies suggest that cultural and linguistic factors influence how personal and general BJW relate to SWB.

In contrast to these findings, our study, combined with the approach taken by Hafer et al. (2020), raises an intriguing question: could the shared aspects of BJW—those that are common to both the personal and general dimensions—be more culturally universal in their explanatory role for SWB than the unique aspects of each BJW dimension? This question implies that while the cultural context may shape how individuals experience and interpret personal and general BJW, the overarching belief in a just world may serve as a more stable, cross-cultural factor that contributes to subjective well-being. Further investigation is required to gain a deeper understanding of the interplay between universal and culturally specific mechanisms in the relationship between BJW and SWB.

Limitations

Despite the strengths of our study, there are a few limitations that should be considered when interpreting our findings. First and most notably, we focused on SWB in our study but not on subjective *and* psychological well-being as Hafer et al. (2020) did. However, we considered the frequently investigated differentiation of affective and cognitive aspects of SWB (e.g., Diener et al., 2002) and measured them on a trait (as Hafer et al., 2020) and not on a state level. Nevertheless, the comparability of our findings with those of Hafer et al. (2020) is somewhat restricted. Additionally, Hafer et al. (2020) did not report the estimator for their SEM, for example, Robust Maximum Likelihood (MLR), or Weighted Least Squares Mean and Variance adjusted (WLSMV). Following Brauer et al. (2023), we used the latter for the CFA and SEM.

Second, our samples consisted of university students who were younger than the participants of Study 2 by Hafer et al. (2020). Furthermore, the proportion of females was higher than the proportion of males in our samples. This might have caused biased findings. However, we tested our models in two different countries representing one rather

individualistic (Germany) and one rather collectivistic country (Iran) instead of only one individualistic country (USA, Study 2, Hafer et al., 2020). Though there might have been linguistic differences in the use of the BJW and SWB scales between our studies, we see a cross-cultural approach here more as a strength than a limitation.

Conclusion and Implications

Altogether, our approach and findings strengthen those of Hafer et al. (2020). We agree with their conclusion: "a latent factor approach best captures the meaning of belief in a just world as originally outlined in justice motive theory" (Hafer et al., 2020, p. 14). In this sense, our findings also support Lerner's (e.g., 1980) original conceptualization of BJW as a generalized tendency of people, which combines and integrates beliefs about the self and others. Investigating the nature and significance of the shared aspects of personal and general BJW in terms of an underlying BJW factor seems to be a fruitful approach to explain people's general tendency to experience better SWB. In contrast to previous research, future studies should thus focus more on the shared aspects of BJW when examining its relation to well-being, especially as such an approach is rarely explored. Consistent with the findings of Hafer et al. (2020, Study 2), our study shows that the correlation between the latent BJW and the latent SWB factor was stronger than the correlations between each individual manifest BJW (personal, general) and manifest SWB (cognitive, affective) factor in both samples. In addition, we agree with the interpretation of Hafer et al. (2020) concerning the meaning and significance of the positive meta-analytic correlation observed between personal and general BJW (Hafer et al., 2020, Study 1) as we observed similar manifest correlations in both samples of our study.

However, there may be circumstances in which it is more appropriate to investigate the unique aspects of personal versus general BJW, such as when there are significant cross-cultural differences in the meanings of both BJW dimensions. This might also be the case when a social situation causes people to strongly differentiate on a cognitive level between the justice of their own personal world versus justice of the world as a whole. Such circumstances may, for example, arise when people's personal experience is more affected (e.g., the experience of justice)—here, on the one hand, unique aspects of personal BJW may be important. On the other hand, unique aspects of general BJW might be important for events that affect rather other people and allow for a certain cognitive and/or emotional distancing of the individual (e.g., in terms of victim blaming, derogation, or moral disengagement). There might also be other circumstances in which people are asked about their general, habitual well-being—here, shared aspects of general and personal GWG are likely to be more important. However, when people are asked about their current well-being and emotions in a certain situation, unique aspects of personal or general GWG may play a central role. Additionally, the meaning of shared versus unique aspects of both BJW dimensions for people's SWB might also depend on their age or developmental stage as the differentiation of personal from general BJW seems to increase with age (Dalbert & Sallay, 2004). Thus, circumstances in terms of the sample selection in future studies might determine on which aspects (shared or unique) of BJW researchers will

focus on. In this sense, it would be interesting to find out which of these aspects are more important in a certain age group or developmental stage (other than students as in the study of Hafer et al., 2020, or ours).

Furthermore, the study of psychological constructs other than well-being may require a focus not only on the shared but also on the unique aspects of both BJW dimensions, for example, when it comes to people's own actions. Those actions in which individuals interact directly with other people, such as prosocial or aggressive/antisocial behavior, may be more strongly associated with unique aspects of personal BJW (see the motive function of BJW, Dalbert, 2001). The study of people's judgments of other people's (just or unjust) behavior toward them may also require consideration of the unique aspects of personal BJW. In contrast, evaluating and judging other people's behavior that does not directly affect the individual may be more strongly associated with unique aspects of general BJW.

Overall, in our view, a systematic investigation of the circumstances and constructs exemplarily discussed above, and their significance for shared versus unique aspects of personal and general BJW, is preferable. We hope that our approach provides a starting point for such research. Furthermore, statistical models that account for measurement errors are necessary to substantiate the underlying tendencies of theoretically assumed latent subdimensions of BJW (personal, general) and SWB (affective, cognitive). Thus, we encourage researchers to replicate the findings of Hafer et al. (2020) and ours in further samples and cultural contexts.

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Data Availability The datasets generated and analyzed during the current study and additional material are available at: https://osf.io/26wz3/?view_only=79f466c4b0b64171b93b965bdeeee418. Online Resource 1: The Data Set. Online Resource 2: The CFA and SEM – R codes, Fit Indices and Results (Including Measurement Invariance Tests and SEM3–SEM6 Providing Residual Correlations). Online Resource 3: Supplementary Tables 1–3. Online Resource 4: Supplementary Table 4. Online Resource 5: Supplementary Table 5. Online Resource 6: Supplementary Table 6.

Declarations

Ethical Approval All procedures performed in our study which involved human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki Declaration and its later amendments or comparable ethical standards.

Consent to Participate Informed consent was obtained from all individual participants included in the study.

Consent for Publication Not applicable.

Competing Interests None.

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