Christian-Albrechts-Universität zu Kiel

Working Paper 2020: 15

Institute of Psychology

Work and Organizational Psychology

Beyond Mean Entity Fairness: The Role of the Zone of Tolerance in Responding to Fairness Treatment

Udo Konradt

Tim Warszta

Yvonne Garbers

Institute of Psychology
Christian-Albrechts-University
D-24098 Kiel
Germany
Fax: +49 431 880 4878

Working paper 2020: 15
June 2020

Beyond Mean Entity Fairness:
The Role of the Zone of Tolerance in Responding to Fairness Treatment

Udo Konradt [a]
Tim Warszta [b]
Yvonne Garbers [a]
[a] Institute of Psychology, Kiel University
[b] Business Psychology, West Coast University of Applied Sciences Heide

Papers in the Working Paper Series are published on internet in PDF formats.
Download from:
http://www. http://www.uni-kiel.de/psychologie/AOM/index.php/reports.html

Abstract

We propose that a zone of tolerance of fairness (ZOT) construct, which encompasses a boundary model, provides a deeper understanding of fairness processes. In two field experimental studies using scenario techniques, we manipulated fairness treatment in personnel selection settings and examined the role of a new ZOT measure in event fairness perceptions. Results from Study 1 (N = 222) demonstrated the psychometric properties of the ZOT measure, including reliability, and factorial and discriminant validity. We also found support for our hypothesis that the ZOT measure is a stronger predictor of perceived event fairness than a mean entity fairness measure. Furthermore, results from Study 2 (N = 108) replicated most of those from Study 1. We also demonstrated that individuals' fairness perception is not a uniform entity but consists of four latent classes, determined by different levels of height and width of the ZOT measure. Class membership was predictive of perceived event fairness when treated unfair. Taken together, our findings suggest that the ZOT measure represents a promising supplementary instrument to the traditional approach targeting applicants' mean entity fairness.

Keywords: zone of tolerance, procedural justice, applicant reactions, entity fairness, event fairness, personnel selection

Applicant reaction research has viewed fairness in a variety of ways—as a predictor, as a moderator or mediator, or as a consequence. Meta-analytic evidence suggests that fairness perceptions are triggered by selection procedures and test settings, and are associated with applicants' attitudes, intentions, and behaviors both before (e.g., Anderson, Salgado, & Hülsheger, 2010; Hausknecht, Day, & Thomas, 2004; McCarthy, Bauer, Truxillo, Anderson, Costa, & Ahmed, 2017) and after organizational entry (e.g., Colquitt, et al., 2013; Whitman, Caleo, Carpenter, Horner, & Bernerth, 2012). Despite the diversity of approaches and methods in this research area, all approaches use individual evaluations or judgments of fairness beliefs and perceptions, which are aggregated to a total or mean score (for an overview, see Colquitt & Rodell, 2015). Although this is a well-established practice in psychometrics and thus is imperative in psychological research, its usefulness to fairness research was questioned regarding the underlying distributional assumptions of fairness perceptions. Drawing on the principle of negativity bias in justice research (Cropanzano, Stein, & Nadisic, 2011), Gilliland (2008) pointed out that fairness is typically more important to individuals at the extremes than in the middle, with "at the extreme positive end of the distributions (i.e., more than fair), justice is important, but less so than at the negative end" (p. 275). Accordingly, the differences between low values should be assigned a greater weighting than the values in the upper range, which contradicts the assumption of symmetric scaling (i.e., symmetry of categories about a midpoint). With regard to marketing research, Gilliland proposed using a range as a measure for fairness perception instead, called zone of tolerance (ZOT; Parasuraman, Zeithaml, & Berry, 1994). Applied to the study of fairness, it is crucial that any fairness perception falls within a range of fairness between the minimum acceptable level and the actual level. Within this range, which is called the concession zone, people will generally consider events as fair. At the same time, the upper and lower values of this interval represent the boundary to the comfort zone ("more than fair") and the refusal zone ("unfair"), respectively.

Our research is informed by these considerations that—to the best of our knowledge—have not been addressed yet in justice research. In this research, we pursue four objectives. First, we establish a self-report measure of the ZOT of fairness by demonstrating its reliability, construct validity, discriminant validity, and criterion validity (Study 1). Additionally, Study 2 serves to replicate and extend these findings in a sample of employees to demonstrate the reproducibility. Second, we sought to demonstrate that this measure shows predictive validity with regard to event fairness perception. Third, we intend to show that particular characteristics of our new measure (i.e., height and width of ZOT) are sensitive to individual's fairness perceptions to fair and unfair treatment as manipulated in an experimental study. Fourth, we sought to capture unobserved heterogeneity in ZOT by identifying distinct patterns of individual patterns of the ZOT for understanding and predicting functional differences across applicants and situations. Figure 1 shows a graphical representation of the ZOT and the parameters.

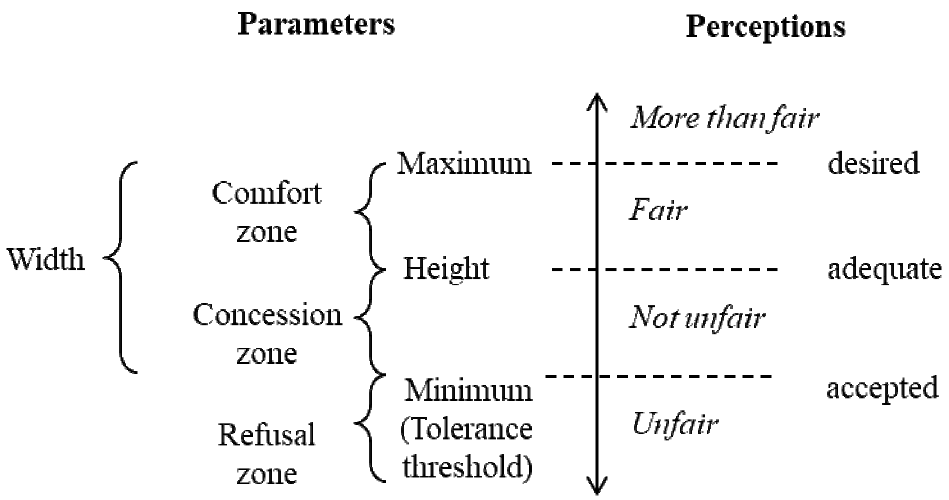

Figure 1. Graphical Representation of the Zone of Tolerance and Corresponding Parameters.

Note. Height is calculated as the arithmetical mean between the desired (maximum) and the accepted (minimum) level of fairness. Width represents the span above the accepted and below the desired level fairness.

Theoretical Background

Entity fairness1, referring to "an accumulated assessment about the fairness of a particular source of justice" (Cropanzano, Byrne, Bobocel, & Rupp, 2001; p. 139), represents a trait-like and global evaluation that is often informed by a series of judgments of justice events involving that entity that are experienced over time. In examining the dimensionality of organizational justice constructs, Gilliland (2008) outlined that fairness is a construct which is not normally distributed (Gilliland, 2008). He proposed considering fairness perceptions not as a normally distributed dichotomous construct with the characteristics fair and unfair, but with a range as a zone between a minimally acceptable and a desired fairness level. Gilliland argued that highly fair experiences and highly unfair experiences are very rarely made by individuals and that individuals consequently react more strongly to these tails of the distribution. In the middle of this distribution, there is a zone in which justice experiences are classified as neither fair nor unfair. The width of this zone, as well as its position on the continuum of justice experiences, are assumed to be influenced by prior experiences and stable individual characteristics, such as personality, beliefs and attitudes (Gilliland, 2008).

Emerged from service marketing literature, the ZOT construct has been used to describe judgments of consumer's expectations about acceptable service quality, and satisfaction (e.g., Gwynne, Devlin, & Ennew, 2000; Parasuraman et al., 1994). Particularly, the ZOT represents a range of perceptions of a product or service that represents adequate and desired expectations. This construct suggests variability in applicants' fairness perceptions, because instead of a concrete mean value which represents a single value, lower and upper values determine a bundle of values, which are functionally equivalent, since they achieve the same outcome. The significance of the concept is evidenced by the large number of conceptual and empirical papers (e.g., Ladhari, 2009; Stodnick & Marley, 2013).

In our study, we devote particular interest to the point at which individuals perceive a certain level of unfairness, which constitutes the transition between perceptions of fair and unfair. Beugré (2007) referred to this trigger point as the 'justice threshold' (p. 5), and noted the similarities that the justice threshold has with prospect theory (see Hastie & Dawes, 2001, for a review). Thresholds describe states that are related to intense or qualitative changes or transitions in outcomes with only a small variation of inputs. Several psychological theories, such as prospect theory (Kahneman & Tversky, 1979) or adaptive self-regulation theory (Carver & Scheier, 1990), refer to this concept by suggesting that individuals evaluate outcomes relative to a reference point, which determines their cognitions (e.g., expectations, believes, and wishes) and goal-directed behaviors.

The theoretical foundation of threshold models in general and ZOT in particular has seldom been explicitly attempted in the marketing and the wider psychological literature. One theoretical approach that appears to be promising are two-process models of information processing (e.g., Chaiken, 1980; Kahneman, 2011). Basically, these models contend that humans make use two different processing styles of automatic and controlled. Decision-making and judgments involve the use of both automatic or heuristically and controlled or systematic information processing. Typically, people use an affect heuristic for evaluating situations, relying on an immediate sense of appropriateness or positive affective impressions (Slovic, Finucane, Peters, & MacGregor, 2002). These mechanisms have been used to explain the fact that people start to reflect about justice only under conditions of negative affect (Mullen, 2007; Van den Bos, 2007). In terms of the tolerance threshold, perceptions above a threshold prompt feelings of fairness ("right") and trigger a heuristic that does not justify deep (i.e., conscious) information processing such as dimension-specific judgments. When an event is detected that falls below this threshold, systematic information processing is triggered, in which available information is assessed according to its meaning and relevance.

The theoretical justification for the upper limit (or wish) of the ZOT is less straightforward. A wish refers to a conscious state of the subject, which includes a set of desired or pleasant values of an event or a consequence. As a results of a reflection, a subject's wish is closely related to his/her beliefs, which is defined as an estimate of the likelihood that the knowledge one has about an entity is correct or, alternatively, that an event or a state of affairs has or will occur (Eagly & Chaiken, 1998). When believes are considered as a continuum of likelihood or expectation values, a wish represents the desired and even just realistic expression of that value. A wish might be less realistic for something to occur and what is believed.

Compared to an overall mean fairness measure, the ZOT construct might have a number of diagnostic benefits. First, it captures the characteristics of the not normally distributed fairness construct that has been pointed out by Gilliland (2008). Second, it allows to delineate different zones instead of single scores to represent psychological states of fairness perceptions, including comfort (i.e., above perceptions of adequate treatment), concession (i.e., between accepted and adequate), and refusal (i.e., below accepted). This allows representing different fairness states more accurately and signifies the range of ambiguities in individual fairness perceptions. Third, based on the characteristics of the zone, including its height and width, combinations of characteristics can be derived. For example, people with a high level of height (i.e., high fairness belief) and narrow width (low tolerance) in fairness represent a receptive type that may react more negatively to unfair treatment, compared to people with the same high level of height and large width. Capturing this heterogeneity allows to perform comparisons based on subgroup characteristics, which can improve our theoretical understanding of fairness, and help to identify its antecedents and consequences of fairness reactions more accurately.

Table 1

Key Parameters of the Zone of Tolerance

Parameter	Description	Formula
Minimum	Minimum of accepted unfairness	min (x)
Maximum	Maximum of desired fairness	max (x)
Height	Adequate fairness	(max (x) + min (x)) / 2
Width	Span above accepted unfairness and below desired fairness	max (x) - min (x)
Comfort zone	Span above adequate fairness and below desired fairness	max (x) - (max (x) + min (x)) / 2
Concession zone	Span above accepted unfairness and below adequate fairness	((max (x) + min (x)) / 2) - min (x)
Refusal zone	Area below accepted unfairness	min (x) - x_{min}
Status	Zone in which people are located at a specific point in time in relation to an event fairness perception (fp)	x = {1, if fp < min; 2 if min <= fp < height; 3 if fp >= height}

Note. x is the scale mean. xmin is the minimum possible value of x.

Measuring the Zone of Tolerance of Fairness

The conceptual ideas of Gilliland (2008) were used as a starting point for developing the ZOT measure. Taking into consideration that "previous theorists have suggested that fairness perception arise from the satisfaction and violation of procedural rules" (Gilliland, 1995, p. 17, referring to Leventhal, 1980), we used rules or attributes of justice to represent the upper and lower boundaries of the zone, i.e. the maximum and minimum tolerance boundary. Specifically, each boundary is represented by the rules of procedural justice proposed by Gilliland (1995), which consists of three second-order justice factors of formal characteristics, explanation, and interpersonal treatment and 11 procedural justice rules (e.g., treatment of the applicants, opportunity to perform, propriety of questions, and reconsideration opportunity). Each rule was assessed in terms of an ideal selection process, which reflects the upper boundary, and minimal accepted level, which reflects the lower boundary. Next, two multi-attribute measures−tolerance and wish−were generated from each items and accumulated. Minimum and maximum mean scores were inputs to the conceptual model in Figure 1 to derive key parameters, such as height and width. The parameters along with a description and calculation formula are depicted in Table 1.

Aims and Hypotheses of the Present Research

In this research, we aim to present and validate a measure of the zone of tolerance of fairness composed of the two measures of tolerance and wish and demonstrate their psychometric properties including reliability and factor structure (Hair, Black, Babin, Anderson, & Tatham, 1998). This index measure is derived from aggregating multiple measures (i.e., components) by using a set of Gilliland's (1995) rules of procedural justice and formulas. By examining its construct and criterion validity, we demonstrate its usefulness for predicting event fairness perceptions. Moreover, we intend to show that this measure is sensitive to an individual's importance of fairness and is predictive of an individual's perception to fairness treatment, thereby establishing construct and criteria validity. Specifically, and consistent with previous ZOT research (Campos & Nóbrega, 2009; Parasuraman et al., 1994), we suggest that people who consider fairness as important are more attentive to relevant fairness situations and are motivated to expend more effort in reflecting upon their perceptions and thinking more extensively about the implications of the information they have acquired. Hence, we hypothesize that people that ascribe fairness attributes as more (versus less) important have a higher (versus lower) level of height of their zone of tolerance than if fairness attributes are less (versus more) important (Hypothesis 1a).

Johnston (1995) proposed that the width of the ZOT is inversely proportional to the degree of involvement in that high involvement generates a narrower ZOT, compared to low involvement, which generates a wider ZOT. Likewise, we hypothesize that people that ascribe fairness attributes as less (versus more) important have a larger (versus narrower) width of their zone of tolerance than if fairness attributes were more (versus less) important (Hypothesis 1b).

Further, we aim to show that characteristics of this ZOT (i.e., height, width) and combinations are predictive of event fairness perceptions. A central proposition of the ZOT concept in consumer research is that consumer satisfaction will result as long as his/her perceptions of the service or product quality fall in that zone (Parasuraman et al., 1994). Applied to the fairness context, consistent with the ZOT conception, extant literature marketing literature (e.g., Gwynne et al., 2000; Parasuraman et al., 1994; Walker & Baker, 2000) demonstrated that the height and width of the ZOT varies for essential versus less-essential service quality components. Based on this literature, we advanced the hypotheses that people with a low (versus high) level of height of the zone of tolerance of fairness perceive violations of justice as less (versus more) unfair than people with a high (versus low) level of height of the zone of tolerance (Hypothesis 2a). Likewise, people with a low (versus high) level of height of the zone of tolerance of fairness perceive compliance of justice as more (versus less) fair than people with a high (versus low) level of height of the zone of tolerance (Hypothesis 2b). We also sought to provide evidence of convergent and predictive validity by demonstrating that the ZOT measure would predict variance associated with event fairness (Hypothesis 2c). Regarding the width of ZOT, we hypothesized that people with a large (versus narrow) width of the zone of tolerance would perceive violations of justice as less (versus more) unfair compared to people with a narrow zone of tolerance (Hypothesis 3a). Similarly, people with a large (versus narrow) width of the zone of tolerance would perceive compliance of justice as more (versus less) fair compared to people with a narrow (versus large) zone of tolerance (Hypothesis 3b). We also hypothesized that people with a low level of height and a narrow width (versus low levels of height and large width) of the zone of tolerance would perceive violations of justice as more unfair compared to people with a high and narrow (versus high levels of height and large width) zone of tolerance (Hypothesis 4).

There is no clear theoretical basis to predict how patterns of height and width of the ZOT will affect fairness perceptions. Nevertheless, it will be informative to explore this issue, as it has not been previously investigated in this field. Unobserved heterogeneity, which refers to unobserved (i.e., unmeasured) differences and diversity among classes of individuals in how they are affected by the independent variables, is assumed to be ubiquitous in empirical research. However, very little effort has been directed at understanding these latent or hidden characteristics. In a longitudinal study, Konradt et al. (2016) found support of four unique classes of applicants exhibiting different initial scores and growth of fairness perceptions across the recruitment process. Since heterogeneity has important consequences for empirical analysis and theory, we explored the relationship between patterns of the ZOT and fairness perceptions. Given different individual height and width of the ZOT, it seems likely that individuals vary in their patterns of fairness perceptions. Although there is no research linking different patterns of ZOT to perceptions, we postulate that there exist at least four plausible classes with distinct patterns of ZOT, based on their individual width and levels of height, high and low in each case (Hypothesis 5a). To examine the criteria validity of each pattern, we expect that these four classes would be predictive in reactions to fairness treatment. Specifically, we hypothesized that class-membership would predict event fairness perceptions, such that a subgroup with low level of height and/or high width perceived violations of justice as less unfair compared to a subgroup with high level of height and/or high width (Hypothesis 5b). An illustrative summary of the hypotheses is presented in Figure 2. Hypotheses 1 to 4 were examined in Study 1 and Study 2, Hypotheses 5a and 5b were tested in Study 2.

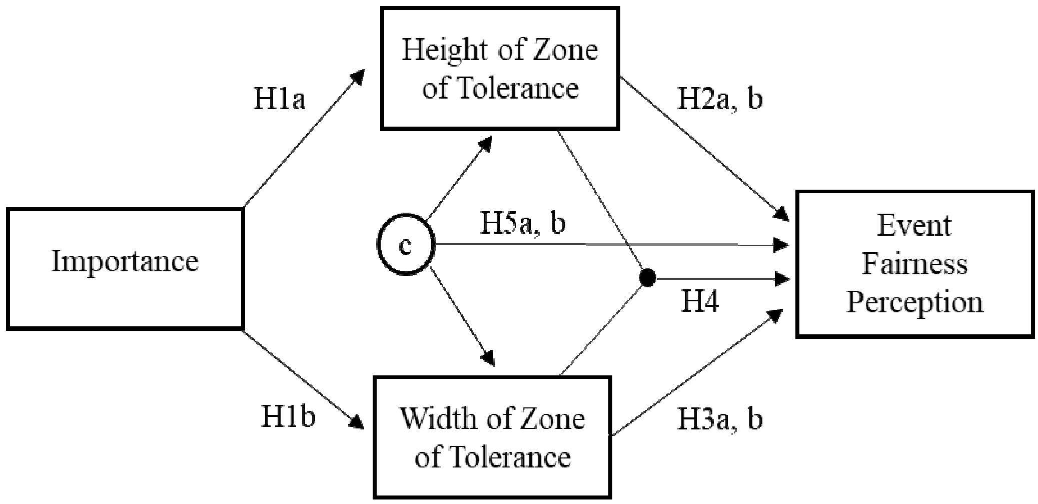

Figure 2. Illustrative Summary of the Hypotheses. C = Classes. Hypotheses 1 to 4 were examined in Study 1 and Study 2, Hypothesis 5a and 5b were tested in Study 2.

Study 1

Sample, Design, and Procedure

Participants were 222 master's-level psychology and business students from different universities. Notably, missing data occurred at a low frequency (i.e., 5.9% did not have full data on event fairness and 10.4% on tolerance), apparently at random (Little's MCAR test, $\chi 2 = 782.53$, df = 725, ns.). The majority of participants were female (62.8%) and the mean age was 20.6 (SD = 2.2, range between 17 and 33). Ninety-nine percent had an intermediate or high level of vocational or general education. Participants enrolled in business courses were directly contacted by investigators to voluntarily participate in the study and had the chance to win one out of five vouchers of 20€.

Each participant was presented with a scenario experiment through a 16-page booklet describing a personnel recruitment process. Scenario techniques are a common method in justice research due to its advantages and have been successfully used in previous experimental applicant justice studies (e.g., Crant & Bateman, 1990; Smither, Millsap, Stoffey, & Reilly, 1996). The experimenter was blind to the participant's experimental condition. To foster psychological realism and involvement, the scenarios involved issues participants could easily relate to, including realistic job advertisements of a fictive company, corporate websites, and user web pages. Participants were first assessed on individual differences, and then read one out of two scenarios, each of which instructed participants to read through the booklet carefully and respond to each item according to the ongoing situation described in the booklet. Scenarios and texts follow a fictional application process in two stages with pre-assessment (T1) and post-process (T2) that allow participants to imagine they were applying for a job (adapted from the scenario manipulation in Chen et al., 2011). Following the scenarios, participants completed measures of anticipatory fairness (T1) and event fairness (T1 and T2). In each booklet, participants were presented with information which distinguished the two conditions by containing our manipulation of fair versus unfair selection. The time span between the two stages was represented by pages separating the stages.

Manipulations. According to a 2 (fairness condition: fair, unfair) factorial design, participants were randomly assigned to the conditions. We created job advertisements based on online job sites by using organizational flexibility, support, and diversity as important sources for fairness perceptions (cf. Hollensbe, Khazanchi, & Masterson, 2008). To avoid any potential confound of the proposed effects with people's individual professional interests, we formulated the job description referring to attributes of the organization and keeping the description of the position neutral. Based on findings of justice in selection processes (Bauer et al., 2001; Colquitt, 2001) two different scenarios were created in order to manipulate the fairness treatment. In the fair condition, the selection process was described according to the rules of justice Gilliland, (1995). In the unfair condition, violations of the rules of procedural justice occur (e.g., lack of information, no opportunity to perform or voice). Material was carefully pretested and applied in previous research (masked for blind review).

Measures

Zone of Tolerance of Fairness. Drawing on Gilliland's (2008) suggestions, items were developed based on the Selection Procedural Justice Scale (SPJS; Bauer et al., 2001), an indirect measure involving the 11 procedural justice rules proposed by Gilliland (1993). Each rule was represented by a single item. The participants were first asked to mark their desired level in an ideal selection process (maximum), and then to mark their tolerance level (minimum) on the same 0-to-10-point scale ranging from 0 = not at all to 10 = fully marked. We chose an 11-point scale (instead of the traditional 5-point Likert scale) to improve the accuracy of the ZOT rating. A pilot study to verify the clarity and understandability of the items with 23 master students (11 women, mean age 25.36 years, SD = 7.99) with experience in selection processes (mean number of job applications was 8.80, SD = 2.21) resulted in the rewording and rephrasing of some questions and minor alterations. All parameters of the ZOT (see Table 1) were derived from the minimum of the tolerance variable (min(x)) and the maximum of tolerance (max(x)), including height (calculated as the mean between maximum of desired fairness and minimum of accepted unfairness), and the widths of the zones.

Importance. The importance of the justice rules was measured by the same 10 items but were framed by "How important it is for you", using an 11-point Likert-type scale from 0 = not important at all to 10 = very important (α = .86).

Entity Fairness. Entity fairness was measured with the six item scale of Ambrose and Schminke (2009) using a 5-point Likert-type scale from 1 (strongly disagree) to 5 (strongly agree). A sample item is "In general, the treatment I receive around here is fair". The reliability (Cronbach's α) of the measure was .81 at T1.

Event Fairness and Anticipatory Fairness. Event fairness was measured at T2 (after the selection procedure) with the 14-item procedural subscale from Colquitt, Long, Rodell, and Halvorsen-Ganepola's (2015) full range of justice measure. The advantage of this measure over others is that the absence of injustice is not synonymous with justice and vice versa by capturing justice rule adherence as well as its violation. As in previous research (e.g., Rodell & Colquitt, 2009; Bell, Wiechmann, & Ryan, 2006) a reframed scale of evaluating justice experience was used to assess event fairness (anticipatory fairness or initial level of fairness perceptions) at T1 (before the selection procedure). Items were reframed into "Please, rate the following statements in anticipation of the upcoming job interview". All items were measured using a 5-point Likert-type scale from 1 (strongly disagree) to 5 (strongly agree). The measure demonstrated acceptable levels of reliability at T1 (α = .89) and T2 (α = .79).

Controls. Literature indicates the potential influence of trait positive and negative affectivity on fairness perceptions (Barsky & Kaplan, 2007; Hollensbe et al., 2008). To provide a rigorous test of our hypotheses, we thus included measures of trait positive affectivity and trait negative affectivity for use as controls. Participants described how much positive affectivity (α = .81) and negative affectivity (α = .83) they experience on average, using the German 20-items adaptation (Grühn, Kotter-Grühn, & Röcke, 2010) of Positive and Negative Affect Scale (PANAS; Watson, Clark, & Tellegen, 1988). We also included gender, age, and the number of applications as control variables, following Bell, Wiechmann, and Ryan's (2004) model of applicant justice. Because none of the controls changed levels of significance and directions of effects, we omitted them from analyses to preserve statistical power for model testing.

Manipulation Check

Differences between perceived event fairness at T1 (i.e., anticipatory fairness) and T2 were used as manipulation checks. ANOVAs revealed that the mean scores for event fairness before the experimental manipulation did not differ, $F(1, 221) = 1.91$, ns. After manipulation, mean scores for event fairness declined significantly and largely in the unfair group while increasing in the fair group, $F(1, 206) = 148.47$, $p < .001$, $\eta p2 = 0.419$. In addition, a three-item measure of the ease of imagining the scenarios (e.g. 'I could easily put myself in these situations', Cronbach's α = .81) placed at the end of the experiment proved to be satisfactory ($M = 3.64$, $SD = 0.72$). Taken together, the data indicated that the manipulation of justice treatment was successful.

Analyses

Data Analysis Strategy. Data analyses were conducted using structural equation modeling with Mplus 8.1 (Muthén & Muthén, 1998-2017). When available, a Bayesian estimator was used because of its fundamental advantages over the traditional frequentist approach in statistical modeling and data analysis (Muthén & Asparouhov, 2012; Zyphur & Oswald, 2013). The Bayesian network do not assume normal data distribution and allows the calculation of credibility intervals for hypothesis tests that outperform conventional approaches (Burton, Gurrin, & Campbell, 1998). Specifically, the model incorporates variables that are closely related, yielding to linear dependence among predictor variables (i.e., multicollinearity) which may become a potential threat in this study. As a consequence, the variance of parameters may be inflated and hence potentially leading to the erroneous identification of relevant predictors in a statistical model. In Bayesian analysis, however, violations of asymptotic properties of estimators are less problematic than under a frequentist approach, because they do not rely on asymptotic theory. Uninformative priors were used that allow representing cross-loadings among all parameters.

A well-specified model fit was indicated by the posterior predictive p-value (PPP), indicating a good fit when equal to or higher than 0.05; a posterior predictive checking (PPC) 95% credibility interval (CI) for all estimated effects in the structural equation model in which a negative lower limit is considered to be one indicator of good model fit; and a one-tailed p-value based on the posterior distribution that indicates what proportion of the posterior is negative and what proportion is positive. The penalized likelihoods of Akaike information criterion (AIC) and the deviance information criterion (DIC) to compare models were used, with small values indicating a better fit. Positive and negative affectivity was allowed to co-vary with all internal model variables, though for space reasons they were not reported. To use a prior distribution as simply as possible (i.e., provides the smallest amount of information), a non-informative prior approach to the parameters is employed. Model estimation was performed with maximum 100,000 and minimum 20,000 iterations using the Markov chain Monte Carlo (MCMC) algorithm (Muthén & Asparouhov, 2012). All hypotheses were examined in separate analyses. We tested moderation by creating latent interaction exogenous variables.

Factor Structure and Reliability. We examined the factor structure of the composite scales of the ZOT measure with confirmatory factor analysis (CFA), because the models were largely informed by the ZOT literature. In support of our proposed factor structure and as proposed by Hair et al. (1998), the λ values for all items were both large ($\lambda \geq .30$) and significant ($p < .001$). Then, as recommended by Hu and Bentler (1999), we examined how well our hypothesized factor structure fit our data, using the comparative fit index (CFI) and standard root-mean-square residual (SRMR) as indicators of model fit. Fit statistics (tolerance: $\chi2 = 40.42$, df = 29, ns., RMSEA = 0.04, 90% CI [0.00, 0.07], CFI = 0.98, TLI = 0.96; wish: $\chi2 = 41.58$, df = 32, ns., RMSEA = 0.03, 90% CI [0.00, 0.06], CFI = 0.96, TLI = 0.95) indicated that the hypothesized factor structure fit our data well (Hu & Bentler, 1999), providing evidence for acceptable measurement model fit for both scales.

Next, we calculated Cronbach's alpha for each of the two separate dimensions. Results supported their reliability, as coefficient alphas were .87 for tolerance and .82 for wish, all exceeding the recommended .70 cutoff (Hinkin, 1998). Taken together, the dimensions of the ZOT measure demonstrated satisfactory reliability. In addition, the ZOT measure was normally distributed, as evidenced by kurtosis and skewness of less than 1.

Discriminant Validity. A series of measurement models including two factors (e.g., tolerance and wish), three factors (i.e., tolerance, wish, and entity fairness), and four factors (i.e., tolerance, wish, importance, and entity fairness) revealed a reasonable fit in all cases.[2] In addition, for all analyses, the multiple factor models were preferable to the one-factor model and fit the data better than a single factor model. Together, these results supported discriminant validity and evidence of lack of common method bias for the latent constructs.

Results and Discussion

Means, standard deviations, and bivariate correlations are presented in Table 2. Inherent to theory, entity fairness and ZOT status were positively related ($r = .48$, $p < .001$) but separable constructs. As expected, entity fairness was significantly positively and weakly related to the level of height of ZOT ($r = .15$, $p < .05$). These relationships indicate that both constructs are related but the new measure covers characteristics of fairness that are not captured by the entity fairness measure.

Table 2

Correlations among Variables and Descriptive Statistics in Study 1and 2

Variable	Mean (*SD*)	1	2	3	4	5	6	7	8	9	10	*M (SD)*
1 Entity fairness T1	2.88 (0.53)	(.81/.94)	.13	-.03	.05	.01	-.13	-.08	.27**	-.08	-.01	3.13 (0.48)
2 ZOT height T1[a]	7.10 (1.01)	.15*	n/a	-.68***	.60***	-.03	.15	.13	.36**	.04	.00	6.97 (1.07)
3 ZOT width T1[a]	2.97 (1.46)	–.08	–.67***	n/a	-.23*	-.11	-.18	-.18	-.15	-.05	.00	3.87 (1.65)
4 Importance T1	7.90 (1.09)	.06	.60***	–.28***	(.86/.85)	-.09	.25**	.01	.32**	.09	-.05	7.73 (1.23)
5 Event fairness T2	2.82 (0.76)	.07	–.04	.07	–.10	(.79/.93)	-.18	-.05	.05	.05	-.04	2.86 (0.80)
5 Positive affectivity	3.38 (0.55)	.20*	.20*	–.04	.13*	.05	(.80/.81)	-.05	-.04	.06	.01	3.29 (0.55)
7 Negative affectivity	1.73 (0.50)	–.09	–.02	–.02	–.01	–.08	.14	(.78/.76)	.07	.06	.03	1.54 (0.40)
8 Gender[b]	0.68 (0.46)	.00	.10	–.01	.05	.11	–.13	–.06	n/a	-.13	-.08	3.44 (8.19)
9 Age	20.60 (2.2)	.15	–.12	.11	.01	–.04	.02	–.17	–.17	n/a	-.19*	37.80 (8.16)
10 Job applications	2.82 (2.52)	.00	–.15	.07	.04	.08	.15	–.09	–.15	.33***	n/a	3.41 (8.16)

*Note. N = 222 (Study 1) and N = 108 (Study 2). n/a = not applicable. a Index variable. b 0 = male, 1 = female. The lower and left parts of the table are Study 1 data, the right and upper parts are Study 2 data. Numbers in parentheses (on the diagonal) are reliabilities where appropriate. *p< .05, **p< .01, ***p< .001 (two-tailed).*

The model for testing Hypotheses 1a and b provided close fit to the data (PPP = 0.417, 95% CI [–16.359 | 5.918]). Hypotheses 1a and 1b, which predicted that the importance of fairness attributes would be positively associated with level of height and negatively associated with the width of the ZOT, were supported (b = 0.28, SE = 0.026, p < .001, 95% CI [0.239 | 0.341], and b = –0.19, SE = 0.051, p < .001, 95% CI [–0.302 | –0.087], respectively).

The model for testing Hypotheses 2a and b provided a close fit to the data (PPP = 0.667, 95% CI [–9.514 | 2.819). We hypothesized that people with a low (versus high) level of height of the ZOT of fairness would perceive violations of justice as less (versus more) unfair than people with a high (versus low) level of height of the ZOT (Hypothesis 2a). Likewise, people with a low (versus high) level of height of the ZOT of fairness would perceive compliance of justice as more (versus less) fair than people with a high (versus low) level of height of the ZOT (Hypothesis 2b). In support of both hypotheses, analysis yielded a significant interaction effect, b = –0.31, SE = 0.09, p < .001, 95% CI [0.118 | 0.459]. Plotting the interaction to aid in interpretation revealed that violations of justice are perceived as more unfair as the level of height of ZOT increases, and compliance of justice are perceived as less just as the width of ZOT increases (Figure 3).

Figure 3. Interaction of Justice Treatment and Height of Zone of Tolerance Predicting Event Fairness Perception.

Hypotheses 3a and 3b, which assumed that people with a large (versus narrow) width of the ZOT would perceive unfair treatment as less (versus more) unfair compared to people with a narrow ZOT (Hypothesis 3a), and people with a large (versus narrow) width of the ZOT would perceive compliance of justice as more (versus less) fair compared to people with a narrow (versus large) ZOT (Hypothesis 3b), were supported. The well-fitting model (PPP = 0.583, 95% CI [–7.114 | 4.542]) showed a significant interaction effect, b = –0.21, SE = 0.058, p < .001, 95% CI [–0.318 | –0.109]. As shown in Figure 4, unfair treatment was perceived as less negative as the width of ZOT increases, and fair treatment was perceived as more positive as the width of ZOT increase. Finally, consistent with Hypothesis 4, people with a low level of height and a narrow width (versus low height and large width) of the ZOT perceived violations of justice as more unfair compared to people with a high and narrow (versus high height and large width) ZOT.

Figure 4. Interaction of Justice Treatment and Width of Zone of Tolerance Predicting Event Fairness Perception.

Summarizing, the key findings of Study 1 were that (1) we demonstrated reliability and normality of the components of the ZOT measure; (2) we showed factorial and discriminant validity; (3) we demonstrated content validity by establishing a positive relationship of fairness importance with levels of height and a negative relationship with width of ZOT; and finally (4) we found that the ZOT predicts reactions to fairness treatment. Although our findings enhance preliminary understanding of the ZOT of fairness and their correlates, this study is not without limitations. First, to overcome a primary limitation of Bayesian analysis that the results apply only to the specific sample used, we sought to replicate Study's 1 findings using a new sample. To preserve the strength of Bayesian modeling, results from this study were used to derive informative priors that reflect the expected population parameters. In doing so, we inspected our hypotheses to an occupational sample of professional adults to provide evidence for external validity of the obtained results. Lastly, we examined unobserved heterogeneity in ZOT as hypothesized in Hypotheses 5a and b.

Study 2

Sample, Design, Procedure, and Measures

The same measures as in Study 1 were used for Study 2. To reach an optimal number of employed people, and to ensure a significant data pool booklets were administered both in supervised proctored ($n = 35$, 32.4%) and un-proctored mode ($n = 73$, 67.6%), obviously similar in means of all relevant variables (all $ts < 1.1$) and SDs (all Levene's F-tests < 1) across both settings with the exception of lower event fairness at T2 for proctored ($M = 2.54$, $SD = 0.86$) compared to un-proctored participants ($M = 3.33$, $SD = 0.48$). The participants were 108 employees from different organizations and of blue-collar ($n = 25$) and white collar ($n = 83$) occupations. The sample consisted of marginally more women ($n = 58$, 53.8%) than men ($n = 50$, 46.2%) and a mean age of 37.5 years ($SD = 10.2$, range: 18 to 65).

Again, findings from the manipulation check indicated that participants in the different conditions experienced no initial differences at T1 ($F(1, 106) = 0.95$, ns.), but different changes in perceived event fairness between T1 and T2, $F(1, 106) = 284.21$, $p < .001$, $\eta p2 = 0.52$ with those in the fair condition experiencing the highest level of fairness. In addition, a three-item measure of the ease of imagining the scenarios (e.g. 'I could easily put myself in these situations', Cronbach's $\alpha = .75$) placed at the end of the experiment was satisfactory ($M = 3.77$, $SD = 0.77$). Thus, the results confirmed that the experimental manipulation successfully altered fairness treatment.

Analyses

As in Study 1, missing data occurred at a low frequency (range between 0% and 3.7%) and completely at random (Little's MCAR test, $\chi 2= 782.53$, $df = 725$, ns.). A series of nested CFAs indicated an acceptable model fit of the hypothesized four factor model.[3] The analysis and parameter settings of the Bayesian analysis remained the same as in Study 1, with the exception that structural paths between variables were specified using informative normal priors and residual variances informative inverse-Wishart (IW) priors for structural paths between variables. IW is a standard prior distribution for covariance matrices in Bayesian analysis, which ensures a positive definite covariance matrix (Muthén & Asparouhov, 2012).

To identify patterns proposed in Hypotheses 5a and b, we first conducted random effects models in Latent Class Analysis (LCA; Albers et al., 2009; Collins & Lanza, 2010), which probabilistically categorizes people into latent classes on the basis of the distribution of their responses to levels of height and width of ZOT. We aggregated data sets from both studies for two reasons. First, this allowed reaching a sample size, in which most commonly used fit indices for mixture models are expected to function adequately (e.g., Nylund, Asparouhov, & Muthén, 2007; Tein, Coxe, & Cham, 2013). Second, according to the exploratory nature of LCA (Bauer & Curran, 2003, 2004), matched groups working adults and university students allow to detect a full range of meaningful latent classes with a more heterogeneous ZOT profile. To justify, mean ZOT characteristics and fairness perceptions did not differ across both samples, all Fs < 1. To determine the number of classes, the bootstrapped likelihood ratio test (BLRT), the Lo–Mendell–Rubin adjusted likelihood ratio test (LMR-LRT), and the Bayesian information criteria (BIC) and sample size adjusted BIC (SSBIC) were used. Simulation studies demonstrated that the BIC/SSBIC and the BLR test were best in identifying the correct number of classes in mixture modeling (Nylund et al., 2007). Also, entropy values, which represent the quality of classification of individuals into latent classes, were inspected. Entropy values over 0.8 indicate a good separation of the latent classes. We estimated the 10 best of 1,000 random starts with 40 iterations and checked that the results were sensitive to the number of random starts for the k class model. The residual variances were constrained to be equal across classes. Hypothesis 5a and b were tested with separate multinomial logistic regressions with the four-category unordered class variable for the fair and unfair treated condition. Odds ratios derived from multinomial regression using the Mplus 3-step procedure, which outperforms the pseudo-class approach for analyzing the relationship between a latent class variable and a distant outcome variable (Asparouhov & Muthén, 2014). Pairwise Wald Chi-Square tests were used to detect significant differences between classes on each correlate. Post-hoc analyses were conducted on outcomes associated with the most likely class membership.

Results and Discussion

Descriptive statistics, internal consistency reliability coefficients, and correlations of our core measures for the sample of employed professionals are reported in Table 2. Again, height and width of the ZOT measure were normally distributed, as indicated by low values of kurtosis (-0.67) and skewness (-0.35). Entity fairness and ZOT status were moderately positively related (r = .33, p < .01) but separable constructs. As not expected, entity fairness was positively and marginally significantly related to height of tolerance zone (r = .15, ns.).

Regarding Hypotheses 1 and 2, the results of Study 1 and 2 converged. The well-fitting model for testing Hypotheses 1a and b (PPP = 0.496, 95% CI [–11.136 | 12.25]) provided support (b = 0.22, SE = 0.043, p < .001, 95% CI [0.145 | 0.314], and b = –0.11, SE = 0.080, p < .01, 95% CI [–0.269 | –0.046], respectively). The model for testing Hypotheses 2a and b provided a close fit to the data (PPP = 0.502, 95% CI [–9.361 | 9.801). In support of both hypotheses, violations of justice are perceived as more unjust as the level of height of ZOT increases, and compliance of justice are perceived as less just as the width of ZOT increases, as indicated by a significant interaction effect (b = –0.23, SE = 0.15, p < .05, 95% CI [-0.537 | -0.060]). Hypotheses 3a and b are rejected. The well-fitting model (PPP = 0.481, 95% CI [–8.719 | 10.318]) showed no significant interaction effect, b = 0.02, SE = 0.070, ns., 95% CI [–0.114 | –0.159]. Contrary to Hypothesis 4, people with a low level of height and a narrow width (versus low height and large width) of the ZOT do not perceive violations of justice as more unfair compared to people with a high and narrow (versus high height and large width) ZOT, thus rejecting Hypothesis 4.

Latent class analysis was employed to examine Hypothesis 5a. As shown in Table 3, the two- and three-class solutions were found not to be optimal, as nearly all the fit indices indicated that more classes yielded a better fit. Nor did the five- and six-class solutions seem to be adequate as the LRT value indicated fewer classes and the solution included one class with less than 5%. Thus, a four-class solution was found to be optimal out of a series of class solutions ranging from 1-6 classes. Corresponding parameters of the four-class model can be found in Table 4. The entropy value was .77 for this model, which is very close to .80, a good separation of latent classes (Celeux & Soromenho, 1996). The obtained four classes were labeled as Responsive subgroup (Class 1), Receptive subgroup (Class 2), Lenient subgroup (Class 3), and Indifferent subgroup (Class 4). The responsive subgroup, which build the majority (48.36%), is characterized by people with moderate levels of height and low level of width. Another major group (39.21%) represents individuals with low levels of height and moderate width, titled as lenient. Relatively small groups were the receptive (4.59%, combining very high levels of height and very narrow width), and the indifferent (8.82%, combining low levels of height and large width). To substantiate the hypothesis that people differed in their fairness perceptions across classes, we constrained the fixed effect for fairness to be equal for all classes. The constrained model (AIC = 2041.71, BIC = 2067.78) showed a worse fit compared to the unconstrained model (AIC = 1848.95, BIC = 1897.36), indicating that people varied in fairness perceptions across classes.

Table 3

Fit Indices, Proportions and Parameters of the Latent Class Analysis

	1 Class	2 Classes	3 Classes	4 Classes	5 Classes	6 Classes
Fit indices						
BIC	2035.71	1891.57	1858.42	1848.95	1842.75	1840.20
SSBIC	2037.92	1895.43	1863.94	1856.13	1851.58	1850.69
Entropy	–	0.73	0.74	0.77	0.76	0.71
LRT *p* value	–	<.001	<.001	<.05	*ns.*	*ns.*
BLRT *p* value	–	<.001	<.001	<.001	<.001[a]	*ns.*
Class counts (fit probabilities)						
c#1	306 (1.00)	173 (.56)	145 (.47)	148 (.48)	99 (.32)	19 (.06)
c#2	–	133 (.43)	30 (.09)	11 (.05)	152 (.49)	83 (.27)
c#3	–	–	131 (.42)	120 (.39)	26 (.08)	14 (.04)
c#4	–	–	–	27 (.08)	13 (.04)	79 (.25)
c#5	–	–	–	–	16 (.05)	101 (.33)
c#6	–	–	–	–	–	10 (.03)

Note. N = 330. AIC = Akaike Information Criterion; BIC = Bayesian Information Criterion; SSBIC = Sample Size Adjusted Bayesian Information Criterion; LRT = Lo-Mendell-Rubin Test; BLRT = Bootstrap Likelihood Ratio Test. c# = class number. a The p-value may not be trustworthy due to non-replication of the best log-likelihood in bootstrap draws.

Table 4

Parameters of the Four-Class Mixture Model

Latent class	Class proportion %	Height of ZOT		Width of ZOT		Fairness Treatment → Fairness perception	
		Mean	*SD*	Mean	*SD*	Unfair Mean *(SD)*	Fair Mean *(SD)*
Responsive	48.36	7.72	0.38	2.31	0.80	2.15 (0.63)	3.48 (0.52)
Receptive	3.59	8.90	0.34	1.08	0.81	1.92 (0.90)	3.50 (0.29)
Lenient	39.21	6.42	0.34	3.97	0.81	2.33 (0.61)	3.31 (0.49)
Indifferent	8.82	5.66	0.34	6.15	0.80	1.90 (0.53)	3.36 (0.65)

Hypothesis 5b, which predicted that class-membership predicted event fairness perceptions, such that the indifferent subgroup perceived violations of justice as less unfair compared to the responsive subgroup, was supported. The results of the Overall Wald Chi-Square Test yielded significant differences in fairness perceptions among groups, Wald $\chi 2$ = 17.20, df = 3, $p < .001$. Class-membership predicted event fairness perceptions, such that the indifferent subgroup perceived violations of justice as less unfair (M = 1.93, SE = 0.20) compared to the responsive subgroup (M = 2.39, SE = 0.10), Wald $\chi 2$ = 4.08, $p < .05$, thereby supporting Hypothesis 5b.

Using an occupational sample, we found mixed support for our hypotheses: evidence was found for main pathways tested in our first study, suggesting that these results found in Study 1 were valid and generalize to different populations. However, the hypotheses on the role of ZOT in treatment effects on fairness perceptions have not been replicated. The purpose of Study 2 was also to extend the findings from both studies by demonstrating that distinct patterns of ZOT exist, which are predictive of how people appraisals to fair or unfair treatment. We found support for four groups with subgroup membership was predictive of perceived event fairness in justice related situations.

General Discussion

The current research takes a novel approach to understanding applicant fairness by proposing a ZOT measure. The findings from two studies across student and employee samples indicate proper psychometric characteristics of this new measure, including reliability, construct validity, and predictive validity. Mixed results were achieved according to the sensitivity of the ZOT measure across both studies. Our findings also provide support to the suggestion that there exist four distinct patterns of fairness tolerance. The majority of individuals were found to be responsive to fairness treatment which was manifested in high levels of height and low width, whereas only small segments of individuals belonging to the indifferent or the receptive classes. These classes were predictive of perceived event fairness when treated unfairly for the responsive vs. indifferent individuals. In what follows, we discuss the implications of our results for measurement, theory, and practice.

Methodologically, we established a new measure for procedural justice that extents the existing tradition by using the ZOT construct (Gwynne et al., 2000; Parasuraman et al., 1994; Gilliland, 2008). By providing various characteristics, such as height, width, and zones, the ZOT measure offers a promising approach to study fairness perceptions more detailed than existing mean entity fairness measures. We demonstrated that our proposed measure has sound psychometric characteristics, including consistency, distribution, and construct validity. Also across two studies, the new measure appeared to be normally distributed within the upper and lower boundaries as indicated by skewness and kurtosis. In particular, we demonstrated its construct and criterion validity. This suggests that the ZOT measure enhances the accuracy of the prediction of the fairness perception.

Substantially, the results of Study 2 converge with those of Study 1. However, there are also divergent findings. The height and width of the ZOT did not contribute to how people perceive fair vs. unfair treatment across both studies. One reason for this divergence may derive from differences within the population regarding their height and width of ZOT. Our variable-centered analyses assume that the population is homogeneous with respect to homogeneity and ignore the possibility that there are subpopulations of individuals who may differ in their fairness perceptions (see Howard & Hoffman, 2018; Woo, Jebb, Tay, & Parrigon, 2018, for reviews). Participants in the occupational study were less homogeneous than the student sample and possibly included subtypes of individuals that were differentially associated with fairness perceptions. Specifically, theory and meta-analytic evidence suggest that age, gender, and education are significantly associated with different levels of fairness perceptions (Bell et al., 2004; Hausknecht et al., 2004). This explanation is also supported by the fact that considerable heterogeneity in ZOT components was identified among these participants. Ignoring this heterogeneity in width and height would both entail poor estimator efficiency and large credibility intervals. We thus conclude that greater emphasis should be given to reveal this potential heterogeneity.

Basically, this measure adds to prior justice theories that focused nearly exclusively on average fairness perceptions represented by a mean score. The ZOT approach to entity fairness may stimulate our theoretical understanding of the complexity of individual entity and event fairness. For example, the measure allows determining a zone or state, in which people are currently in. Fairness heuristic theory (Mullen, 2007; Van den Bos, 2007) suggests that people, who are in a refusal zone should perceive more negative event fairness compared to people who are in a concession or comfort zone. However, besides a diagnostic value of the ZOT measure, a theoretical elaboration of the underlying construct is warranted. As the ZOT model is characterized as a standards-based model, two-process models of information processing (e.g., Chaiken 1980; Kahneman 2011) could provide a starting point for further development.

The present study also advances our understanding of unobserved heterogeneity in responding to fair vs. unfair treatment. Specifically, the four theoretically derived classes presented in this paper indicate that perceptions of fairness to fair vs. unfair treatment do not represent a unified class, but rather a phenomenon, which varies across classes of individuals. These are important suggestions in that they offer a more complex picture of fairness perceptions and might contribute to extending our theories and specifying new hypotheses. In a nutshell, this pattern of results indicate that the vast majority are either people who are responsive to justice (that is, they have relatively high level of height and low level of width) or people who are lenient (that is, they have relatively low level of height and a moderate level of width). Interestingly, both groups react differently to justice violations: responsive people react to minor violations of fair treatment and show low levels of tolerance, whereas lenient people yielded a higher tolerance and acceptance of justice violations.

Separating the two groups, therefore, offers a new avenue for a theoretical differentiation and quantification of the effect of justice, because the use of mean entity fairness measures does not lead to an exact diagnosis of the individual perceptions. As a result, the effects of unfair treatment are underestimated in the first case and overestimated in the second. Building groups seems more appropriate to establish a more exactly prognosis and explanation. In addition, a formative approach enables researchers to identify indicators as sources for possible imbalances. Also, the ZOT approach allows delineating the fairness construct as a formative or composite latent construct (Bollen & Lennox, 1991; Jarvis, MacKenzie, & Podsakoff, 2003), which allows revealing the impact of specific indicators on the variable of interest. As a consequence, formative constructs “are sensitive to discriminant patterns and allow the detection of qualitatively distinct WFB profiles” (Ellwart & Konradt, 2011; p. 399).

Classes of individuals with different patterns of justice reactions may not only help to more precisely predict the level of fairness perceptions, but also other fairness characteristics, such as the spread or span in perceptions when treated unfairly, or the variability in perceptions across situations. For instance, it may be assumed that people in the lenient group show more inconsistent perceptions across similar situations (lower stability), because they have a large width that creates a heterogeneous environment in which reactions may occur. These may also help to enlarge and refine justice theories. According to Jones and Skarlicki’s (2013) dynamic fairness theory, changes in entity fairness perceptions are the product of individual sense-making of justice events. We expect that the relationship between fairness perceptions and sense-making processes to be moderated by fairness classes, in that people in classes of large widths (i.e., lenient and indifferent classes) show higher within-subject instability and lower levels of between-subject associations compared to individuals in the responsive and receptive group.

It might be speculated that individuals in the lenient group are likely to be characterized by personality traits such as high levels of agreeability or serenity (Floody, 2014). These subjects tend to remain calm and maintain an agreeable manner when facing negative emotions or interpersonal conflicts. Given that serenity takes account of behavioral and cognitive components of self-regulation, self-control, and anger management, it is promising to include these considerations in justice research. Similarly, at the individual-self level, self-discrepancy theory (Higgins, 1987) could be used to explain the ZOT pattern in the receptive group. Self-discrepancy theory proposes that specific conflicting cognitive representations of self-discrepancies (i.e., ideal-own, ideal-other, should-own, and should-other) result in emotional vulnerabilities. In line with the theory, Barnett, Moore, and Harp (2017) demonstrated that self-discrepancies were associated with specific affective states.

Specifically, serenity was negatively associated with the ideal-other self-discrepancy, meaning that individual's perceptions of their self stands in relation to others' ideals. Self-discrepancies might not only describe differences in fairness levels, but explain such persistent distinctions among subgroups that we found.

From a practitioners' point of view, the results of this study offer some tentative practical implications, bearing in mind that this is the first study that has applied the ZOT construct to the perception of justice and the results must be substantiated by further studies. The ZOT is a multidimensional construct, which allows statements about height, width as well as states in which individuals are. Thus, it enables a more nuanced description of the perceived fairness than the currently available entity fairness measures, that will most likely have an impact on their attitudinal and behavioral outcomes (Anderson et al., 2010; Hausknecht et al., 2004; McCarthy et al., 2017). For instance, applicants who have a high width of ZOT are more tolerant of violations of fairness and are assumed to show less strong negative organizational reactions, such as pursuit intentions, recommendation intentions, and intentions to reapply (Konradt, Warszta, & Ellwart, 2013). Likewise, the finding of latent classes in our study can provide practitioners with reliable and validated categories for diagnosis and allow a more precise prediction of application behavior (e.g., willingness to accept a job offer; Anderson, et al., 2010; McCarthy, et al., 2017) and performance after organizational entry (Colquitt, et al., 2013; Whitman, et al., 2012). Specifically, applicants in the receptive class, which were found to have high levels of height and narrow width, bear the risk of feeling treated unfairly and substantially decline in their perception of justice across time. Identifying these applicants at an early point in time enables the recruiters to provide them with supplemental information on the organization's values during the hiring process to assist in establishing more realistic fairness expectations and explaining the reasons behind their use of selections procedures and staffing decisions (for suggestions in conventional and web-based settings, see Cropanzano & Wright, 2003; Dineen & Noe, 2009; Konradt & Rack, 2006; Konradt & Sarges, 2003).

Limitations and Future Research

There are, admittedly, some limitations to the current study. A first limitation of this research is that we used a scenario technique to manipulate the level of fairness treatment.

We chose an experimental scenario-based technique because it permits absolute control of the conditions, allow presenting information in different contexts, had been successfully used in previous experimental applicant fairness studies (e.g., Camps, Decoster, & Stouten, 2012; Dineen, Noe, & Wang, 2004) and are more resistant to socially desirable responding than traditional self-report techniques (Tomassetti, Dalal, & Kaplan, 2016). In addition, our results suggest that the people felt the stories lively and were well able to understand them; and we demonstrated that the pretested manipulations were successful. Yet, our results remain on fictive descriptions of situations, which may differ from real situations. Thus, future research should take advantage of non-fictional correlational paradigms, such as retrospective surveys, to validate our findings.

Second, it may seem a limitation of this research that we used Gilliland's (1993) measure that has a focus on procedural fairness because it is of central importance and well established in the personnel selection domain (Anderson et al., 2010; Hausknecht et al., 2004; McCarthy et al., 2017). Given that our study is the first to demonstrate the psychometric quality of ZOT in justice research, it seems worthwhile to extend the focus on differentiated types of fairness relevant to the selection domain, such as informational, distributive, and interactional justice (Colquitt, 2001). This would allow examining how closely the different forms of justice in terms of the components of ZOT are related and to what extent they uniquely contribute to fairness perceptions and behaviors.

A third limitation of this study is the calculation of the height of ZOT as a mean between minima and maxima, which might diverge from an empirically assessed score of height. Gilliland (2008) assumed that the fairness distribution is not normally distributed, but skewed to the left. Applied to our approach, our calculation procedure might result in an overestimation of the height of ZOT. In addition, although subject of a continuing debate (Ladhari, 2009), the use of latent difference scores instead of simple subtraction may improve convergent and predictive validity of the measure (e.g., Edwards, 2001). One essential extension of future research is, thus, to refine the ZOT measure by separately assessing and modeling the mean of tolerated unfairness. Likewise, the use of a direct (i.e., evaluate a feeling or impression of justice) instead of an indirect measure (i.e., various events that reflect separate facets of justice) might be an important extension (Cropanzano, Fortin, & Kirk, 2015). Models of retrieval from memory suggest that Colquitt's indirect measure (2001), for instance, requires respondents to engage in more intensive cognitive activity, thus setting in motion information-processing frames. Conversely, direct measures draw on more affective frames, are experiential in nature, and might be more influenced by trait individuals' affectivity and state affect. Given that the validity of indirect measures is determined by how information relating to fairness is cognitively retrieved, there may be memory effects involved that warrant further theoretical and empirical investigation. The delineation of these processes and their reciprocal influences offers a new avenue for conceptualizing and operationalizing the construct of fairness. Methodologically, we used a 10-category Likert-type discrete response format to capture the different ZOT boundaries of accepted, adequate, and desired fairness. Since the recording of the ZOT entails three borders which are related to each other, graphic rating scale types often used in survey research such as a visual analog scales (e.g., a thermometer or a 100-point scale) might be more adequate because they allow the respondents not only to provide single appraisals of each bound, but to put them in relation to each other by visual inspection, as the ZOT construct involves (Zealley & Aitken, 1969).

From a theoretical point of view, two future research questions are promising. Theory and research suggests that perceptions of justice change over time (e.g., Fortin, Cojuharenco, Patient, & German, 2016; Rupp, Shapiro, Folger, Skarlicki, & Shao, 2017). One reason for these fluctuations may be that perceptions of justice are non-ergodic, i.e. that within-subject changes are not completely homogeneous and stationary (for details, see Molenaar, 2004). Another explanation that draws on the ZOT model is that fluctuations occur when current impressions of justice are close to the boundaries that define the transition points between zones, resulting that an event cannot be clearly discriminated. The fairness impressions should oscillate around adjacent zones (e.g., refusal and concession), which manifests in higher levels of justice instability. Second, the ZOT concept offers the opportunity to investigate high levels of justice or more than fair perceptions, which has been widely neglected by previous literature. People in the comfort zone, who perceive to treated more than fair should be surprised, but should also feel comfortable, well-being, and joy. This suggests to couple approaches and theories of other research directions, such as the conflict and the well-being research (Bornstein & Wiener, 2014).

Conclusion

Across two studies using working adults and university students, we validated a new measure of fairness perceptions and established an initial understanding of the psychometric and substantial properties. Our measure demonstrated sound psychometric properties and showed predictive validity toward fairness perceptions. We show that the ZOT can complement existing measures of entity fairness. Finally, we also show that characteristics of the ZOT measure can be used to capture heterogeneity in peoples' fairness perceptions by representing four different classes of individuals indicated by different profiles in height and width in ZOT. These results may hopefully stimulate our theoretical understanding of the complexity of fairness perceptions.

References

Albers, S., Klapper, D., Konradt, U., Walter, A., & Wolf, J. (Hg.) (2009). Methodik der empirischen Forschung [Methodology of empirical research] (3. Ed.). Wiesbaden: Gabler Verlag.

Ambrose, M. L., & Schminke, M. (2009). The role of overall justice judgments in organizational justice research: A test of mediation. Journal of Applied Psychology, 94, 491–500. doi:10.1037/a0013203

Anderson, N., Salgado, J. F., & Hülsheger, U. R. (2010). Applicant reactions in selection: Comprehensive meta-analysis into reaction generalization versus situational specificity. International Journal of Selection and Assessment, 18, 291–304. doi:10.1111/j.1468-2389.2010.00512.x

Asparouhov, T., & Muthén, B. (2014). Auxiliary variables in mixture modeling: Three-step approaches using M plus. Structural Equation Modeling: A Multidisciplinary Journal, 21, 329–341. doi:10.1080/10705511.2014.915181

Barnett, M. D., Moore, J. M., & Harp, A. R. (2017). Who we are and how we feel: Self-discrepancy theory and specific affective states. Personality and Individual Differences, 111, 232–237. doi: 10.1016/j.paid.2017.02.024

Barsky, A., & Kaplan, S. A. (2007). If you feel bad, it's unfair: A quantitative synthesis of affect and organizational justice perceptions. Journal of Applied Psychology, 92, 286–295. doi:10.1037/0021-9010.92.1.286

Bauer, D. J., & Curran, P. J. (2003). Distributional assumptions of growth mixture models: Implications for overextraction of latent trajectory profiles. Psychological Methods, 8, 338–363. doi: 10.1037/1082-989X.8.3.338

Bauer, D. J., & Curran, P. J. (2004). The integration of continuous and discrete latent variable models: Potential problems and promising opportunities. Psychological Methods, 9, 3–29. doi: 10.1037/1082-989X.9.1.3

Bauer, T. N., Truxillo, D. M., Sanchez, R., Craig, J., Ferrara, P., & Campion, M. A. (2001). Development of the selection procedural justice scale (SPJS). Personnel Psychology, 54, 387–119. doi:10.1111/j.1744-6570.2001.tb00097.x

Bell, B. S., Ryan, A. M., & Wiechmann, D. (2004). Justice expectations and applicant perceptions. International Journal of Selection and Assessment, 12, 24–38. doi:10.1111/j.0965-075X.2004.00261.x

Bell, B. S., Wiechmann, D. J., & Ryan, A. M. (2006). Consequences of organizational justice expectations in a selection system. Journal of Applied Psychology, 91, 455–466. doi:10.1037/0021-9010.91.2.455

Beugré, C. (2007). A Cultural Perspective of Organizational Justice. Charlotte, NC, US: IAP Information Age Publishing Inc.

Bollen, K., & Lennox, R. (1991). Conventional wisdom on measurement: A structural equation perspective. Psychological Bulletin, 110, 305–314. doi: 10.1037/0033-2909.110.2.305

Bornstein, B. H., & Wiener, R. L. (Eds.) (2014). Justice, conflict and wellbeing: Multidisciplinary perspectives. New York, NY, US: Springer Science + Business Media. doi: 10.1007/978-1-4939-0623-9

Burton, P. R., Gurrin, L. C., & Campbell, M. J. (1998). Clinical significance not statistical significance: a simple Bayesian alternative to p values. Journal of Epidemiology and Community Health, 52(5), 318–323. doi:10.1136/jech.52.5.318

Campos, D. F., & Nóbrega, K. C. (2009). Importance and the zone of tolerance of customer expectations of fast food services. Journal of Operations and Supply Chain Management, 2, 56–71. doi:10.12660/joscmv2n2p56-71

Camps, J., Decoster, S., & Stouten, J. (2012). My share is fair, so I don’t care: The moderating role of distributive justice in the perception of leaders’ self-serving behavior. Journal of Personnel Psychology, 11, 49–59. doi:10.1027/1866-5888/a000058

Carver, C. S., & Scheier, M. F. (1990). Origins and functions of positive and negative affect: A control-process view. Psychological Review, 97, 19–35. doi:10.1037/0033-295x.97.1.19

Celeux, G., & Soromenho, G. (1996). An entropy criterion for assessing the number of clusters in a mixture model. Journal of Classification, 13, 195–212. doi:10.1007/BF01246098

Chaiken S. (1980). Heuristic versus systematic information-processing and the use of source versus message cues in persuasion. Journal of Personality and Social Psychology, 39, 752–766. doi: 10.1037/0022-3514.39.5.752.

Collins, L. M., & Lanza, S. T. (2010). Latent class and latent transition analysis: With applications in the social, behavioral, and health sciences. Hoboken, NJ: Wiley.

Colquitt, J. A. (2001). On the dimensionality of organizational justice: A construct validation of a measure. Journal of Applied Psychology, 86, 386–400. doi:10.1037/0021-9010.86.3.386

Colquitt, J. A., & Rodell, J. B. (2015). Measuring justice and fairness. In R. Cropanzano & M. A. Ambrose (Eds.), Oxford Handbook of Justice in the Workplace (pp. 187–202). Oxford: Oxford University Press. doi:10.1093/oxfordhb/9780199981410.013.8

Colquitt, J. A., Long, D. M., Rodell, J. B., & Halvorsen-Ganepola, M. D. K. (2015). Adding the ‘in’ to justice: A qualitative and quantitative investigation of the differential effects of justice and injustice. Journal of Applied Psychology, 100, 278–297. doi:10.1037/a0038131

Colquitt, J. A., Scott, B. A., Rodell, J. B., Long, D. M., Zapata, C. P., Conlon, D. E., & Wesson, M. J. (2013). Justice at the millennium, a decade later: A meta-analytic test of social exchange and affect-based perspectives. Journal of Applied Psychology, 98, 199–236. doi:10.1037/a0031757

Crant, J. M., & Bateman, T. (1990). An experimental test of the impact of drug-testing programs on potential job applicants' attitudes and intentions. Journal of Applied Psychology, 75, 127–131. doi:10.1037/0021-9010.75.2.127

Cropanzano, R., Byrne, Z. S., Bobocel, D. R., & Rupp, D. E. (2001). Moral virtues, fairness heuristics, social entities, and other denizens of organizational justice. Journal of Vocational Behavior, 58, 164–209.

Cropanzano, R., Stein, J. H., & Nadisic, T. (2011). Social justice and the experience of emotions. New York: Routledge.

Cropanzano, R., & Wright, T. A. (2003). Procedural justice and organizational staffing: A tale of two paradigms. Human Resource Management Review, 13, 7–39. doi:10.1016/51053-4822(02)00097-9

Cropanzano, R., Fortin, M., & Kirk, J. F. (2015). How do we know when we are treated fairly? Justice rules and fairness judgments. Research in Personnel and Human Resources Management, 33, 279–350. doi:10.1108/S0742-730120150000033010

Dineen, B. R., & Noe, R. A. (2009). Effects of customization on application decisions and applicant pool characteristics in a web-based recruitment context. Journal of Applied Psychology, 94, 224–234. doi:10.1037/a0012832.

Dineen, B. R., Noe, R. A., & Wang, C. (2004). Perceived fairness of web-based applicant screening procedures: Weighing the rules of justice and the role of individual differences. Human Resource Management, 43, 127–145. doi:10.1002/hrm.20011

Edwards, J. R. (2001). Ten difference score myths. Organizational Research Methods, 4, 265–287. doi: 10.1177/109442810143005

Eagly, A. H., & Chaiken, S. (1998). Attitude structure and function. In D. Gilbert, S.T. Fiske, & G. Lindsey, et al (Eds.), Handbook of social psychology (Vol. 1, pp. 269-322). Boston: McGraw-Hill.

Ellwart, T., & Konradt, U. (2011). Formative versus reflective measurement: An illustration using the work-family balance construct. Journal of Psychology, 145, 391–417. doi:10.1080/00223980.2011.580388

Floody, D. R. (2014). Serenity and inner peace: Positive perspectives. In G. K. Sims, L. L. Nelson, & M. R. Puopolo (Eds.), Peace Psychology Book Series: Personal Peacefulness: Psychological Perspectives (pp. 107–133). New York: Springer Science + Business Media. doi:10.1007/978-1-4614-9366-2_5

Gilliland, S. W. (1993). The perceived fairness of selection systems: An organizational justice perspective. Academy of Management Review, 18, 694–734. doi:10.5465/AMR.1993.9402210155

Gilliland, S. W. (1995). Fairness from the applicant's perspective: Reactions to employee selection procedures. International Journal of Selection and Assessment, 3, 11–19. doi:10.1111/j.1468-

2389.1995.tb00002.x

Gilliland, S. W. (2008). The tails of justice: A critical examination of the dimensionality of organizational justice constructs. Human Resource Management Review, 18, 271–281. doi:10.1016/j.hrmr.2008.08.001

Grühn, D., Kotter-Grühn, D., & Röcke, C. (2010). Discrete affects across the adult lifespan: Evidence for multidimensionality and multidirectionality of affective experiences in young, middle-aged and older adults. Journal of Research in Personality, 44, 492–500. doi:10.1016/j.jrp.2010.06.003

Gwynne, A. L., Devlin, J. F., & Ennew, C. T. (2000). The zone of tolerance: Insights and influences. Journal of Marketing Management, 16, 545–564. doi:10.1362/026725700785045921

Hausknecht, J., Day, D., & Thomas, S. (2004). Applicant reactions to selection procedures: An updated model and meta-analysis. Personnel Psychology, 57, 639–684. doi:10.1111/j.1744-6570.2004.00003.x

Hair, J. F., Black, W. C., Babin, B. J., Anderson, R. E., & Tatham, R. L. (2006). Multivariate Data Analysis (6th ed.). Upper Saddle River, NJ: Pearson. doi: 10.12691/ajams-4-6-3

Hastie, R., & Dawes, R. M. (2001). Rational Choice in an Uncertain World: The Psychology of Judgment and Decision–Making. Thousand Oaks, CA: Sage.

Higgins, E. T. (1987). Self-discrepancy: A theory relating self and affect. Psychological Review, 94, 319–340. doi:10.1037/0033-295X.94.3.319.

Hinkin, T. R. (1995). A review of scale development practices in the study of organizations. Journal of Management, 21, 967–988. doi:10.1177/014920639502100509

Hollensbe, E. C., Khazanchi, S., & Masterson, S. S. (2008). How do I assess if my supervisor and organization are fair? Identifying the rules underlying entity-based justice perceptions. Academy of Management Journal, 51, 1099–1116. doi:10.5465/AMJ.2008.35732600

Howard, M. C., & Hoffman, M. E. (2018). Variable-centered, person-centered, and person-specific approaches: where theory meets the method. Organizational Research Methods, 21, 846–876. doi:10.1177/1094428117744021

Hu, L., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. Structural Equation Modeling, 6, 1–55. doi:10.12691/ajap-5-1-2

Jarvis, C. B., MacKenzie, S. B., & Podsakoff, P. M. (2003). A critical review of construct indicators and measurement model misspecifications in marketing and consumer research. Journal of Consumer Research, 30, 199–218. doi: 10.1086/376806

Johnston, R. (1995). The zone of tolerance: exploring the relationship between service transactions and satisfaction with the overall service. International Journal of Service Industry Management, 6(2), 46-61. doi:10.1108/09564239510084941

Jones, D., & Skarlicki, D. P. (2013). How perceptions of fairness can change: A dynamic model of organizational justice. Organizational Psychology Review, 3, 138–160. doi:10.1177/2041386612461665

Kahneman, D. (2011). Thinking, fast and slow. New York: Farrar, Straus and Giroux.

Kahneman, D., & Tversky, A. (1979). Prospect theory: An analysis of decision under risk. Econometrica, 47, 263–291. doi: 10.2307/1914185

Konradt, U., & Rack, O. (2006). Personalrekrutierung im Internet - Einfluss der Qualität von Recruiting-Sites auf die Arbeitgeberattraktivität [Internet recruitment - Corporate website quality as determinants of organizational attraction]. *Zeitschrift für Personalpsychologie, 5*, 53–59. doi:10.1026/1617-6391.5.2.53

Konradt, U. & Sarges, W. (2003). Suche, Auswahl und Förderung von Personal mit dem Intra- und Internet: Strategien, Zielrichtungen und Entwicklungspfade. In U. Konradt & W. Sarges (Hrsg.), E-Recruitment und E-Assessment (S. 3-16). Göttingen: Hogrefe.

Konradt, U., Garbers, Y., Erdogan, B., & Bauer, T. N. (2016). Patterns of change in fairness perceptions during the hiring process. International Journal of Selection and Assessment, 24, 246–259. doi:10.1111/ijsa.12144

Konradt, U., Warszta, T., & Ellwart, T. (2013). Fairness perceptions in web-based selection: Impact on applicants' pursuit intentions, recommendation intentions and intentions to reapply. International Journal of Selection and Assessment, 21, 155–169. doi:10.1111/ijsa.12026

Ladhari, R. (2009). A review of twenty years of SERVQUAL research. International Journal of Quality and Service Sciences, 1, 172–198. doi: 10.1108/17566690910971445

Leventhal, G. S. (1980). What should be done with equity theory? New approaches to the study of fairness in social relationship. In K. J. Gergen, M. S. Greenberg, & R. H. Willis (Eds.), Social Exchange: Advances in Theory and Research (pp. 27–55). New York: Plenum. doi:10.1007/978-1-4613-3087-5_2

Likert, R. (1932). A technique for the measurement of attitudes. Arch Psychology. 22, 55. doi:10.12691/ajphr-3-3-7

McCarthy, J. M., Bauer, T. N., Truxillo, D. M., Anderson, N. R, Costa, A. C, & Ahmed, S. M. (2017). Applicant perspectives during selection: A review addressing so what? What's new? and Where to next? Journal of Management, 43, 1693–1725. doi:10.1177/0149206316681846

Molenaar, P. C. (2004). A manifesto on psychology as idiographic science: Bringing the person back into scientific psychology, this time forever. Measurement, 2, 201–218. doi:10.1207/s15366359mea0204_1

Mullen, E. (2007). The reciprocal relationship between affect and perceptions of fairness. In K. Törnblom & R. Vermunt (Eds.), Distributive and Procedural Justice: Research and 42 Social Applications (pp. 15–37). Burlington, VT: Ashgate.

Muthén B., & Asparouhov T. (2012). Bayesian structural equation modeling: A more flexible representation of substantive theory. Psychological Methods, 17, 313–335. doi:10.1037/a0026802

Muthén, L. K., & Muthén, B. O. (1998-2017). Mplus User's Guide. Eighth Edition. Los Angeles, CA: Muthén & Muthén

Nylund, K. L., Asparouhov, T., & Muthén, B. (2007). Deciding on the number of classes in latent class analysis and growth mixture modeling. A Monte Carlo simulation study. Structural Equation Modeling, 14, 535–569. doi:10.1080/10705510701575396

Parasuraman, A. P., Zeithaml, V. A., & Berry, L. L. (1994). Reassessment of expectations as a comparison standard in measuring service quality: Implications for further research. Journal of Marketing, 58, 111–124 doi:10.1177/002224299405800109

Rodell, J. B., & Colquitt, J. A. (2009). Looking ahead in times of uncertainty: The role of anticipatory justice in an organizational change context. Journal of Applied Psychology, 94, 989–1002. doi:10.1037/a0015351

Rupp, D. E., Shapiro, D. L., Folger, R., Skarlicki, D. S., & Shao, R. (2017). A critical analysis of the conceptualization and measurement of organizational justice: Is it time for reassessment? Academy of Management Annals, 11, 915–959. doi: 10.5465/annals.2014.0051

Slovic, P., Finucane, M., Peters, E., & MacGregor, D. G. (2002). The affect heuristic. In T. Gilovich, D. Griffin, & D. Kahneman (Eds.), Heuristics and Biases: The Psychology of Intuitive Judgment (pp. 397-420). New York, NY, US: Cambridge University Press. doi: 10.1017/CBO9780511808098.025

Smither, J. W., Millsap, R. E., Stoffey, R. W., & Reilly, R. R. (1996). An experimental test of the influence of selection procedures on fairness perceptions, attitudes about the organization, and job pursuit intentions. Journal of Business and Psychology, 10, 297–318. doi:10.1007/bf02249605

Stodnick, M., & Marley, K. (2013). A longitudinal study of the zone of tolerance. Managing Service Quality: An International Journal, 23, 25–42. doi: 10.1108/09604521311287641

Tein, J.-Y., Coxe, S., & Cham, H. (2013). Statistical power to detect the correct number of classes in latent profile analysis. Structural Equation Modeling, 20, 640–657. doi:10.1080/10705511.2013.824781

Tomassetti, A. J., Dalal, R. S., Kaplan, S. A. (2016). Is policy capturing really more resistant than traditional self-report techniques to socially desirable responding? Organizational Research Methods, 19, 255-285. 10.1177/1094428115627497

Van den Bos, K. (2007). Hot cognitions and social justice judgments: The combined influence of cognitive and affective factors on the justice judgments process. In D. De Cremer (Ed.), Advances in the Psychology of Justice and Affect (pp. 61–84). Charlotte, NC: Information Age Publishing.

Walker, J., & Baker, J. (2000). An exploratory study of a multi-expectation framework for services.

Journal of Services Marketing, 14(5), 411-431.

Watson, D., Clark, L. A., & Tellegen, A. (1988). Development and validation of brief measures of positive and negative affect: The PANAS scales. Journal of Personality and Social Psychology, 54, 1063–1070. doi:10.1037/0022-3514.54.6.1063

Whitman, D. S., Caleo, S., Carpenter, N. C., Horner, M. T., & Bernerth, J. B. (2012). Fairness at the collective level: A meta-analytic examination of the consequences and boundary conditions of organizational justice climate. Journal of Applied Psychology, 97, 776–791. doi:10.1037/a0028021

Woo, S. E., Jebb, A. T., Tay, L., & Parrigon, S. (2018). Putting the "person" in the center: Review and synthesis of person-centered approaches and methods in organizational science. Organizational Research Methods, 21, 814–845. doi:10.1177/1094428117752467

Zealley, A. K., & Aitken, R. C. B. (1969). Measurement of mood. Proceedings of the Royal Society of Medicine, 62, 993–996.

Zyphur, M. J., & Oswald, F. L. (2015). Bayesian estimation and inference: A user's guide. Journal of Management, 41, 390-420. doi: 10.1177/0149206313501200

Footnotes

[1] Justice and fairness are treated as interchangeable construct labels.

[2] Tolerance/wish model: 2-factors ($\chi2$ = 226.66, df = 152, $p < .001$, RMSEA = 0.04, 90% CI [0.00, 0.05], CFI = 0.94, TLI = 0.93, SRMR = 0.05), and 1-factor ($\chi2$ = 468.55, df = 153, $p < .001$, RMSEA = 0.09, 90% CI [0.8, 0.10], CFI = 0.77, TLI = 0.72, SRMR = 0.10). tolerance/entity fairness model: 2-factors ($\chi2$ = 128.10, df = 236, $p > .05$, RMSEA = 0.03, 90% CI [0.01, 0.05], CFI = 0.98, TLI = 0.98, SRMR = 0.06), and 1-factor ($\chi2$ = 1208.50, df = 103, $p > .001$, RMSEA = 0.22, 90% CI [0.20, 0.23], CFI = 0.27, TLI = 0.26); wish/entity fairness model: 2-factors ($\chi2$ = 156.23, df = 102, $p > .001$, RMSEA = 0.04, 90% CI [0.03, 0.06], CFI = 0.96, TLI = 0.95), and 1-factor ($\chi2$ = 406.03, df = 103, $p > .001$, RMSEA = 0.11, 90% CI [0.10, 0.12], CFI = 0.79, TLI = 0.76).

Tolerance/ wish/ entity fairness model: ($\chi2$ = 156.23, df = 102, $p > .001$, RMSEA = 0.04, 90% CI [0.03, 0.06], CFI = 0.96, TLI = 0.95, SRMR = 0.06), and 1-factor ($\chi2$ = 406.03, df = 103, $p > .001$, RMSEA = 0.11, 90% CI [0.10, 0.12], CFI = 0.79, TLI = 0.76, SRMR = 0.13).

Tolerance/ wish/ importance/ entity fairness model: ($\chi2$ = 2531.25, df = 559, $p < .001$, RMSEA = 0.12, 90% CI [0.12, 0.13], CFI = 0.51, TLI = 0.45, SRMR = 0.07), and 1-factor ($\chi2$ = 406.03, df = 103, $p > .001$, RMSEA = 0.11, 90% CI [0.10, 0.12], CFI = 0.79, TLI = 0.76, SRMR = 0.06).

[3] Tolerance/ wish/ importance/ entity fairness model: $\chi2$ = 2531.25, df = 559, $p < .001$, RMSEA = 0.08, 90% CI [0.05, 0.10], CFI = 0.81, TLI = 0.89, SRMR = 0.07.

WORKING PAPERS*

Editor: Udo Konradt

2020:15 Udo Konradt, Tim Warszta & Yvonne Garbers, Beyond Mean Entity Fairness: The Role of the Zone of Tolerance in Responding to Fairness Treatment, 37pp.

2014:14 Udo Konradt, Yvonne Garbers, Julia Hoch & Thomas Ellwart, Evidence for the dispersed leadership theory in teams: A policy-capturing study, 43pp.

2012:13 Kristina Hauschildt & Udo Konradt, A conceptual framework of self-leadership in teams, 25pp.

2011:12 Annika Wiedow, Understanding direct and indirect effects of team process improvement: A conceptual framework, 19pp.

2011:11 Udo Konradt, The dispersed leadership theory in teams: Model and empirical evidence, 23pp.

* A list of papers in this series from earlier years (only available in German) will be sent on request by the institute.