

Workplace Injustice and Counterproductive Work Behaviour:
The Moderating Role of Employee Age

by

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Author's Declaration

I hereby declare that I am the sole author of this thesis. This is a true copy of the thesis, including any required final revisions, as accepted by my examiners.

I understand that my thesis may be made electronically available to the public.

Abstract

Drawing on prior research from several areas of psychology, I predicted that different forms of organizational justice would predict counterproductive work behaviour (CWB) depending on employees' age. In particular, I predicted that distributive justice would be associated with CWB more so for younger than older employees, whereas interactional justice would be associated with CWB more so for older than younger employees. In an initial study, 192 employees completed an online survey which assessed the focal variables. Hierarchical regression analysis revealed the two predicted 2-way interactions. The findings are in line with aging research suggesting that, whereas younger people are more motivated by instrumental concerns, relational concerns become more salient as they age. The results have important implications for research on justice and CWB, and they extend basic research on human aging to an applied context.

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Table of Contents

Author's Declaration.....	ii
Abstract.....	iii
Acknowledgements.....	iv
Table of Contents.....	v
List of Figures.....	vi
List of Tables.....	vii
INTRODUCTION.....	1
Theoretical Rationale.....	2
Linking justice to CWB via needs for control and belonging.....	2
Age-related changes in needs, values, and motivation.....	4
Integrating justice, CWB, and age literatures.....	7
METHOD.....	9
Participants.....	9
Procedure.....	9
Control variables: tenure, income, and gender.....	9
Perceptions of organizational justice.....	9
Counterproductive work behaviour.....	10
RESULTS.....	11
Preliminary bivariate correlations.....	11
Test of Hypotheses: Does employee age predict CWB, and does age moderate the relations between justice facets and CWB?.....	13
Ancillary analyses: further probing the potential roles of gender and income.....	16
How does gender interact with justice in predicting CWB?.....	16
The role of employee income in the interaction between age and justice.....	18
Post-Hoc Tests Exploring the Organization-Supervisor CWB Target Distinction.....	21
GENERAL DISCUSSION.....	24
References.....	30

List of Figures

Figure		Page
1.	Plot of age x distributive justice interaction predicting CWB	15
2.	Plot of age x interactional justice interaction predicting CWB	16

List of Tables

Table		Page
1.	Descriptive Statistics and Intercorrelations	12
2.	Unstandardized Coefficients for the Regression Analysis	14

INTRODUCTION

Counterproductive work behaviour (CWB) represents a family of negative organizational behaviours that includes daydreaming on work time, dragging out a job, and gossiping (Bennett & Robinson, 2000). These behaviours are extremely common: Upwards of 75% of workers engage in CWB (Harper, 1990). As a result, CWB leads to enormous losses for organizations, and represents a potential for a wide range of negative psycho-social and performance outcomes for both organizations and employees (Bennett & Robinson, 2000; Dunlop & Lee, 2004; Hollinger & Davis, 2002; Hung, Chi, & Lu, 2009).

CWB is predicted by many negative workplace experiences, including interpersonal conflict, frustrations, and work stressors, and is conceptualized as an intentional negative reaction to these experiences (e.g., Bruursema, Kessler, & Spector, 2011; Jones, 2009; Marcus & Wagner, 2007; Sprung & Jex, 2012). Past organizational research has demonstrated that one important predictor of CWB is perceived injustice (e.g., Aquino, Lewis, & Bradfield, 1999). In particular, the greater employees' perceptions of distributive injustice (unfairness in the distribution of outcomes such as pay and benefits) and interactional injustice (disrespectful and non-inclusive treatment), the more frequently they engage in CWB. Indeed, many of the situational antecedents of CWB imply some aspect of unfairness (e.g., organizational constraints which prevent employees from completing their tasks; Meier & Spector, 2013).

In the present research, I build on past research examining the relation between organizational justice and CWB by considering the moderating role of employee age. The research on CWB has shown that although unfair and stressful experiences at work predict CWB, the effects of these experiences are attenuated or exacerbated by individual differences. Much of the past research on individual differences and CWB focuses on how personality traits can buffer the effect of unfair work situations on CWB (e.g., Ferris, Spence, Brown, & Heller,

2012). The current study diverges somewhat from this trend by exploring how the effect of organizational justice on CWB differs for employees of different age groups. As explained in more detail below, I draw on past research on the multiple needs model of justice (Cropanzano, Byrne, Bobocel, & Rupp, 2001) and past research on human aging and development to argue that different facets of justice may be differentially associated with CWB as a function of employee age.

This research is important for several reasons. Research examining the role of employee age is sparse in the research on CWB, and virtually non-existent in the justice literature, as well as in organizational psychology more generally, despite theoretical and practical importance (Kanfer & Ackerman, 2004; Kooij, Lange, Jansen, Kanfer, & Dijkers, 2010). With the proportion of older workers in the Western workforce growing rapidly (Toossi, 2009), it is especially timely to consider the possible role of age in a variety of organizational phenomena, including justice and CWB, in preparation for a drastically changing demographic. In addition, the present study extends and validates existing research on human aging and development within an applied context.

Theoretical Rationale and Hypotheses

Linking justice to CWB via needs for control and belonging. Integrating prior seminal research on distributive, procedural, and interactional justice, scholars have argued that perceived justice influences a variety of employee attitudes and behaviours because of its capacity to fulfill a number of fundamental needs (Cropanzano et al., 2001). In particular, drawing on prior research on distributive justice (e.g., Adams, 1965) and control theories of procedural justice (Leventhal, 1976), research has demonstrated that justice has instrumental value; that is, it provides recipients with a sense of control over valued outcomes. According to the instrumental

perspective on justice (e.g., Tyler, 1987), people seek to maximize present and future control over their environment. Unfair workplace outcomes, by threatening or reducing employees' sense of control, have the potential to lead to negative psychological outcomes (e.g., Ambrose, Harland, & Kulik, 1991; Conlon, 1993). Other research has shown that people who perceive reduced control experience increased stress, anxiety, burnout, and negative emotions, as well as decreased well-being and ability to deal with depression and physical health problems (e.g., Benassi, Sweeney, & Dufour, 1988; Bollini, Walker, Harmann, & Kestler, 2004; DeNeve & Cooper, 1998; Ghorbani, Krauss, Watson, & LeBreton, 2008; Manuck, Hinrichsen, & Ross, 1975; Taylor, Kemeny, Reed, Bower, & Gruenewald, 2000). Most if not all of these factors are positively associated with CWB (e.g., Bolton, Harvey, Grawitch, & Barber, 2012), and are negatively associated with positive workplace outcomes (e.g., performance and organizational citizenship behaviour; Cropanzano, Rupp, & Byrne, 2003).

In addition, drawing on research on non-instrumental models of procedural justice (e.g., Lind & Tyler, 1988) and research on interactional justice (e.g., Tyler & Bies, 1990), justice also has relational value, that is it provides people with a sense of belonging and feelings of positive self-regard. The need for belonging is considered a universal human need (Baumeister & Leary, 1995), and is related to a variety of outcomes that are important for organizations. Individuals who perceive a reduced sense of belonging (i.e., social exclusion) experience psychological outcomes similar to those who experience lost or threatened sense of control (e.g., anxiety and depression; Leary, 1990). In contrast, fulfilled social belonging leads to positive emotional states that are linked to a variety of important individual outcomes, as well as social and organizational outcomes including interpersonal cohesion, high quality leader-subordinate exchanges, and improved trust (Bhal, 2006; Cropanzano, & Byrne, 2000; Cropanzano & Prehar, 1999; Gest,

1997; Masterson, Lewis, Goldman, & Taylor, 2000; Saunders & Thornhill, 2003; Schinka, Van Dulmen, Bossarte, & Swahn, 2012).

In summary, organizational justice informs employees about the fulfillment of important psychological needs, which in turn may reduce CWB. Thus, there is theoretical reason to expect negative bivariate associations between measures of distributive, procedural, and interactional justice perceptions and employee CWB, as borne out in prior research (e.g., Aquino, Lewis, & Bradfield, 1999). As noted earlier, however, different dimensions of justice are especially relevant to the fulfillment of particular needs. Consequently, the strength of the associations between justice dimensions and CWB will depend on the extent to which individual employees are motivated by the needs that are addressed by the particular justice dimension. As discussed below, research on age suggests that the relevance of different dimensions of justice to individual employees will vary with employee age.

Age-related changes in values, needs, and motivation. Much research in developmental, social, and cognitive psychology supports the idea that as people age they become less motivated by fulfillment of control needs and more motivated by fulfillment of relational needs. An early study by Ryff and Baltes (1976) investigated value preferences as a function of age. Values were distinguished as either *terminal* (e.g., friendship, peace) or *instrumental* (e.g., independence, capability). Ryff and Baltes predicted and found that age was positively associated with greater preference for terminal over instrumental values, suggesting an increasing concern over positive social and emotional experience than for control over outcomes, as people age.

Supporting this notion, Carstensen's (1993) research on social motivation demonstrates that younger people maximize the *quantity* of social contact for instrumental gain, but as people

age they increasingly orient toward maximizing the *quality* of social contact for emotional gain. Carstensen and colleagues (e.g., 1994; 1995; 2005) have found strong evidence that younger people are more instrumentally oriented and that older people are more relationally oriented. For example, in a 34-year longitudinal study tracking the amount and type of social contact people engage in as they age, Carstensen (1992) found that social contact in relationships which serve instrumental purposes decreased with age, but social contact that fulfills quality relational needs remained stable or actually increased. Carstensen argued that changes in preference for quality over quantity of social contact is due to increasing relevance of emotion with age; that is, older individuals increasingly and actively select and create environments in the service of emotional regulation and positive socio-emotional experience (Carstensen, 1995; Fredrickson & Carstensen, 1990; Lang & Carstensen, 1994).

The broader research on age and psychology provides much convergent support for the ideas that, first, older employees will be less negatively reactive in the workplace in general, and second that younger employees will be more oriented toward instrumental concerns and less oriented toward relational concerns, compared to older employees. In line with Carstensen's findings, the research has found that age is associated with a prioritization of positive social emotion and down-regulation of negative emotion (Gross et al., 1997). Emotion regulation is less cognitively taxing for older people (Scheibe & Blanchard-Fields, 2009) and older individuals tend to show a positivity bias in both attention and memory (Mather & Carstensen, 2005). People become more socially agreeable and less neurotic (Allemand, Zimprich, & Hertzog, 2007; Terracciano, McCrae, Brant, & Costa, 2005), show greater emotional empathy and pro-social empathy (Sze, Gyurak, Goodkind, & Levinson, 2012), become increasingly socially wise

(Grossmann et al., 2010), and develop increased acceptance of negative social and other stresses, with age (Shallcross, Ford, Floerke, & Mauss, 2013).

It is important to note that although some of the research cited above was conducted with individuals who were in an older age bracket than the typical worker (e.g., age 70+), there is reason to expect it to generalize, to some degree, to older employees (i.e., age 50+). Mainly, the age-related changes revealed in the research are not presumed to occur in drastic increments. Rather, because these changes arise from a dynamic and varied range of physiological and psychosocial factors, they generally occur gradually as people age. Indeed, significant differences between younger and older employees have been found in past research using samples with characteristics similar to that of the current study (e.g., Warr, 1992). I also note that in this study I do not refer to chronological age as a psychological variable. Nor do I expect that the age-related changes cited above will occur in all individuals, or at the same age. However, chronological age corresponds with psychosocial, subjective, biological, and life-span age, which together lead to age-related psychological changes but which are obviously less amenable to measurement (Kooij, 2008). Taken together then, and following other researchers, I use chronological age as a proxy for age-related differences (Kanfer & Ackerman, 2004).

As noted earlier, research on age in the organizational research is sparse. However, the research that has been done aligns with the general aging literature. Briefly, in the workplace it has been predicted and found that age is associated with an increased desire for positive social atmosphere, cooperation and respect, increased orientation toward generative identity, and decreased orientation toward achievement, instrumental control, and competition in the workplace (e.g., Caldwell, Farmer, & Fedor, 2008; Kanfer & Ackerman, 2004; Kooij, de Lange, Jansen, & Dikkers, 2008; Leviatan, 1992; Lord, 2004). Consistent with these findings,

organizational research has revealed a negative bivariate relation between employee age and CWB and related constructs, such as retaliation (e.g., Bobocel, 2013; Gruys & Sackett, 2003), although age is most often treated as a covariate, rather than a focal variable (see Kooij et al., 2008).

Integrating the justice, CWB, and age literatures. Incorporating the literature showing that older individuals develop increased self-regulation and acceptance of stressful events, a bias for positivity in attention and memory, increased social wisdom and agreeableness, and increased ability to cope positively with stressful situations, I expect that older employees, in general, will engage in less CWB compared to younger employees. Thus, my initial prediction is as follows:

Hypothesis 1: Employee age will be negatively associated with CWB.

From the research on human aging and changes in orientation and motivation, I reasoned that compared to younger employees, older employees will be more concerned with relational value and less concerned with instrumental control. From the justice literature, it is clear that justice can inform employees about their level of personal control and their relational value, which in turn leads to psychological states that promote or suppress CWB. As currently operationalized in the contemporary justice literature, perceptions of distributive justice convey the clearest information about personal control over outcomes, whereas perceptions of interactional justice convey the clearest information about relational value (Cropanzano et al., 2001). Thus, integrating these converging ideas, I made the following novel predictions regarding the interaction between employee age and justice facets on CWB:

Hypothesis 2: There will be a two-way interaction between employee age and distributive justice, such that distributive justice will be negatively associated with CWB among younger employees, but not older employees.

Hypothesis 3: There will be a two-way interaction between employee age and interactional justice, such that interactional justice will be negatively associated with CWB among older employees, but not younger employees.

As has been noted elsewhere (e.g., Cropanzano et al., 2001), procedural justice is valued both for instrumental and non-instrumental reasons; moreover, past research has found lack of correlation between procedural justice and CWB (e.g., Aquino, Lewis, & Bradfield, 1999). As such, when considered as a predictor in combination with distributive and interactional justice, I did not expect procedural justice to have incremental predictive power.

METHOD

Participants

I examined the hypotheses in an initial on-line survey of 192 US working adults (recruited by Crowdfunder) who were asked to complete the survey in reference to their current job (99 female). Average age was 39.87 ($SD = 14.21$); 69% of participants were employed full-time; mean tenure was 6.95 years ($SD = 7.58$). The median income category was \$30,000-\$39,000. The majority of participants were Caucasian (75.5%). Other racial subgroups represented in the data include 8.3% African American, 8.3% Asian, and 6.3% Hispanic/Latino.

Procedure

Control variables: tenure, income, and gender. Employees first provided demographic information including their age, and a number of variables to be used as covariates in the primary regression analysis. In particular, given that age is likely to be correlated with tenure and income (e.g., Kooij et al., 2008), these variables were included as controls. Moreover, from past research I expected males to be more likely than females to engage in CWB (e.g., Hollinger & Clark, 1982); therefore gender was controlled.

Perceptions of organizational justice. I assessed justice facets with Colquitt's (2001) 20-item scale comprising 4 items to assess employees' perceptions of distributive justice (e.g., "Do your outcomes reflect what you have contributed to the organization?"), 7 items to assess procedural justice (e.g., "Have those procedures been free of bias?"), and 9 items to assess interactional justice (e.g., "Has your supervisor treated you in a polite manner?"), over the past year. Note that I combined the informational justice and interpersonal justice items given their high intercorrelation ($r = .72, p < .01$), and the lack of theoretical reason in the current research to separate them (see Ambrose & Schminke, 2009). All items were rated on 5-point likert-type

scales (where 1 = *To a small extent* and 5 = *To a large extent*). Cronbach's alpha for the facets were .95 for distributive justice, .87 for procedural justice, and .94 for interactional justice.

Counterproductive work behaviour. As noted earlier, CWB is conceptualized as a broad family of behaviours that represent a common underlying construct, covary reliably with one another, and occur as an intentional reaction to negative workplace experience (e.g., Bennett & Robinson, 2000; Gruys & Sackett, 2003; Jones, 2009). Past research suggests that employees direct their reactions to the perceived source of unfair treatment, which in the current case may be a supervisor, the organization itself, or both – since perceptions of any form of justice may be influenced by multiple sources (Jones, 2009; see also, Bies & Moag, 1986; Lavelle, Rupp, & Brockner, 2007). Thus, the current measure was adapted from items from Bennett and Robinson (2000) and Skarlicki and Folger (1997) and contains 10 items assessing organization-directed CWB (CWB-O) and 5 items assessing supervisor-directed CWB (CWB-S). Participants reported how frequently (1 = *Never*, 4 = *Sometimes*, 7 = *Daily*) they engaged in behaviours in the past year (e.g., put little effort into work, daydreaming, gossiping, wasting time). Cronbach's alpha was .91. Further analyses exploring the organization-supervisor target distinction are presented in post-hoc analyses, below.

RESULTS

Preliminary Bivariate Correlations

At the zero-order level, CWB was significantly correlated with distributive ($r = -.28, p < .01$), procedural ($r = -.29, p < .01$), and interactional ($r = -.29, p < .01$) justice (see Table 1). Note that the correlations among the justice facets were less than .58 ($ps < .01$), indicating that the measures share less than 35% of variance. Consistent with past research, the overall mean level of CWB was relatively low ($M = 1.94, SD = .75$). Still, CWB was related to employee age ($r = -.18, p < .05$) and gender ($r = .23, p < .01$). Age was related to income ($r = .27, p < .01$), and income was related to tenure ($r = .30, p < .01$); neither variable was significantly related to CWB. Although tenure and income were not related to CWB, both were related to employee age. Therefore, as noted previously, both factors were included as control variables in the regression analysis, in addition to employee gender.

Table 1. *Descriptive Statistics and Intercorrelations*

Variable	<i>M</i>	<i>SD</i>	1	2	3	4	5	6	7	8
1. CWB	1.94	.75	(.91)							
2. Age	39.87	14.18	-.17**	--						
3. Gender	1.48	.50	.22**	-.08	--					
4. Tenure	6.99	7.61	-.02	.52**	-.06	--				
5. Income	3.13	1.12	-.04	.28**	.12	.30**	--			
6. Distributive Justice	3.56	1.18	-.28**	.02	.02	.07	.22**	(.95)		
7. Procedural Justice	3.39	.90	-.29**	.19**	-.02	.17*	.21**	.52**	(.87)	
8. Interactional Justice	3.97	.94	-.29**	.14*	-.17**	.15*	.17**	.41**	.58**	(.94)

Note. *N* = 192. Continuous measures of distributive, procedural, and interactional justice are on 1-5 point scales; measure of CWB is on 1-7 point scale; in all measures higher scores reflect more of the construct. Cronbach's alpha reliabilities (for multi-item scales) are on the diagonal. Participant gender (females = 1, males = 2).

p* < .05. *p* < .01

Test of Hypotheses: Does Employee Age Predict CWB, and Does Age Moderate the Relations Between Justice Facets and CWB?

To test the hypotheses, a hierarchical regression analysis was conducted with CWB as the criterion (see Table 2). Step 1 included the control variables, and explained a significant proportion of variance ($R^2 = .05$). As can be seen, of the control variables only employee gender predicted CWB significantly ($B = .29, p < .01$). Step 2 included the focal justice predictors and employee age; together these accounted for significant increment in variance explained ($\Delta R^2 = .14$). There was a significant negative relation between distributive justice perceptions and CWB ($B = -.12, p < .05$) but not between interactional justice and CWB ($B = -.09, p = .17$) nor procedural justice and CWB ($B = -.09, p = .24$). Employee age was a significant negative predictor of CWB ($B = -.01, p < .05$). Thus hypothesis 1 was supported.

To test Hypotheses 2 and 3, the 2-way interaction terms were entered into Step 3 of the regression analysis and were found to account for significant incremental variance ($\Delta R^2 = .05$). Supporting Hypothesis 2, I observed a significant interaction between employee age and distributive justice ($B = .01, p < .01$). Similarly, in support of Hypothesis 3, employee age interacted with interactional justice ($B = -.01, p < .05$).

Table 2. *Unstandardized Coefficients (Bs) for the Hierarchical Regression Analysis Predicting Counterproductive Work Behaviour*

<i>Predictor</i>	<i>Step 1</i>	<i>Step 2</i>	<i>Step 3</i>
Intercept	1.94** (.05)	1.94** (.05)	1.95* (.05)
Gender	.35** (.12)	.29** (.10)	.26 (.10)
Tenure	.00 (.01)	.01 (.01)	.01 (.01)
Income	-.02 (.02)	.01 (.02)	.01 (.02)
DJ		-.12* (.05)	-.13* (.05)
PJ		-.09 (.08)	-.08** (.08)
IJ		-.09 (.07)	-.13 (.07)
Age		-.01* (.00)	-.01* (.00)
DJ x Age			.01** (.00)
PJ x Age			.00 (.01)
IJ x Age			-.01* (.01)
R^2	.05*	.19**	.24*
ΔR^2		.14**	.05**
ΔF	3.56	7.85	4.30

Note. $N = 192$. All variables were mean centered. As recommended by Aiken and West (1991), unstandardized coefficients are presented when interaction terms are included in the model. Standard error estimates listed in parentheses. DJ = distributive justice. PJ = procedural justice. IJ = interactional justice. Participant gender was effect-coded: females = 1, males = 2.

* $p < .05$. ** $p < .01$.

As recommended by Aiken and West (1991), the interactions were plotted at one standard deviation above and below the mean on the predictors, and the simple slopes were tested for significance (Dawson & Richter, 2006). As shown in Figure 1, distributive justice was significantly negatively related to CWB in younger employees ($t = -4.09, p < .01$), but not in older employees ($t = 0.21, ns$), as predicted. Also as predicted, interactional justice was significantly negatively related to CWB in older employees ($t = -3.43, p < .01$), but not in younger employees ($t = 0.66, ns$; see Figure 2). Therefore, both hypothesis 1 and hypothesis 2 were accepted.

Figure 1. *The interaction between age and distributive justice (DJ) on counterproductive work behaviour, plotted at +/-1 SD around the means on the continuous predictors.*

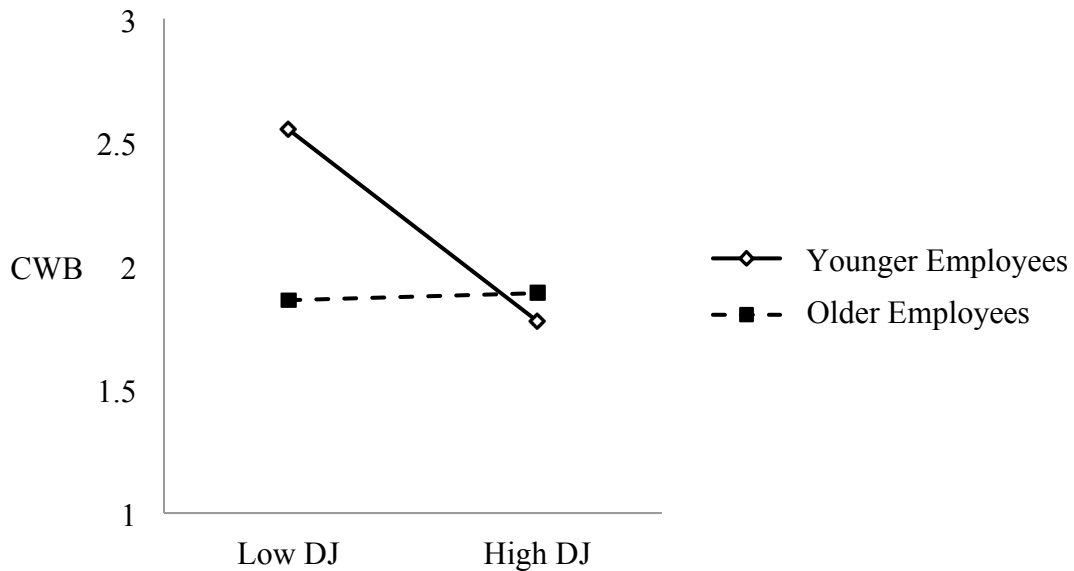
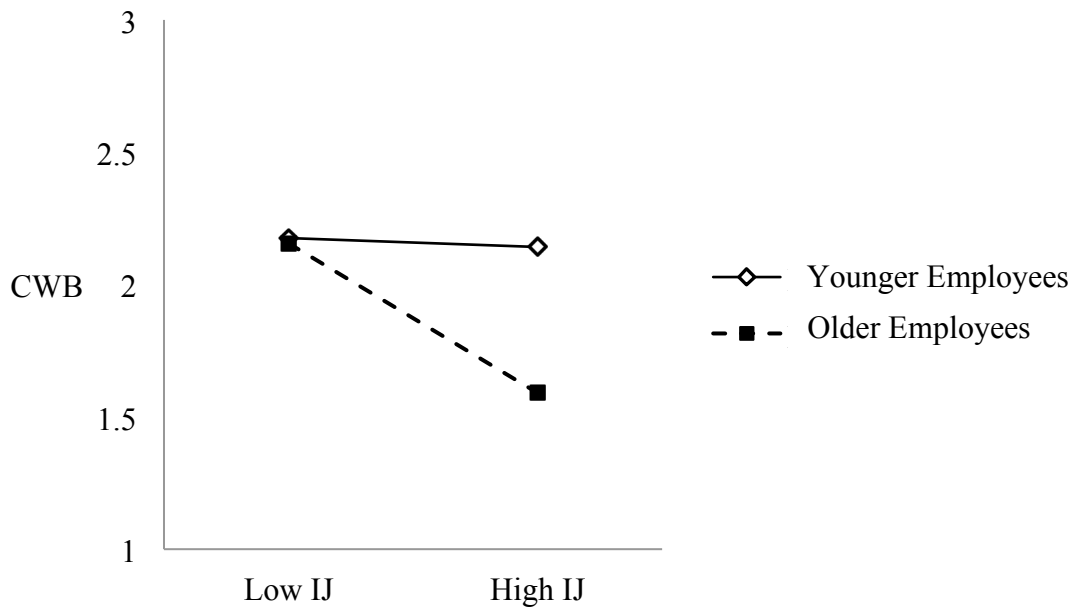


Figure 2. *The interaction between age and interactional justice (IJ) on counterproductive work behaviour, plotted at +/-1 SD around the means on the continuous predictors.*



Ancillary Analyses: Further Probing the Potential Roles of Gender and Income

It is important to note that because I statistically controlled both gender and income in the primary analyses, the main effect of age and the two interaction effects between age and justice cannot be accounted for by participant gender or income. However, in this section, I explore the possible role of these variables more, given that they share considerable conceptual overlap with age.

How does gender interact with justice in predicting CWB? My hypotheses regarding age were derived from research showing age-related changes toward pro-social and communal orientation, as well as social and emotional motivation. Interestingly, similar social-motivational differences have also been found between males and females (e.g., Ferssizidis et al., 2010; Schwartz & Rubel, 2005). It could be argued, then, that the distinctions made in the current study are not specific to age. Indeed, the significant main effect of gender on CWB found in this study,

and the common finding that females engage in less aggressive behaviour, hint that this may be the case. However, there is also reason to believe that the current hypotheses will not generalize to gender – most of the research cited in this study is particular to age and gender-independent. To my knowledge, no other studies have focused on this issue. Thus, it is important to investigate the issue here to ensure that the current focus on age is justified.

To examine whether the current theory and results generalize to gender, a regression analysis was run, again with CWB as the criterion. Briefly, the goal of this analysis was to examine whether the two focal interactions between age and justice remained significant when the corresponding interactions between gender and justice were included in the model, and additionally, to see if the gender by justice interactions would replicate the patterns found with age and justice. In Step 1, I controlled for tenure and income. This step was not significant ($R^2 = .00, p = .88$); CWB was not significantly predicted by income ($B = -.01, p = .64$), or by tenure ($B = .00, p = .93$). The focal predictors, distributive, procedural, and interactional justice, as well as age and gender, were entered in Step 2 of the regression analysis, and these accounted for a significant increment in explained variance ($\Delta R^2 = .191$). There was a significant negative relation between distributive justice and CWB ($B = -.12, p < .05$), but not between procedural justice and CWB ($B = -.09, p = .24$), nor between interactional justice and CWB ($B = -.09, p = .17$). As was found earlier, there was a significant positive relation between gender and CWB ($B = .29, p < .01$), and between age and CWB ($B = -.01, p < .01$).

Step 3 of the regression included the three gender by justice interaction terms, as well as the three age by justice interaction terms. This step accounted for a significant increment in variance explained ($\Delta R^2 = .08, p < .01$). Gender interacted with distributive justice to predict CWB ($B = -.24, p < .05$), such that distributive justice predicted CWB in males but not in

females. This finding corresponds with my initial findings with age and distributive justice. However, gender did not interact significantly with interactional justice ($B = -.04, p = .77$), and the small effect was not in the same direction as the interaction between age and interactional justice. Most importantly, age continued to interact significantly with both distributive justice ($B = .01, p < .05$) and interactional justice ($B = -.01, p < .05$) in predicting CWB, even with the gender by justice interaction terms included in the model. These results suggest that there may be some shared underlying mechanisms between age and gender in moderating the relation between justice and CWB, but also that there are some important differences. A discussion of these potential similarities and differences is beyond the scope of this study, and should be taken up by future research; however, the results presented here strongly suggest that the theory guiding my predictions is specific to employee age and not gender, and also that age and gender moderate the justice-CWB relation in different ways.

The role of employee income in the interaction between age and justice. Income is significantly related to both age and organizational justice. It is possible that interactional justice becomes relevant (and distributive justice becomes irrelevant) in predicting CWB among older employee only *because* fundamental control needs are being fulfilled by their relatively larger income. If older employees but not younger employees in the current study responded as they did because they perceive their control needs being fulfilled, and not because of age-related psychosocial changes, then the main results reported here may be better explained by income than by age. Participants' perceptions of the fulfillment of needs was not measured here, and therefore I cannot directly address this proposition. Moreover, controlling for income in my main regression analysis may not have been the strongest or most conservative test to assess these

potential relations. As such, two tests were run to rule out income as a confounding and/or mediating variable in the primary interaction effects presented in this study.

First, if income plays a confounding role in the main analysis of the current study, then relations similar to those found between age, justice, and CWB should also be found with income. To rule out this possibility, a regression analysis was run, with CWB as the dependent variable and with income rather than age as the moderating variable. In Step 1 of the regression, I controlled for tenure, gender, and age. This step explained a significant proportion of variance ($R^2 = .08$). Employee gender predicted CWB ($B = .32, p < .01$), as did age ($B = -.01, p = .01$), however tenure did not ($B = .01, p = .20$). Step 2 included the distributive, procedural, and interactional justice variables, as well as the new focal variable income, and accounted for a significant increment in variance explained ($\Delta R^2 = .11$); only distributive justice was a significant predictor of CWB ($B = -.12, p < .05$). Although income did not predict CWB in Step 2 of the regression, a third step was entered to test for interactive effects between income and the three organizational justice variables. Step 3 also accounted for a marginally significant increment in variance explained ($\Delta R^2 = .03, p = .06$). Income did not interact with distributive justice ($B = -.01, p = .83$) or procedural justice ($B = -.01, p = .73$), and there was a marginal interaction between income and interactional justice ($B = -.05, p = .07$). These results therefore rule out the possibility that income plays a confounding role in my main analysis. Nonetheless, the marginally significant interaction between income and interactional justice is in the same direction as the interaction between age and interactional justice, hinting at the possibility that income may play a mediating role in the latter relation. Therefore, a final test was run to rule out the possibility that income mediates the interaction between age and interactional justice on CWB.

For this second analysis, I followed the stepwise approach recommended by Baron and Kenny (1986), in which separate regression analyses are conducted and examined at each step, to test the proposition that income mediates the interactive effect of age and interactional justice on CWB. Step 1 tested whether the independent variable predicts the dependent variable in the mediation model. The age by interactional justice interaction term was entered in a regression as the independent variable with CWB as the dependent variable; because the predictor is a product of age and interactional justice variables, I included both factors as controls in the regression. There was a significant effect of both control variables, interactional justice ($B = -.27, p < .01$) and age ($B = -.07, p < .05$), in predicting CWB, and there was a marginally significant interaction between age and interactional justice ($B = -.07, p = .08$). Step 2 tested whether the independent variable predicts the proposed mediator: employee income. The age by interactional justice product term was entered as the independent variable, again controlling for age and interactional justice, and income was entered as the dependent variable. Age was significantly related to income ($B = .05, p < .01$), but interactional justice was not ($B = .30, p = .13$). Age and interactional justice did not significantly interact in predicting the mediator, income ($B = -.02, p = .13$). Step 3 tested whether the proposed mediator predicts the independent variable. In this step income was entered as the predictor and CWB was entered as the dependent variable, and no significant relation was observed ($B = -.01, p = .66$). A central assumption of mediation is that the mediator must have a significant effect on the dependent variable; this effect was not observed here, so mediation is not possible. Nonetheless, I conducted a test of mediation using the Sobel Test Calculator (Preacher & Leonardelli, 2006). As expected, results indicated that income does not mediate the interaction between age and interactional justice on CWB (Sobel

test $z = 0.41, p = .68$). Therefore, the proposition that income mediates the effect of age on the interactional justice-CWB relation is rejected.

Post-Hoc Tests Exploring the Organization-Supervisor CWB Target Distinction

The *target* distinction, between organization-directed and person-directed CWB, is the most common distinction made in the literature. Although I made use of items assessing both targets to ensure breadth of scope, the CWB- O vs. S distinction was not made in my primary analysis, as there was no a priori reason for doing so – my primary goal was to investigate the effect of employee age on the relations between types of justice and CWB as a broad construct. However, research has found differential effects of justice on CWB-O and CWB-S (e.g., Jones, 2009). Thus it is important to examine whether the main results of this study remain consistent (i.e., whether Hypotheses 2 and 3 are confirmed), and what insights might be gained, when distinguishing CWB by target for the current sample. Therefore, post-hoc tests were run examining CWB-O and CWB-S as separate dependent variables.

For the first test, a regression was run with CWB-O as the criterion. Step 1 included the control variables, income, gender, and tenure; this step explained a marginal proportion of variance ($R^2 = .04, p = .06$). CWB-O was significantly predicted by gender ($B = .36, p < .01$), but not by either income ($B = -.02, p = .44$) or tenure ($B = -.00, p = .93$). Step 2 included the focal variables, distributive justice, procedural justice, interactional justice, and employee age, and accounted for a significant proportion of variance explained ($\Delta R^2 = .12$). Consistent with my initial analysis, CWB-O was significantly predicted by distributive justice ($B = -.15, p < .05$) and employee age ($B = -.02, p < .01$), and not by procedural justice ($B = -.14, p = .14$), nor by interactional justice ($B = -.01, p = .87$). Note that, in line with past research (e.g., the agent-system model of justice; Bies & Moag, 1986; Jones, 2009), distributive justice and procedural

justice are both stronger predictors of CWB-O, and interactional justice a weaker predictor of CWB-O, than of the composite measure of CWB.

In Step 3 I entered the three focal interactions, between distributive, procedural, and interactional justice and employee age. This step accounted for a significant increment in proportion of variance explained ($\Delta R^2 = .06$). There was a significant interaction between employee age and distributive justice in predicting CWB-O ($B = .01, p < .01$), and between employee age and interactional justice in predicting CWB-O ($B = -.02, p = .01$). There was no significant interaction between employee age and procedural justice in predicting CWB-O ($B = .00, p = .57$). These findings are consistent with my primary results; when considering CWB-O as the criterion, both Hypothesis 2 and Hypothesis 3 are supported.

For the second test, a regression was run with CWB-S as the criterion. Step 1 included the control variables, income, gender, and tenure, and explained a significant proportion of variance ($R^2 = .06$). Only gender was significantly related to CWB-S ($B = .33, p < .01$). Step 2 included the three justice terms as well as employee age, and accounted for a significant increment in proportion of variance explained ($\Delta R^2 = .16$). In this step, only interactional justice predicted CWB-S ($B = -.26, p < .01$). CWB-S was not significantly predicted by distributive justice ($B = -.06, p = .17$), or by procedural justice ($B = .02, p = .83$). Again, note that consistent with previous research, interactional justice was a stronger predictor of CWB-S than CWB-O or CWB in general, while distributive and procedural justice were not significantly related to CWB-S. Somewhat surprisingly, employee age was not related to CWB-S ($B = -.00, p = .42$). In Step 3 I entered the three justice by age interaction terms. This step did not account for a significant increment in explained variance ($\Delta R^2 = .01, p = .39$). Although the pattern of interactions revealed in this step corresponded in direction to those found in my initial analysis, the

magnitude of the effects was reduced. There was no significant interaction between age and distributive justice ($B = .01, p = .10$), age and procedural justice ($B = -.00, p = .42$), or age and interactional justice ($B = -.00, p = .53$). Thus, when considering CWB-S as the criterion, Hypotheses 2 and 3 are no longer supported. Implications and limitations of these findings are addressed in the discussion.

GENERAL DISCUSSION

The present study adds to several fields of research. First, I support past research on CWB by showing that age negatively predicts deviance in the workplace. More novel, I build on past research examining the relation between organizational justice and CWB by considering the moderating role of employee age. The data presented here are consistent with the idea that different facets of justice are most strongly associated with CWB for younger and older employees.

In addition, the pattern of the interactions I observed suggests that distributive injustice heightens CWB among younger employees relative to older employees. In contrast, interactional justice suppresses CWB among older employees relative to younger employees. These patterns suggest that younger employees respond negatively to factors in the workplace that reduce perceived control, such as distributive injustice. In contrast, older employees respond more constructively to factors in the workplace that communicate relational value, such as interactional justice. Thus, they support the idea that justice has the capacity to fulfill needs for control and needs for relational value, which may be differentially motivating to individuals as a function of age. Little research in psychology has investigated the effects of an aging workforce, though research in this vein is important and timely. The present study is an initial step in filling this gap. From a practical perspective, these findings suggest that the aging workforce may contribute to pro-social organizational climates, which encourage cooperation and discourage negative social behaviours (Kessler and Staudinger, 2007). Future research is needed to further explore the positive potential of an aging workplace population.

It is important to recognize the limitations of the present, preliminary study. First, the data are correlational, which limits conclusions regarding causality between justice perceptions

and CWB. Common method bias is sometimes offered as an alternative explanation for results when studies assess focal variables cross-sectionally. Given that I assessed only the variables of interest, I cannot offer evidence of discriminant validity. However, it is not obvious how common method bias might strengthen the relation between distributive justice and CWB for younger but not older employees, and vice-versa for interactional justice; in addition, given that I observed two different theoretically predicted 2-way interactions, common method variance is not plausible as an alternative explanation for my findings (Evans, 1985).

Moreover, I ruled out obvious third variable explanations by controlling for participant gender, income, and tenure, and conducted ancillary analyses to further probe possible alternative effects of gender and income. It was found that the predictions made in the current study do not apply to employee gender, suggesting that although age and gender may share some commonalities, there are important differences in the distinctions between younger vs. older employees and male vs. female employees. It was also found that although income seems to play a role in how people respond to fairness via CWB, the role of employee age is not confounded by income, nor is income a significant mediator of the effect of age. Although these may be important first steps in exploring the role of age, future research is needed to replicate and build on these preliminary results.

The use of a broad measure of CWB in this study may be considered a limitation. Indeed, post-hoc analyses revealed important differences in how justice and age predicted CWB-O and CWB-S. However, these differences do not necessarily weaken the central argument of the current study, rather they may be explained by taking a closer look at the nature of the behaviours themselves. Recent research suggests that certain counterproductive work behaviours are perceived as relatively dangerous for the employee, and therefore will occur relatively rarely

and vary minimally between individuals (e.g., Spector et al., 2006). CWB-S may be perceived as more risky than CWB-O, since it involves negative and somewhat aggressive actions taken against a supervisor that are most likely to lead to serious consequences. It may have been expected, then, that CWB-S would not be predicted by the variables of interest in this study (as opposed to more serious predictor variables such as supervisor abuse), and perhaps even less so by my hypothesized interactions. The lack of relation between age and CWB-S, as well as the observed difference in magnitude but not direction of effects between CWB-S and CWB-O supports this idea. Two conclusions can be drawn from the above argument. The first is that my inclusion of CWB-S items within a broad measure of CWB unintentionally resulted in a more conservative test of the hypotheses. The second is that this study's main argument for the interaction between justice and age may apply mainly to relatively minor CWB.

Along these lines, my post-hoc tests are informative beyond addressing study limitations. First, the results supplement past research on the antecedents of CWB. Specifically, although all CWB belong to a broad family of covarying behaviours, there will be circumstances in which making one of many a priori distinctions between types of CWB will be most advantageous, depending on the research question. Past research has made a number of these distinctions in order to guide the research, including property vs. production deviance (e.g., Hollinger & Clark, 1983), organization vs. interpersonal deviance (e.g., Bennett & Robinson, 2000), and other dimensions (e.g., by underlying motivations, such as hostility and instrumentality; Spector et al., 2006), although challenges to these distinctions have been made (Gruys & Sackett, 2003). One distinction – minor vs. serious deviant behaviour – appears to be particularly relevant to the current discussion (Robinson & Bennett, 1995). Specifically, the post-hoc analyses in this study seem to support degree of seriousness as a relevant distinction for CWB in that risky or serious

CWB, unlike minor deviance, may fail to be predicted by lower-impact or ambiguous stimuli. If certain individual difference variables and ‘mild’ situational factors can expectedly fail to predict more serious CWB, then, as the current study suggests, covariance between different CWB does not imply arbitrary interchangeability – rather, researchers should rely on strong theory when deciding which CWB are most relevant to their research question (see Gruys & Sackett, 2003 and Spector et al., 2006). Although this conclusion may seem obvious in the current case, relatively little has been done to guide researchers in this regard.

The lack of a relation between employee age and CWB-S is similarly informative regarding the potential limits of age as a predictor of organizational outcomes. This lack of association appears to be part of the reason that my predictions failed to find support when CWB-S was entered as the criterion, and, as a consequence, is perhaps the most important limitation of the current study. Again however, the above argument applies to the results found for employee age. It may be that although age predicts many important cognitive and psychosocial differences, these differences may only predict CWB up to a certain threshold of perceived seriousness, aggressiveness, or riskiness. Past this threshold, *ceteris paribus* (i.e., barring extraordinary situational or motivational factors), age may no longer predict. Similar arguments regarding curvilinear relations have been made in the study of culture differences, such as values, and discretionary behaviour (e.g., Gelfand, Nishii, & Raver, 2006; Taras, Kirkman, & Steel, 2010). Thus, as argued above, the results found in my post-hoc tests may not necessarily weaken the current argument for age so much as provide clues regarding the boundary conditions of age as a predictor or moderator. The potential curvilinear nature of the effect of age suggested here might also be expected for other organizational outcomes such as

conflict, forgiveness and retaliation, and citizenship behaviour, and therefore deserves careful consideration in future research.

My post-hoc tests also support past research in organizational justice. First, they provide further evidence that some justice perceptions can evoke psychological reactions strong enough to motivate people to engage in serious and even personally risky behaviours; indeed, of the focal variables considered in this study, only interactional injustice predicted CWB-S. Additionally, they support past research showing that different types of justice predict different CWB (e.g., Aquino et al., 1999). In support of the agent-system model of justice, which argues that employees will tend to direct their responses toward the perceived source of unfair treatment (Bies & Moag, 1986), participants in the current study more often responded to distributive injustice with CWB directed at their organization, and to interactional injustice with CWB directed at their supervisor. Notably, the interaction between interactional justice and employee age remained significant even with only CWB-O as the criterion; this supports past research showing that perceptions of justice may be associated with multiple different sources (e.g., Lavelle et al., 2007), as well as the common argument that CWB-O may sometimes serve as a substitute for direct retaliation behaviours (i.e., CWB-S) when convenient (e.g., when direct reactions toward a supervisor are perceived as more risky; see Spector et al., 2006).

A final limitation of the current study is that the data come from self-report. Although this may not be important for common method variance problems in the current study, it raises some important issues about what can be legitimately extrapolated from the results. As a specific example, I based my age-related predictions partly on past research showing that older individuals are cognitively biased toward positive and against negative social information, and that they are more skilled at down-regulating and coping with negative situations. However,

these same factors could influence participants' responses other ways: older worker may dismiss certain kinds of unfair treatment from attention and memory and therefore fail to report them; older employees may simply recall more fair treatment, and in certain domains more than others; older workers may be less likely to acknowledge engaging in CWB, especially particular behaviours that are perceived as taboo for older people; all of these ideas are supported by the correlational data provided in Table 1, and all represent viable, albeit less parsimonious, alternative explanations for the current results. As such, the current study should be considered an early and very limited step in expanding the research on age in the context of organizational fairness and CWB, and in organizational research in general. Nonetheless, it is hoped that this study can serve to motivate the organizational literature toward a deeper examination of the role of age in organizations.

In summary, the present study is consistent with the idea that fairness is a relevant predictor of CWB for employees of all ages, yet different facets of justice will relate most strongly to CWB as a function of employee age. Thus, although they are preliminary, the present findings may have important implications for the literatures on organizational justice, CWB, as well as for basic research on human development and aging.

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