

A META-ANALYSIS OF AGING, TENURE, THE PSYCHOLOGICAL CONTRACT,  
AND WORK-RELATED OUTCOMES

Running Head: Psychological Contracts and Age

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## **ABSTRACT**

In this meta-analysis the size and nature of the relations between aging, organizational tenure, psychological contracts, and work-related outcomes were examined. It was expected that aging and organizational tenure would be positively related to content of the psychological contract and relational contracts, and negatively related to transactional contracts. Next, it was expected that psychological contract breach was related to a number of affects, behavioral intentions and behavior. Furthermore, the relations between aging, tenure and outcomes (affects, behavioral intentions, and behavior) were investigated. Finally, aging and tenure were investigated as moderators in the relation between psychological contract breach and affective and behavioral outcomes.

The results of  $k=94$  studies revealed no direct relations between aging, tenure, and content and types of psychological contracts. However, psychological contract breach was related to affective and behavioral outcomes, and aging was related to commitment, turnover intentions and performance. Moreover, our results revealed that aging moderated the relations between psychological contract breach and commitment, perceived organizational support, and organizational citizenship behaviors, indicating stronger reactions on contract breach among young employees compared to older employees. The conclusions, theoretical as well as practical implications of these results are discussed.

*Keywords:* aging, age-related variables, psychological contract, meta-analysis

## **Introduction**

The workforce in the US and Europe is aging rapidly (Ashworth, 2006; Brooke & Taylor, 2005; European Commission, 2005; Griffiths, 1997; Kanfer & Ackerman, 2004). The number of people aged over fifty in Europe will increase with 25%, (i.e. approximately 13 million people) in the next 25 years, whereas the number of young adults (25-39 years old) will decrease with 20%, i.e. about 20 million people (European Commission, 2005). Moreover, an increasing number of older workers will not retire before the age of 65 (Collins, 2003; De Lange et al., 2006; Schein, 1996).

As a consequence, the available workforce of organizations will increasingly be composed of older workers, and organizations will have to put more effort in retaining and motivating their older workers. Organizational policies, which were traditionally focused on younger workers, will have to be tailored to older workers (Hedge, Borman, & Lammlein, 2006; Schein, 1996). At the same time, the nature and type of the relationship, or working contracts, between employers and their employees has changed due to trends like downsizing, organizational change and globalization of the labor market. Instead of life-time employment within one organization, employees face increased job insecurity and job turnover (Farr & Ringseis, 2002).

This 'working contract' has been conceptualized as the *psychological contract* (Morrison & Robinson, 1997; Rousseau, 1989). It refers to the employees' beliefs regarding the terms of the exchange agreement between the employee and the organization (Rousseau, 1995).

Previous research suggests that the psychological contract may be crucial in motivating workers because fulfillment of psychological contracts leads to job satisfaction and commitment to the organization (Guest, 1998; Tekleab, Takeuchi & Taylor, 2005). Some

authors have argued that due to aging or seniority at work, the psychological contract will also change (Farr & Ringseis, 2002; Lester, Kickul & Bergmann, 2006; Rousseau, 1989). For instance, according to Farr & Ringseis (2002), older workers think they deserve more entitlements than younger workers, due to their experience and seniority. Although a number of reviews on the psychological contract have been published (*cf.* Anderson & Schalk, 1998; Cullinane & Dundon, 2006; Guest, 2004a,b; Guest & Conway, 2003; Roehling, 1997; Taylor & Tekleab, 2004), and on aging in organizations (Hansson, DeKoekkoek, Neece & Patterson, 1997; Sterns & Miklos, 1995; Warr, 1994, 2001), up until now no review has linked these two important factors age and the psychological contract.

The present meta-analysis aims to overcome these limitations by examining: the size and nature of the relations between aging, organizational tenure and the psychological contract. In this meta-analysis the relations between aging, organizational tenure and the content and types of psychological contracts are investigated, as well as relations between psychological contract breach and attitudinal and behavioral outcomes, and the moderating role of aging and tenure in these relationships.

Before discussing the specific research questions of the current meta-analysis, we will start with a brief overview of the conceptual background of the psychological contract.

*Conceptual development of the psychological contract.* In general, psychological contract relates to the employee-employer relationship (Rousseau, 1995). Yet, there is an ongoing debate about how to best conceptualize the psychological contract in a more specific sense (Anderson & Schalk, 1998; Conway & Briner, 2005; Cullinane & Dundon, 2006; Guest, 1998a,b, 2004; Rousseau, 1998; *cf.* Table 1 with different conceptualizations found in

earlier research). For instance, opinions differ on whether the psychological contract consists of the employee's perceptions of obligations between the employee and the organization (Rousseau, 1989, 1990, 1995, 2001), or whether it relates to an agreement between employee and organization (Guest, 1998a,b; Guest & Conway, 2002; Herriot & Pemberton, 1996, 1997; see Cullinane & Dundon, 2006 for a conceptual review). In Table 1 the various conceptualizations of the psychological contracts are presented.

<Table 1 here>

In this study we will conceptualize the psychological contract by applying attitude-behavior theories (Ajzen & Fishbein, 1980; Breckler, 1984; Eagly & Chaiken, 1993; 1998; Pratkanis & Greenwald, 1989). The attitude-behavior framework is useful: (1) to incorporate different conceptualizations of the psychological contract, and (2) to understand the relations between aging, tenure and the psychological contract.

In earlier conceptualizations, the content of the psychological contract was described as beliefs of the employee regarding mutual obligations, promises and expectations between the employee and the employer (Guest, 1998; Rousseau, 1995). Employees evaluate what they receive from their employer in relation to what they think they should receive (Morrison & Robinson, 1997). A negative comparison may result in a negative attitude. An attitude is defined as the psychological tendency to evaluate a particular entity (e.g., object or thought) with favor or disfavor (Eagly & Chaiken, 1993; Pratkanis & Greenwald, 1989). An attitude can be observed through cognitions or affects. Cognitions include perceptions

of ‘contract breach’, and affects include feelings of ‘contract violation’ (i.e. anger, frustration, Morrison & Robinson, 1997; Robinson & Morrison, 2000), job satisfaction, commitment, and trust (Rousseau, 1995). In the psychological contract model of Morrison & Robinson (1997) cognitions of breach precede feelings of violation. Finally, an attitude leads to a behavioral intention (e.g. turnover intention), which might be followed by actual behavior (e.g., actual turnover; Ajzen, 1991; Eagly & Chaiken, 1993,1998).

Figure 1 presents a summary model of the aforementioned theoretical notions. This model serves as a meta-model, in which existing conceptualizations of the psychological contract can be incorporated. In the next sections, we will explain each path in the model (marked by a letter) and formulate the research questions. As can be seen in the model, aging and tenure are primarily related to *content* of the psychological contract, whereas psychological contract *breach* is assumed to be related to affective and behavioral outcomes. Content of the psychological contract is conceptualized as the employees’ perceived obligations, promises and expectations of the employer (Guest, 1998; Rousseau, 1995), whereas psychological contract breach is conceptualized as the evaluation of the extent to which these obligations, promises, and expectations are fulfilled or unfulfilled (Rousseau & Tijoriwala, 1998). First, we will discuss the concept of aging and the influence of aging and tenure in the development of the psychological contract (path A in Figure 1).

<Figure 1 here>

*Aging.* The factor age has often been used as control variable or confounder in previous studies on psychological contracts (e.g., Coyle-Shapiro & Conway, 2005; George, 2003).

However, the reasons to control for the influence of age have scarcely been given. De Lange et al. (2006) argue that age should be viewed as a proxy measure of other age-related variables (in line with: Kanfer & Ackerman, 2004; Sterns & Miklos, 1995; Warr, 2001). Age can best be seen as a multidimensional concept which refers to changes in biological, psychological, social, as well as societal functioning across time (De Lange et al., 2006). That is, next to *chronological age*, other age-related variables may explain differences in attitudes and behaviors at work (Cleveland & Shore, 1992; Henderson, Goldsmith & Flynn, 1995; Kaliterna, Larsen & Brkljacic, 2002). De Lange et al. (2006) have proposed a framework for studying definitions of the concept of aging. Based on earlier work of Sterns and Doverspike (1989), chronological, functional, psychosocial, organizational, and life-span age were distinguished as separate operationalizations of age. In the present meta-analysis, we will focus on: chronological or calendar age and organizational tenure (i.e. how many years one works within the current organization). Other age-related variables (e.g., job tenure, work experience) may also influence the psychological contract, but these factors have scarcely been investigated in relation to psychological contracts, and, as a consequence, are not included in the meta-analysis.

*Question 1a: What is the relation between aging, tenure, and content of the psychological contract?* In studies of the psychological contract and its relations with attitudes and behaviors (Guest, 1998, 2004; Morrison & Robinson, 1997; Taylor & Tekleab, 2004), age has not been a factor of major interest. Nevertheless, previous research does provide some valuable clues for understanding the relation between aging, tenure and psychological contracts. For example, Guest's model (2004) of the psychological contract contains (chronological) age and tenure as contextual factors which possibly influence the

relations between organizational policies and practices, and the psychological contract. When people grow older, their perceptions about what they should receive from their employer may change (Schein, 1978). Moreover, when employees are longer in the organization their perceptions of the psychological contract may change as well (Lester et al., 2006; Rousseau, 1989). Rousseau (1989) stated that with longer tenure within organizations, employees have higher expectations of their employers. As young employees are often new in organizations and relatively inexperienced they may feel that they first have to prove themselves to their employers in order to expect something in return, whereas older workers already have proven themselves to their employers and, as a result, they have higher expectations (Robinson, Kraatz & Rousseau, 1994). Moreover, employees with long tenure may have higher expectations of their employer because of their loyalty to the organization. Due to their years of hard working and loyalty to the organization, employees may perceive that their employers should offer them more inducements than young employees (Robinson et al., 1994; Rousseau, 1989). Such age-related differences were recently confirmed for a number of psychological contract dimensions in a study of Westwood, Sparrow and Leung (2005). They found that the employees' perceptions of employers' promises to provide a secure and rewarding job, was lowest among the youngest group of employees, and increased linearly with age. Further, perceptions of employers' promises to provide an intrinsically satisfying and challenging environment were characterized by an inverted U-shape. According to Farr and Ringseis (2002), older workers may experience a more severe contract violation compared to younger workers when the employer does not fulfill its obligations, because they think they should receive more because of their seniority. Thus, it is expected that when people grow older and have



longer tenure in the organization, their perceptions of their employers' obligations increase. As a consequence, our first hypothesis is that: *Chronological age and organizational tenure are positively related to content of the psychological contract (conceived as employee's beliefs about obligations, promises and expectations of the organization; hypothesis 1a).*

*Question 1b: What is the relation between aging, tenure, and relational and, transactional psychological contracts?* Researchers have stated that not only the strength of psychological contract obligations may differ with age, but also specific types of contracts may be age-related (Rousseau & McLean Parks, 1993). In psychological contract theory, authors have distinguished several types of psychological contracts (Rousseau, 1995; Rousseau & McLean Parks, 1993). The main distinction is between transactional contracts and relational contracts (Morrison & Robinson, 1997). Regarded as two ends of a continuum, the transactional and relational contracts are assumed to be unipolar. On the one hand, transactional contracts are described as short-term financial exchanges between the employee and the organization, characterized by little mutual involvement of the parties (Rousseau & McLean Parks, 1993). On the other hand, relational contracts are characterized by a long-term relation between the employee and organization, in which both socio-emotional and financial elements are exchanged. It can be argued that with increasing tenure, employee and organization develop a more relational contract (Rousseau & McLean Parks, 1993). In the beginning of an employment relationship, the focus may be on transactional exchanges, since mutual trust has to be established between the two parties, and hence the focus is on the short-term. The relation between longer-tenured employees and the employer will focus not solely on exchanges of goods or services, but

the focus will be more on socio-emotional exchanges, such as loyalty of the employee towards the organization, and fair treatment by the organization. As a consequence, employees will be more committed to the organization. Therefore, we hypothesize that: *Chronological age and organizational tenure are negatively related to transactional psychological contracts and positively related to relational psychological contracts (Hypothesis 1b).*

*Question 2: What is the relation between psychological contract breach and affective and behavioral outcomes?* Whereas aging and tenure may have an impact on the perceptions of obligations, perceptions of obligation fulfillment may also lead to work-related attitudes and behaviors. According to the model in Figure 1, when evaluations of obligations and inducements (i.e. perceptions whether the employer has fulfilled its obligations) are negative, often labeled as “psychological contract breach” in the literature, an affective reaction will follow (path B in Figure 1). When the employer does not fulfill its promises and/or obligations the employee may be less satisfied with the job, and will be less committed to the organization (Guest, 1998; Rousseau, 1995). Psychological contract breach has been related to dissatisfaction (Rousseau, 1995), feelings of anger and frustration (Morrison & Robinson, 1997), lower trust in the organization and the employee (Robinson, 1996), the feeling that the organization offers less support (POS; Coyle-Shapiro & Conway, 2005), lower perceived fairness (Guest, 1998), increased negative affectivity (Kickul, 2001b), and a decline in organizational commitment (Bunderson, 2001). Therefore, we hypothesize that: *Psychological contract breach is negatively related to job satisfaction, organizational commitment, perceived organizational support, trust in the*

*organization and perceived justice, and positively related to feelings of violations and negative affectivity (Hypothesis 2a).*

Negative contract evaluations may also lead to turnover intentions (path C in Figure 1) and actual turnover (path D; Rousseau, 1995). Moreover, employees may respond to unfulfilled obligations by lowering their organizational citizenship behaviors (OCB; Coyle-Shapiro, 2002) and performance (Tekleab & Taylor, 2003). Based on these results, we hypothesize that: *Psychological contract breach is positively related to turnover intentions, and negatively related to job performance and organizational citizenship behaviors (Hypotheses 2b).*

*Question 3: What is the relation between aging, tenure and affective and behavioral outcomes?* Next to influencing content of psychological contracts (path A in Figure 1), aging and tenure may also have a direct impact (path E in figure 1) on attitudes and behaviors (Warr, 1994). Earlier reviews have revealed that age is related to some attitudes and behaviors at work (Sterns & Miklos, 1995; Warr, 1994, 2001). For instance, Hansson et al. (1997) stated that seniority (i.e. high chronological age) increased commitment to the organization and decreased intention to leave the organization (cf. Allen & Meyer, 1993; Hedge, Borman, & Lammlein, 2006; Sterns & Miklos, 1995). However, the relation between age and job satisfaction is found to be U-shaped (Hedge et al., 2006; Warr, 1994), resulting in a low overall correlation between age and job satisfaction. Other meta-analyses on relations between age, tenure, and POS (Rhoades & Eisenberger, 2002), perceived justice (Cohen-Charash & Spector, 2001), and trust (Dirks & Ferrin, 2002) showed low correlations. Previous meta-analyses on the relations between age and job performance

have revealed that this relation is small and dependent on the type of demands of a particular job (McEvoy & Cascio, 1989; Waldman & Avolio, 1986; Warr, 2000). In a study of Wagner and Rush (2000), it was shown that age did not have a direct impact on OCB's but moderated the relations between antecedents and OCB. As a consequence, the third research question in this meta-analysis concerns the evidence of relations between age, tenure and attitudes and behavior. More specifically we hypothesize that: *Aging and tenure are positively related to commitment and negatively related to turnover intentions. Aging and tenure are not related to job satisfaction, perceived organizational support, trust, perceived justice, negative affectivity, performance, and organizational citizenship behaviors (Hypothesis 3).*

Aging and tenure may be directly related to attitudes and behaviors at work. However, researchers have proposed that aging and tenure may act as moderators in relations between contract breach and outcomes. In the next section, we discuss these relationships.

*Question 4: Which moderating effects do age, tenure, design, measure, and publication source have on the relations between psychological contract breach and affective and behavioral outcomes?* Aging and tenure may function as a moderator in the relation between psychological contract breach and attitudes and behaviors (path F in Figure 1). Farr and Ringseis (2002) stated that contract violations may have stronger impact on attitudes and behavior among older workers than among young workers, because older workers may feel that they are entitled more than younger employees. Therefore age and tenure may have a moderating effect on the relation between contract breach and outcomes.

However, since there is no conclusive evidence of the moderators, we do not postulate a specific hypothesis.

Other moderators may influence correlations of single studies as well and may cause differences in correlations between studies. For instance, research design and measures may have an impact on the relations between the variables. In this study the following moderators were also investigated: First, correlations are assumed to be higher when they are measured at the same time points, due to systematic covariation (i.e. common method bias: Podsakoff, MacKenzie, Lee & Podsakoff, 2003). Therefore, we will investigate whether correlations of longitudinal studies and cross-sectional studies differ. Second, the measurement procedure of psychological contract breach may have an impact on the correlations. Two kinds of measurements have been employed in earlier studies: specific and global measurements of breach. Specific breach is measured by providing a list of specific items (e.g., training obligations, high pay) which the employer has, or has not, fulfilled, as perceived by the employee (Robinson et al., 1994). Global breach is measured by asking employees how well their employers *in general* have fulfilled obligations (Robinson & Morrison, 2000). Third, publication bias (Hunter & Schmidt, 2004) may be present as a consequence of the tendency that significant results have a larger probability to be published in journals compared to non-significant results. Therefore, dissertations, conference papers, and working papers were also included in the meta-analysis. A moderator analysis may reveal whether there are differences between peer-reviewed articles and other manuscripts. Further analyses on differences in correlations between dissertations, conference papers and research reports could not be conducted due to limitations in number of studies and respondents. The last research question is:

*Which effect do aging and tenure, research design, psychological contract breach measures, publication source have on the relations between psychological contract breach and affective and behavioral outcomes?*

In sum, the overall aim of this new meta-analytic review is to provide more knowledge about the role of aging in psychological contract theory as well as the role of aging within organizations. Using the method of meta-analysis, results from a number of studies can be summarized statistically (Hunter & Schmidt, 2004), providing more information than earlier (systematic reviews of) single studies only. Summarizing, we will pay attention to the following research questions:

1. What is the relation between aging, tenure and content and types of the psychological contract?
2. What is the relation between psychological contract breach and affective and behavioral outcomes?
3. What is the relation between aging, tenure and affective and behavioral outcomes?
4. Which moderating effects do age, tenure, design, measure, and publication source have on the relations between psychological contract breach and affective and behavioral outcomes?

## **Method**

### *Search Strategy*

In order to find relevant articles about the psychological contract, several search strategies were conducted. First, the ABI-Inform, Psycinfo, and Medline databases (1989-2006) were

investigated using key-terms as psychological contract(s), contract violation(s), contract breach, contract feature(s), contract dimension(s), contract content, promise(s), and mutual obligations. Databases were searched after 1989, since in that year Rousseau published the redefinition of the psychological contract (Rousseau, 1989). In addition, the reference lists of several (review-) articles about the psychological contract were scrutinized (Anderson & Schalk, 1998; Shore et al., 2004), as well as reference lists of articles which were obtained from the database searches. Furthermore, electronic searches were conducted among a wide range of journals, such as *Journal of Applied Psychology*, *Journal of Organizational Behavior*, and *Academy of Management Journal*.

Presenters at the Annual Academy of Management Conference (2005, 2006) who presented papers about psychological contracts were emailed and asked to send their papers (see, e.g., Bingham, 2005; Dulac, Coyle-Shapiro, Henderson & Wayne, 2006). In order to obtain as much unpublished studies as possible and avoid publication bias, authors of the published articles were mailed and asked whether they had or knew relevant unpublished studies. In total, these searches obtained 347 articles and studies on psychological contracts<sup>1</sup>.

Subsequently, theoretical papers, qualitative studies and studies which were not in English or Dutch were eliminated; resulting in a database of 157 studies on the psychological contract. Next, only studies with samples of employees working in organizations were taken into account since the psychological contract describes the mutual obligations between employees and their organizations (Rousseau, 1995); studies with students in experiments (Edwards, Rust, McKinley & Moon, 2003), costumers and suppliers (Koh, Ang & Straub, 2004), and buyers and sellers (Pavlou & Gefen, 2005) were eliminated.

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<sup>1</sup> A list of publications can be obtained from the first author

There were a number of studies conducted with samples of (MBA-) students working in organizations (e.g. Robinson & Rousseau, 1994). When these studies focused on their psychological contracts with their organizations, these studies were included in the meta-analysis.

The studies were coded, and it was indicated whether psychological contract content, types, and/or breach was measured, whether relations were reported between age and/or organizational tenure and the psychological contract measures, and outcomes. A number of articles did not report correlations between age-related variables (i.e. chronological age, organizational tenure) and measures of the psychological contract. These authors were emailed and kindly requested to send the correlations, if available.

Correlations of an additional 10 studies were obtained by this search (e.g., De Cuyper & De Witte, 2006). Of the final dataset of 94 studies, 74% were empirical peer-reviewed journal articles, 13% conference papers, 9% dissertations, and a final 4% were working papers. An assumption of meta-analysis is that samples are independent (Hunter & Schmidt, 2004). When multiple articles were published from the same respondent database (e.g., Coyle-Shapiro & Kessler, 2000, 2002a), the most recent publication was used for the analyses.

*Variables.* The *content of the psychological contract* was operationalized as the employers' obligations and promises towards the employee, as perceived by the employee (e.g., indicate the extent to which you believe your employer is obliged to provide up to date training and development; Coyle-Shapiro & Conway, 2005). Further, correlations were obtained between age and transactional and relational psychological contracts. Only correlations from articles in which the separate factors transactional and relational contracts



were distinguished were taken into account for research question 2b. Other factors, types or contract dimensions have been proposed (Tallman, 2006; Ten Brink, 2004), but these were not part of the meta-analysis. We calculated relations between psychological contracts and the following *age-related variables*: chronological age and organizational tenure (see Cohen, 1991).

Psychological contract breach is defined as ‘the cognition that one’s organization has failed to meet one or more obligations within one’s psychological contract (Morrison & Robinson, 1997). Although a number of researchers have labeled breach as violations of the psychological contract (e.g., Sutton & Griffin, 2004), in this meta-analysis it was considered as breach when cognitions were measured. Moreover, many researchers have measured fulfillment (i.e., asking employees to which extent organizations have fulfilled their obligations). Correlations of fulfillment with outcomes were reversed to indicate psychological contract breach. Studies in which a number of obligations were reported instead of a single measure of obligations (e.g. Cassar, 2001; Ten Brink, 2004), the correlations were averaged.

Considering affective and behavioral *outcomes* of the psychological contract, organizational commitment was operationalized as affective organizational commitment. Trust was included when trust in the employer or organization was measured, and excluded in the case that trust in co-workers or other forms of trust was measured. Performance could be assessed by the employee or by a manager, supervisor or employer. Turnover intentions are also operationalized as intention to stay, remain, quit or leave (the organization). In the case that intention to stay or remain was measured, the correlation was reversed to indicate turnover intention.

*Statistical procedure.* The formulas of Hunter and Schmidt (2004) were used for the meta-analysis. The analyses were performed with the statistical software of Schmidt and Le (2004). The random-effects model will be used, since studies are not assumed to obtain similar correlations (Hunter & Schmidt, 2004). Four possible moderators are investigated; research design, measures, publication source, and age and tenure. Whereas the first three moderators are nominal variables, the latter are mostly investigated as a discrete variable (see Appendix A for an overview of the studies). In order to investigate the moderating role of age and tenure, we first calculated the weighted mean of age ( $M=37.6$  years) and tenure ( $M= 7.57$  years) for the total sample of the meta-analysis (see also Cohen, 1993; McEvoy & Cascio, 1989). Most studies reported mean age and mean organizational tenure. Some studies reported age and/or tenure ranges. These studies were not taken into account in the moderator analysis because mean age and/or tenure could not be calculated. Then, we classified studies into two groups for each moderator, including studies with mean age smaller than 37.6 (*Group Weighted Mean*=32.49) vs. larger than 37.6 ( $M=42.03$ ) and a group with studies with a mean tenure smaller than 7.57 ( $M=4.94$ ) vs. larger than 7.57 ( $M=9.58$ ).

The correlations between the predictors and outcomes were corrected for the ‘artifacts’ of sample size and measurement error. Objective criteria (i.e. chronological age, organizational tenure) were not corrected for measurement error. Not all studies reported reliability statistics. Wherever reliability was not reported, the average of the reliabilities of the other was used (see Hunter & Schmidt, 2004).

*Moderators.* Two statistical conditions are important in a moderator-analysis in meta-analysis. First, average correlations for the groups created by the moderating variables must

differ largely, and, second, within-group variances of the average correlations must decrease compared to the variance of the average non-moderated correlations (Schmidt & Hunter, 2004). When these conditions are met moderators are likely to be present. In this meta-analysis, moderator-analyses were conducted only when there were sufficient studies and respondents to make relevant interpretations.

## **Results**

### *Description selected studies.*

In appendix A, the descriptive characteristics are presented from the sample of  $k=94$  studies. Of the selected studies, 72% was conducted among employees in organizations, 21% among (MBA-) students (questions referring to their jobs), and an additional 7% of the studies was conducted among managers. The mean weighted age of the total sample was 37.6 years old (range of mean age 18 to 47.54 years) and the mean weighted organizational tenure of the total sample was 7.57 years (range of mean tenure 1.20 to 21 years). Of the total sample, 52% was female.

Tables 2-5 show the results of the meta-analyses. In the tables, the following statistics are reported: the number of studies ( $k$ ), the number of total respondents in the separate meta-analyses ( $N$ ), the sample size weighted mean observed correlation ( $r$ ), the true score correlation ( $\rho$ ), the standard deviation (SD) of  $\rho$ , the 80% credibility interval of  $\rho$ , and the percentage variance explained by the artifacts (see Hunter & Schmidt, 2004).

Tables 2-5 show that the percentages explained variance differs largely across the investigated outcomes. For some correlations, as much as 100% of the variance is explained by study artifacts (e.g., the relation between age and perceived organizational

support). This is often the consequence of a limited number of studies and respondents included in a meta-analysis (Hunter & Schmidt, 2004). When lower percentages of explained variances are found, it is likely that moderators are present in the relation between two variables, causing the different correlations obtained between studies.

*Question 1a: What is the relation between aging and tenure and content of the psychological contract?* As can be seen in Table 2, both age ( $\rho = -.05$ ) and organizational tenure ( $\rho = .02$ ) have low true score correlations with content of the psychological contract. Almost 21% of the variance in the age-psychological contract relation was explained by study artifacts, and almost 30% of the variance in the organizational tenure – psychological contract relation was explained by study artifacts. Further, both credibility intervals included zero, meaning that the relations of these studies cannot be generalized to the population. In this meta-analysis no significant relations between age, tenure and the content of the psychological contract were found. Thus, hypothesis 1a was not supported.

*Question 1b: What is the relation between aging, tenure and relational and transactional psychological contracts?* Table 2 shows the meta-analytic results of the proposed relations between aging and the two main types of psychological contracts, namely transactional and relational contracts. Like the correlations between aging and overall content of the psychological contract, the relations between age and transactional ( $\rho = -.03$ ), relational contracts ( $\rho = -.06$ ), as well as between organizational tenure and transactional ( $\rho = .01$ ) and relational contracts ( $\rho = .04$ ), are close to zero. All credibility intervals included zero. The relation between age and relational contract is worth mentioning, since the credibility interval ranged from  $-.27$  to  $.14$ , indicating possible

moderators in this relation (explained variance: 12.70). In sum, hypothesis 1b was not supported.

<Table 2 here>

*Question 2: What is the relation between psychological contract breach and affective and behavioral outcomes?* The results are shown in Table 3. Psychological contract breach is related to job satisfaction (true score correlation  $\rho = -.52$ ), affective commitment ( $\rho = -.39$ ), perceived organizational support ( $\rho = -.43$ ), trust ( $\rho = -.62$ ), perceived justice ( $\rho = -.48$ ) feelings of violations ( $\rho = .69$ ), and negative affectivity ( $\rho = .24$ ): supporting hypothesis 2a. Furthermore, psychological contract breach is related to turnover intentions ( $\rho = .41$ ), performance ( $\rho = -.22$ ), and OCB ( $\rho = -.19$ ): supporting hypothesis 2b. Especially job satisfaction, trust in the organization and feelings of violations are highly correlated with contract breach. The correlations between psychological contract breach and affective outcomes (job satisfaction, affective commitment, POS, trust, justice, and feelings of violation) are higher than the relations between contract breach and turnover intentions and behavior (performance, OCB). All true score correlations do not include zero, except for the correlation between contract breach and organizational citizenship behaviors, implying that the correlations are generalizable except for the relation between contract breach and OCB's. In sum, hypotheses 2a and 2b were supported by our results.

<Table 3 here>

*Question 3: What is the relation between aging, tenure and affective and behavioral outcomes?* Table 4 shows the meta-analytic results. A positive correlation was found between age and affective commitment ( $\rho = .13$ ), and a negative correlation between age and turnover intention ( $\rho = -.16$ ), supporting hypothesis 3. However, the credibility interval of the age – commitment relation included zero, indicating that this true score correlation cannot be generalized. Furthermore, there is a small positive correlation between age and job satisfaction ( $\rho = .07$ ), and a small negative correlation between organizational tenure and job satisfaction ( $\rho = -.02$ ). However, the credibility intervals included zero. Neither for POS, nor for trust, justice or negative affectivity were large correlations found with age or organizational tenure. Nonetheless, some findings are noteworthy: the relations between age and POS ( $\rho = -.05$ ), and between tenure and POS ( $\rho = -.09$ ) were small but consistent negative, and did not include zero in the credibility intervals. This is also true for the relation between age and perceived justice ( $\rho = -.07$ ), indicating that when people age, they may receive relatively less support from the organization, and may perceive being treated less fairly compared to younger employees.

Tenure correlated negatively with turnover intentions ( $\rho = -.07$ ), although the correlation was weak and the credibility interval included zero. There was a positive correlation between age and performance ( $\rho = .12$ ), and a small positive correlation between age and OCB ( $\rho = .08$ ). Tenure correlated positively with job performance ( $\rho = .06$ ) and OCB ( $\rho = .06$ ). In sum hypothesis 3 is partially supported; the relations with commitment and turnover intentions were confirmed for age, and relations were found between age and job

performance. However, only small correlations were found between organizational tenure and affective and behavioral outcomes.

<Table 4 here>

*Question 4: Which effect do aging, tenure, research design, psychological contract breach measures, publication source have on the relations between psychological contract breach and affective and behavioral outcomes?*

*Aging and tenure.* Age moderated the relations between psychological contract breach and commitment (age <37.6:  $\rho = -.46$ ; SD = .10; age >37.6:  $\rho = -.34$ ; SD = .10), perceived organizational support (age <37.6:  $\rho = -.59$ ; SD = .19; age >37.6:  $\rho = -.40$ ; SD = .04), and organizational citizenship behaviors (age <37.6:  $\rho = -.26$ ; SD = .17; age >37.6:  $\rho = -.19$ ; SD = .00). There were differences in correlations found between the younger and older samples concerning the relations between contract breach and trust (age <37.6:  $\rho = -.68$ ; SD = .13; age >37.6:  $\rho = -.56$ ; SD = .13) and turnover intentions (age <37.6:  $\rho = .42$ ; SD = .15; age >37.6:  $\rho = .27$ ; SD = .18). However, standard deviations did not decrease compared to the non-moderated correlations. This was also the case for the moderator variable tenure: there were differences between short-tenured samples and long-tenured samples in the relations between contract breach and trust (tenure <7.57:  $\rho = -.70$ ; SD = .13; tenure >7.57:  $\rho = -.51$ ; SD = .16) and turnover intentions (tenure <7.57:  $\rho = .42$ ; SD = .13; tenure >7.57:  $\rho = .37$ ; SD = .21). Job satisfaction was not moderated by age or tenure, and commitment and OCB's were not moderated by tenure. In sum, age acted as a moderator between contract breach and commitment, POS, and OCB. Furthermore, differences in correlations were

found for relations between contract breach and trust and turnover intentions (both aging and tenure) but variances did not decrease.

*Research design.* No differences in correlations were found between longitudinal versus cross-sectional studies in the relations between contract breach and job satisfaction and commitment. Longitudinal studies on relations between contract breach and trust resulted in smaller correlations than cross-sectional studies did. The true correlations differed largely (cross-sectional:  $\rho = -.67$ ; longitudinal:  $\rho = -.48$ ), and the standard deviations decreased for the longitudinal studies (cross-sectional:  $SD = .11$ ; longitudinal:  $SD = .07$ ). The correlation between contract breach and turnover intentions was somewhat lower in longitudinal studies than in cross-sectional studies (cross-sectional:  $\rho = .42$ ; longitudinal:  $\rho = .35$ ) but variances did not decrease (all  $SD$ 's were  $.14$ ). In sum, research design moderated the relation between contract breach and trust, indicating stronger relations for cross-sectional studies than for longitudinal studies.

*Measures.* Breach measure acted as a moderator in the relation between contract breach and commitment, and POS. The relations between contract breach and affective commitment was stronger when contract breach was measured with a global scale of contract breach (global:  $\rho = -.54$ ; specific:  $\rho = -.37$ ) and the standard deviation decreased (global:  $SD = .07$ ; overall correlation:  $SD = .12$ ). Global measures of POS were stronger related with contract breach than specific measures (global:  $\rho = -.62$ ;  $SD = .18$ ; specific:  $\rho = -.40$ ;  $SD = .04$ ). For turnover intentions, the correlations differed somewhat global:  $\rho = .50$ ;  $SD = .16$ ; specific:  $\rho = .38$ ;  $SD = .13$ ). However, standard deviations did not decrease in relation to the standard deviation of the non-moderated correlations. The relations between contract breach and job satisfaction and job performance were not moderated by the type of breach



measure. Summarizing, breach measure moderated relation between contract breach and commitment and POS, indicating stronger relations for global measures than for specific measures.

*Publication source.* For performance, the correlations found in publications other than in peer-reviewed journals were smaller than the correlations reported in the peer-reviewed journals (journal:  $\rho = -.24$ ; other source:  $\rho = -.16$ ), and the standard deviation decreased compared to the standard deviations of the overall correlation (journal:  $SD = .09$ ; other source:  $SD = .00$ ). The relations between contract breach and job satisfaction, commitment, perceived organizational support, turnover intentions, and OCB's are not moderated by publication source. In sum publication source moderated the relations between contract breach and performance, indicating higher correlations for journal articles than for other sources.

In sum, mixed results have been found for the moderating role of design, measures, and publication source.

## **Discussion**

The aim of this meta-analysis was to examine the size and nature of the relation between aging, tenure, the psychological contract and behavioral versus affective outcomes. More specifically, four research questions were examined using results of  $k=94$  studies examining aging, tenure, psychological contracts and outcomes. We will summarize the main findings of each research question, and will pay attention to the theoretical as well as practical implications of our findings.

*Question 1a-b: Aging, tenure, and (types of) psychological contracts.* In this meta-analysis it was expected that psychological contracts change with aging and increasing tenure. On the one hand, chronological age may have an impact on perceived obligations of the employer, because of changing needs when people grow older (Schein, 1978). On the other hand, increasing tenure may have an impact on the psychological contract (Farr & Ringseis, 2002; Rousseau, 1989), because employees who have been loyal to an organization, may think they are entitled more than younger employees. Both propositions were not confirmed in this study. Neither chronological age, nor organizational tenure were related to perceived obligations or a specific type of contract (i.e. transactional or relational). An important implication of our findings is that our meta-analysis could not confirm the relations between aging, tenure, and psychological contracts proposed in earlier studies (Farr & Ringseis, 2002; Rousseau, 1989; Rousseau & McLean Parks, 1993).

A number of explanations can be given for the absence of relations between aging and psychological contracts. The strength of obligations does not change with aging and tenure, but older and more tenured workers may perceive *different* obligations from their employers than younger and less tenured workers. Previous research has shown that young employees are more likely to show higher needs of development opportunities and advancement (Thomas & Anderson, 1998), whereas older employees will show higher needs of job security (cf. Smithson & Lewis, 2000). This could also be an explanation of why there no age-related differences were found in having a transactional or relational contract.

Furthermore, the distinction between transactional and relational contracts has been subject to criticism (Coyle-Shapiro & Conway, 2005; Tallman, 2001, 2006). Coyle-Shapiro and

Conway (2005) found that job security belonged neither to transactional contracts nor to relational contracts, but formed a distinct component. It may be that obligations which change with age and tenure do not fall into a transactional or relational category. Taylor and Tekleab (2004) also criticize the relational-transactional distinction. They stated that some elements may cross-over between studies from a transactional factor to a relational factor (e.g., training obligations). Further research should therefore examine whether there are age-related differences in specific dimensions of the psychological contract (e.g., De Vos, Buyens, & Schalk, 2003; Tallman, 2006). However, another more likely explanation of the absence of age-related differences in content of the psychological contract is that the influence of aging and tenure is primarily in the interpretation of psychological contract breach, which is discussed below.

*Question 2: Psychological contract breach and outcomes.* Our results showed that psychological contract breach was strongly related to affects (i.e. job satisfaction, affective commitment, POS, feelings of violations, trust, and perceived justice), and less strongly related to behavioral intentions and behaviors, which indicates support of the attitudinal model depicted in figure 1 (Ajzen, 1991; Ajzen & Fishbein, 1980). The large correlations between contract breach and trust ( $\rho = -.62$ ), and feelings of violations ( $\rho = .69$ ) may indicate empirical problems in distinguishing cognitions of breach, feelings of anger and frustration, and feelings of trust (*cf.* Harrison, Newman & Roth, 2006). Attitude researchers have already reported that it is hard to empirically distinguish cognitions and affects as different elements of an attitude that is formed (Ajzen, 2001; Eagly & Chaiken, 1993). Cognitions and affects following evaluations of the psychological contract may overlap.

Harrison et al. (2006) even found evidence for a model in which a single general job attitude, consisting of both job satisfaction and organizational commitment, was related to general ratings of performance. Since the psychological contract relates to a general perception of the employment relationship, it makes sense to treat relations between psychological contract evaluations and affects as general constructs. However, when specific dimensions of the psychological contracts are measured (e.g. developmental obligations), relations with specific attitudes and behaviors should be investigated.

*Question 3: Relations between aging, tenure, and outcomes.* Our results showed that aging and tenure are related to a number of affects and behaviors. The meta-analysis largely confirmed previous studies and meta-analyses concerning these relations. There was a positive relation between aging and commitment ( $\rho = .13$ ). According to Allen and Meyer (1993), when people grow older their organizational commitment increases, as older people are more likely to have had more positive work-related experiences. However, in this meta-analysis there was no relation between organizational tenure and commitment. These findings underline the distinction between chronological age (positive effect on commitment) and organizational tenure (no relation on commitment).

Furthermore, small correlations were found between age-related variables and job satisfaction, POS, trust in the organization, perceived justice, negative affectivity, and OCB's. Further, turnover intentions were negatively related to age, and performance was positively related to age. These results are in line with previous research findings indicating that when people age their intentions to leave the organization decreases (Hedge et al., 2006). Possible explanations for these results are the increased commitment to the

organization of older workers or possible difficulties finding a job elsewhere (Hedge et al., 2006).

*Question 4: Moderators.* Our results revealed that chronological age moderated the relation between psychological contract breach and commitment, POS, and OCB's. The relations between contract breach and these outcomes were stronger for younger samples than for older samples. This means that young employees evaluate psychological contract breach differently compared to older workers, whose reactions on contract breach are less strongly related to commitment, POS, and OCB's. This indicates that age is not as much related to the content of the psychological contract, but more related to interpretations of contract evaluations. Together with the findings that there were differences in the contract breach – turnover relations, it can be stated that younger employees show stronger affective reactions to contract breach, leading to an increased intention to turnover, and a decline in organizational citizenship behaviors. Older workers may experience the same events as younger workers at the workplace, but they may evaluate them differently. Young employees may make more comparisons between what they think their employer is obligated to do, and what they have received in practice, leading to more intense behavioral reactions after contract breach (Clark, Oswald and Warr; 1996).

Moderator analyses revealed that for commitment and POS stronger relations were found between psychological contract breach and outcomes when breach was measured with a global breach scale compared to a composite scale of specific items. Measuring psychological contract breach with a global scale might result in higher correlations with outcomes.

Study design moderated the relations between contract breach and trust. This was not the case for job satisfaction, commitment or turnover intentions. It may be that contract breach has a strong direct impact on trust in the organization but that this decreases across time, whereas the effect of contract breach on satisfaction, commitment and turnover intentions perseveres in time. Finally, the relations between contract breach and performance were stronger in peer-reviewed journals than in other publications. This difference could be attributed to publication bias, since studies in which stronger relations between contract breach and job performance are found may be easier to publish in peer-reviewed journals. However these differences were not found for the relations between contract breach and job satisfaction, commitment, POS, turnover intentions, and OCB's. In sum, relations between psychological contract breach and outcomes are moderated by a number of factors, such as breach measure and research design. This meta-analysis shows that factors like research design, breach measure, and publication source may have an influence on the reported correlation. Researchers must be aware that correlations as reported in studies may be influenced by the type of breach measures they use.

*Limitations of this study.*

Before discussing the implications of our findings, we address the most important limitations of our study. First, because older workers are consistently missing in many studies because of early retirement options (Griffiths, 1999) and healthy worker effects (Zapf, Dormann & Frese, 1996), we could not estimate how healthy worker effects and early retirement options (Griffiths, 1999) have influenced the outcomes of previous studies. With regard to the number of studies that investigated psychological contracts of young

employees (e.g., MBA-students; Lo & Aryee, 2003), the mean age of the total sample of this meta-analysis was approximately 38 years. Older workers and longer tenured workers are still missing in many studies (see e.g., Wright & Bonett, 2002). When age ranges of study samples are smaller due to healthy workers effects and retirement options, observed correlations will be lower than true score correlations are. This could be the reason why such small correlations were found between age, tenure and psychological contracts.

Furthermore, although age and organizational tenure are possible indicators for career stage (Cohen, 1991; Conway, 2004), there are other conceptualizations of age (De Lange et al., 2006), which could not be analyzed in relation to psychological contracts (e.g., functional age, psychosocial age). For instance, job tenure may have an impact on the experience of psychological contracts. When people work longer in their jobs, their expectations about for example receiving development may decrease. Therefore, it is important that other conceptualizations of aging (De Lange et al., 2006; Sterns & Doverspike, 1989) are empirically linked to the psychological contract.

Finally, most correlations in this meta-analysis are based on cross-sectional data. We could, therefore, draw no conclusions regarding causality. For instance, the relation between psychological contract breach and POS can be bidirectional. When the employer does not fulfill its promises, the employee may feel that as a consequence, he/she may receive less support from their employers, whereas when an employee feels that the organization offers less support, he/she may experience the psychological contract as breached by the employer.

*Theoretical and practical implications.*

*Suggestions future research*

Based on the results of this study we have several suggestions for further research. First, older workers (age >50) are still lacking in psychological contract research. There is a need of more research including employees of a wide age/tenure range in order to investigate more specifically how older workers perceive their psychological contracts compared to younger workers, and how the relations between psychological contracts and attitudes and behaviors differ for younger and older workers. Further research is also needed to investigate why older workers react differently to contract breach compared to young workers. These kinds of questions can best be investigated through longitudinal study designs, to determine causal relationships. Through the use of curvilinear models and regression (Sturman, 2003), non-linear relationships can be investigated between age, tenure, and psychological contracts (Clark et al., 1996).

In this meta-analysis, only chronological age and organizational age were taken into account. According to De Lange et al. (2006) chronological age functions as a proxy of other age-related variables, which may have substantial impacts on attitudes and behaviors at work. Therefore, further studies should investigate other age-related variables, such as functional age and job tenure, in relation to psychological contracts.

*Practical implications.*

The important implication of this study for managers is that the content of the psychological contract employees experience do not decrease or increase with age and tenure, and types of psychological contract (i.e. whether the relation is based on economic versus socio-emotional exchange) are not dependent on age or tenure. However, managers must bear in mind that the effects of the extent of fulfilled obligations are differently



interpreted by younger employees versus older employees. Younger workers may react more strongly to unfulfilled promises (Rousseau, 1995) by lowering their commitment, and organizational citizenship behaviors. This does not mean that older workers' reactions to contract breach does not include lower commitment, POS and OCB's but their reactions are less severe than those of younger workers. Therefore, it may be attractive for organizations to retain and employ older workers, since older workers are more committed to the organization, show less intention to turnover, and show less severe reactions to psychological contract breach than younger employees.

Summarizing, this unique meta-analysis on the relations between aging, tenure, psychological contracts and work-related outcomes revealed that aging and tenure have an important role as moderators in the relations between psychological contracts and attitudes and behaviors. Although many studies have focused on age-related differences in attitudes and behaviors at work (Hedge et al., 2006), age and tenure may function as moderators in relations between contract breach and attitudes and behaviors. We hope that this will initiate sophisticated new research on the influence of aging, tenure, and work experience on psychological contracts as more research is needed in order to investigate why and how older employees evaluate psychological contract breach differently compared to their younger coworkers.

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**Appendix A: Characteristics of the studies included in the meta-analysis**

Authors	Sample	Mean age (SD); Organizational tenure (SD) in years	Component	Measurement design	Dependent Variable
Agee (2000) [dissertation]	N=121, US university employees	Tenure: 14.5	Specific breach	Cross-sectional	Trust, unmet expectations, justice, attribution, commitment, OCB, intent to donate, intent to leave, participation, development, satisfaction
Barnett, Gordon, Gareis & Morgan (2004) [article]	N=178, 100%♀, US physicians and nurses	Between 25-50; 14.8/10.4 tenure	Specific fulfillment	Cross-sectional	Intent to quit
Bingham (2005) [conference]	N= 177, 19%♀, range of employees in 4 US companies	35.38, (11.32); 2.92 (2.8)	Content types, specific fulfillment	Cross-sectional	Performance, OCB-O, OCB-I
Bordia, Restubog & Tang (2006) [conference]	S1, N=168, 49.2%♀, sales personnel in Philippines S2. N= 187, 42%♀, bank employees in Philippines	S1: 48.2% 26-30, 82% 1-5 year S2: 80% 21-30; 87% 1-5 year	S1: specific fulfillment S2: global breach	Cross-sectional	Revenge cognitions, workplace deviance, violation
Bunderson (2001) [article]	N= 167, 40%♀, US hospital clinicians	45.5 (8.4) ; 9.0 (8.0)	Specific fulfillment	Longitudinal (2 measurements)	Job satisfaction, affective commitment, intent to quit, turnover, patient satisfaction, productivity
Carbery, Garavan, O'Brien & McDonnell (2003) [article]	N=89, 35%♀, Irish hotel managers	85% 21-39 years old	Global breach	Cross-sectional	Violation, job satisfaction, intent to quit, organizational search
Cassar (2000) [article]	N= 132, 39.4%♀, Maltese public service employees	42 (12.34); 21 (13.33)	Specific breach	Cross-sectional	Trust, organizational commitment, job satisfaction
Castaing (2005) [conference]	N=754, 32%♀, French civil service employees	45 (8.9); 18.9 (10.43)	Content, specific fulfillment	Cross-sectional	Commitment, job involvement
Cavanough & Noe (1999) [article]	N= 136, 99%♀, US managers and professionals	M= 36-40	Global fulfillment	Cross-sectional	Responsibility for career development, commitment, job insecurity, satisfaction, development, intent to remain
Chambel & Castanheira (2006) [article]	S1: N=339, 69.3%♀ S2: N=191, 76%♀, Portuguese permanent and temporary workers	S1: 29.83 (2.09); 3 (2.33) S2: 26.89 (5.57); 2.75 (1.35)	Contract types	Cross-sectional	Performance, OCB
Cheung (2005) [working paper]	N= 200, 62%♀, Chinese part-time service employees	45.5% between 31-35; 46.5% work tenure <7 months	Specific fulfillment	Cross-sectional	Commitment, OCB, voluntariness of work status
Cheung & Chiu (2005) [working paper]	N= 354, 58.2%♀, Chinese manufacture employees	18; 1.2 years	Specific fulfillment	Cross-sectional	POS, LMX, commitment, intent to remain, performance
Chrobot-Mason (2003) [article]	N= 88, 44%♀, minority employees at	6-10 year tenure	Specific fulfillment	Cross-sectional	Job satisfaction, organizational



US university					commitment, organizational cynicism
Claes et al. (2002) [article]	N=596, 63%♀, Flemish workers	Permanent: 38.66 (9.83); temporary: 29.41 (8.25)	Content, global fulfillment	Cross-sectional	Commitment, satisfaction, job insecurity, self efficacy, WHI, well-being
Conway & Briner (2002) [article]	S1,N= 1608, 84%♀, UK bank employees S2,N= 366, 72%♀, UK supermarket employees	S1: 6 (6.14) tenure S2: 2.42 (2.66) tenure	Specific & global fulfillment	Cross-sectional	Commitment, OCB, intention to quit, affective well-being, satisfaction
Coyle-Shapiro (2002) [article]	N= 480, 65%♀, UK public service employees	42.92(8.69); 10.51 (7.89)	Content, specific fulfillment	Longitudinal (3 measurements) PC: Cross-S.	OCB, trust, justice
Coyle-Shapiro & Conway (2005) [article]	N= 347, 69%♀, UK public service employees	43.5 (8.48); 11.13 (7.59)	Content, specific fulfillment	Longitudinal (4 measurements)	POS, psychological contract fulfillment
Coyle-Shapiro & Kessler (2000) [article]	N, managers = 703, 53%♀ N, employees = 6953; 82.5%♀. %♀, UK public service employees	Manager: 46.6; 14.6 Employee: 42.4; 7.6	Types, specific fulfillment	Cross-sectional	Organizational commitment, POS, OCB
Coyle-Shapiro & Kessler (2002a) [article]	N= 6953, 79%♀, UK public service employees	43.59 (9.90); 8.57 (7.20)	Content, specific fulfillment	Cross-sectional	OCB
Coyle-Shapiro & Kessler (2002b) [article]	N, employer = 84, 53.7%♀ N, employee = 1303, 63.5%♀, UK range of public services	Employer: 46.23 (6.98); 9.59 (6.26) Employee: 42.06 (9.34); 6.79 (6.14)	Content, specific fulfillment	Longitudinal (2 measurements)	Perceived obligations, perceived fulfillment of obligations
Coyle-Shapiro & Morrow (2006) [article]	N= 99, 36%♀, European contracted employees	6.38 (7.82) tenure	Global fulfillment	Cross-sectional	Affective commitment
Coyle-Shapiro & Neuman (2004) [article]	N≈ 500, 64.4%♀, UK range of occupations	42.9 (8.60); 6.68 (6.09)	Content, specific fulfillment	Longitudinal (3 measurements)	Employee obligations, employee fulfillment of obligations
Dabos & Rousseau (2004) [article]	N, director = 16, 6.25%♀ N, scientists = 80, 55%♀, Research directors and staff scientists at Latin American university	Director: 45.63 (5.98); 17.86 (6.44) Scientist: 38.18 (7.09); 11.26 (6.89)	Content, types	Cross-sectional	Publications, coauthorship, formal career advancement
De Cuyper & De Witte (2006) [article]	N= 538, Belgian employees	37	Content, types, specific fulfillment	Cross-sectional	Satisfaction, commitment, performance
De Schampelaere, De Vos & Buyens (2004) [working paper]	N= 491, 58.2%♀, Belgian organizations	33.80 (7.79); 9.44 (8.25)	Content	Cross-sectional	Perceived promises (PC)
De Witte & Van Hecke (2002) [article]	N= 226, 47.3%♀, range of Flemish employees	34 (9.76); 8.14 (8.55)	Specific breach	Cross-sectional	Job satisfaction
Deery, Iverson & Walsh (2006) [article]	N= 480, 69%♀, Australian service employees	35.45 (10.33); 7.42 (6.62)	Specific fulfillment	Cross-sectional	Absenteeism, cooperative relations, trust, market pressures

Dulac, Coyle-Shapiro, Henderson & Wayne (2006) [conference]	N= 159, 47%♀, large Belgian organizations	28; 9	Global breach	Longitudinal (2)	POS, LMX, trust, violation, commitment, intent to leave
Freese, Heinen & Schalk (1999) [article]	N= 119, 98%♀, Dutch home care organization	39.6; 8.3	Specific fulfillment	Longitudinal (2 measurements)	Relation with organization, commitment, intention to quit
Gakovic & Tetrick (2003a) [article]	N= 601, 58%♀, US university students working in organizations	57% between 18 and 24, 28% between 25 and 30, 15% over 30.	Global fulfillment	Cross-sectional	Organizational Commitment
Gakovic & Tetrick (2003b) [article]	N= 161, 90%♀, US employees from financial corporation	n.a.	Global fulfillment	Cross-sectional	Emotional exhaustion, job satisfaction
George (2003) [article]	N= 256, 38%♀, US research laboratory, computer manufacturer, consumer product retailer	36.20 (9.73); 5.69 (7.18)	Specific fulfillment	Cross-sectional	Trust, Psychological contract, commitment
Granrose & Baccili (2006) [article]	N= 145, 41.2%♀, US aerospace employees	43.35 (8.10); 13.5	Specific fulfillment	Cross-sectional	Commitment, intent to leave
Guest & Clinton (2006) [working paper]	N= 642, 62%♀, UK range of occupations	37; 5	Content	Cross-sectional	Violation, satisfaction, commitment, intent to quit, absence, performance,
Guzzo, Noonan & Elron (1994) [article]	N= 148, 7%♀, US expatriate managers	42.76 (7.52); 12.63 (7.08)	Specific fulfillment	Cross-sectional	POS, commitment, intent to quit, intent to return early
Ho, Rousseau & Levesque (2006) [article]	N=46, 15%♀, US start-up unit of large firm	39; 67% less than 6 months tenure	Content, types	Cross-sectional	Obligations
Hoobler (2002) [dissertation]	N= 210, 40%♀, US three-way matches with MBA-students, supervisor, family member	Age MBA-student: 25-34	Global breach	Cross-sectional	Abusive supervision, family undermining, violation, NA, justice, performance
Huiskamp & Schalk (2002) [article]	N= 1331, 34.9%♀, range of Dutch occupations	38; 9.6	Specific fulfillment	Cross-sectional	Fulfillment, commitment, intent to quit
Johnson & O'Leary-Kelly (2003) [article]	N= 103, 64%♀, US bank employees	35.8; 4.37(4.17)	Global breach	Cross-sectional	Job satisfaction, organizational commitment, emotional exhaustion, absenteeism, in-role performance, OCB
Kickul (2001a) [article]	N= 322, 49.7%♀, US MBA students	31.03 (7.89); 4.54 (5.44)	Specific fulfillment	Cross-sectional	NA, deviant work behavior (PF)
Kickul (2001b) [article]	N=151, 56%♀, US MBA-students	29.41 (7.73); 3.86 (4.91)	Specific fulfillment	Cross-sectional	NA, commitment, intent to leave
Kickul & Lester (2001) [article]	N= 183, 45.9%♀, US MBA students	31.73 (6.44); 3.29 (2.06)	Specific fulfillment	Cross-sectional	NA, job satisfaction, OCB
Kickul, Lester & Belgio (2004) [article]	N, Hong Kong= 76, 47%♀, bank employees N, U.S.= 60, 54%♀,	HK: 34.55; 5.23 US: 31.8; 4.33	Specific fulfillment	Cross-sectional	Satisfaction, intent to quit, commitment, performance, OCB

MBA-students						
Kickul, Lester & Finkl (2002) [article]	N=246, 51%♀, US MBA students, working in changing organizations	33.43; 4.22	Specific fulfillment	Cross-sectional	Satisfaction, intent to leave, justice, performance, OCB-I, OCB-O	
Kickul & Liao-Troth (2003) [article]	N= 370, 51%♀, US MBA students	32.36 (10.44); 6.40 (6.80)	Content	Cross-sectional	Psychological contract	
Kickul, Neuman, Parker & Finkl (2001) [article]	N= 165, 49.7%♀, US MBA-students	33.15 (7.90); 4.94 (5.61)	Specific fulfillment	Cross-sectional	Justice, OCB	
Kickul & Zaper (2000) [article]	N=260, 46.9%♀, US MBA-students	32.05; 5.14	Specific fulfillment	Cross-sectional	Justice, commitment, Entrepreneurial intention	
Kim (2002) [dissertation]	N,T1=988, 44%♀, Korean laid-off employees, N,T2= 292 employees	34.31 (8.94); 4.43 (6.00)	Content	Longitudinal (2 measurements)	Psychological contract	
King & Bu (2005) [article]	N= 395, 34.4%♀, Chinese and American students working as IT professionals	22.3	Content, types	Cross-sectional	Obligations	
Knights & Kennedy (2005) [article]	N=251, Australian government employees	47.54 (6.23); 15.44 (10.47)	Specific fulfillment	Cross-sectional	Satisfaction, commitment	
Korsgaard, Sapienza & Schweiger (2002) [article]	N= 104, 29%♀, employees from US electric plants	38; 11.31 (6.34)	Content	Longitudinal	Psychological contract, trust, intent to remain	
Kreiner & Ashforth (2004) [article]	N= 330, 56%♀, US university alumni	43.6 (7.8); 8.8 (7.3)	Global fulfillment	Cross-sectional	Organizational identification, NA, PA, cynicism	
Lambert, Edwards & Cable (2003) [article]	N= 213, 79%♀, student employees	Range 17-24 years; 93% had previous work experience	Specific fulfillment	Longitudinal (2 measurements)	Job satisfaction	
Larwood, Wright, Desrochers & Dahir (1998) [article]	N= 259, 50%♀, US range of occupations	36.2 (8.17);	Global fulfillment	Cross-sectional	Underemployment, satisfaction, organizational politics, intent to turnover	
Lee (2005) [article]	N= 302, 14.6%♀, IT Singapore expatriates	36.3	Global fulfillment	Cross-sectional	Job satisfaction, work alienation, career satisfaction	
Lemire & Rouillard (2005) [article]	N= 132, 74.4%♀, Canadian civil servants	44.23 (8.65); 12.45 (10.36)	Global fulfillment	Cross-sectional	Commitment, exit, neglect	
Lester & Kickul (2001) [article]	N= 268, 48.3%♀, US MBA students	27.6; 3.4	Specific fulfillment	Cross-sectional	Intent to leave, satisfaction, performance, OCB-O	
Lester, Turnley, Bloodgood & Bolino (2002) [article]	N, supervisor= 134, 50%♀ N, subordinate= 134, 58%♀ US MBA students	Supervisor: 40.81 (8.55); 14.22 (8.91) Subordinate: 32.27(7.52); 4.34 (4.07)	Specific fulfillment	Cross-sectional	Organizational commitment, employee performance	
Lo & Aryee (2003) [article]	N= 152, 53.9%♀, Chinese MBA-students	27.6% under 30, 48.7% 30-40, 23.7% 41-50; 6.56 (3.35)	Specific breach	Cross-sectional	Turnover, psychological withdrawal, civic virtue (OCB)	
Montes & Irving (2005) [conference]	N= 293, 51%♀, US students in work team	19-22 years old	Specific fulfillment	Longitudinal (3 measurements)	Satisfaction, violation, change in intent to quit	
Moye (2001)	N= 223, 31%♀, US	39	Content	Cross-sectional	Org. identification, idea	

[dissertation]	employees and managers of Computer organization					volume, idea creativity, self-determination, intrinsic motivation, performance, OCB
Purvis & Cropley (2003) [article]	N= 223, 93%♀, UK nurses	32.3 (8.3); 4.6 (5.1)	Content, types	Cross-sectional		Intent to leave, absence
Raja, Johns & Ntalianis (2004) [article]	N= 197, 6%♀, higher level employees in Pakistan	38.81 (9.86); 12.25 (9.50)	Content, types, global breach	Cross-sectional		Violation, intention to quit, affective commitment, job satisfaction
Restubog & Bordia (2006) [article]	N= 267, 67%♀, Philippines MBA-students	80% between 20-30; 4.04 (4.07)	Specific fulfillment	Cross-sectional		OCB
Restubog, Bordia & Tang (2006) [article]	N=137, Philippines IT employees	54% between 26-34; 67% between 6-10 year tenure	Global breach	Cross-sectional		Affective commitment, OCB, performance
Robinson (1995) [article in book]	N= 126, 34%♀, US MBA Alumni	30 (2.01); 6.29 (1.78)	Specific fulfillment	Longitudinal (3 measurements)		Trust, satisfaction, commitment
Robinson (1996) [article]	N= 125, 34%♀, US MBA Alumni	30 (2.01); 6.29 (1.78)	Specific fulfillment	Longitudinal (3 measurements)		Performance, organizational citizenship behavior, intention to remain, turnover
Robinson & Morrison (1995) [article]	N= 126, 34%♀, US MBA Alumni	30 (2.01); 6.29 (1.78)	Specific fulfillment	Longitudinal (3 measurements)		Civic virtue
Robinson & Morrison (2000) [article]	N= 147, 36.1%♀, US MBA Alumni	27.67 (1.9); 3.83 (1.56)	Global breach	Longitudinal (2 measurements)		Violation, performance
Robinson & Rousseau (1994) [article]	N= 96, 35%♀, US range of occupations (MBA Alumni)	28	Global fulfillment	Longitudinal (2 measurements)		Intention to remain, turnover
Rosen, Chang, Johnson & Levy (2005) [conference]	N= 349, 68%♀, US students at university working parttime	24 (6.88); 27 months (36.24)	Global breach	Cross-sectional		Satisfaction, justice commitment, performance
Rousseau (1990) [article]	N= 224, 35%♀, US MBA graduates	28, 97% had prior work experience	Content, types	Cross-sectional		-
Rybnikova (2006) [conference]	N=133, 6.9%♀, German interim managers	29% 40-49, 67% over 50	Specific fulfillment	Cross-sectional		Satisfaction, performance, OCB
Shih & Chen (2006) [conference]	N= 485, 49.8%♀, Taiwanese MBA-graduates	36.6 (8.28); 9.7 (8.42)	Specific fulfillment	Cross-sectional		OCB, satisfaction, PA
Sturges, Conway, Guest & Liefoghe (2005) [article]	N= 151, 51%♀, UK employees from media company	55% under 30, 40% 30-40, 5% over 40; 2.42 (1.55)	Specific fulfillment	Cross-sectional		Commitment, performance, absence, career management, turnover
Suazo (2002) [dissertation]	N= 237, 60%♀, US minority groups (African, Hispanic-American)	37.39 (10.44); 4.50 (4.91)	Global breach	Cross-sectional		PA, NA, POS, LMX, Performance, OCB
Suazo, Turnley & Mai-Dalton (2005) [article]	N= 234, 59%♀, US racial groups of employees	37; 4.50 (4.91)	Global breach	Cross-sectional		Intent to quit, commitment, performance, OCB, violation
Sutton & Griffin (2004) [article]	N= 235, Australian new professionals	T1: 23.2 (3.84)	Specific fulfillment	Longitudinal (2 measurements)		Job satisfaction, turnover
Tallman (2001)	N=63, 57%♀, US new	40% 31 years or older,	Global	Cross-sectional		PA, NA, satisfaction,

[dissertation]	hires in organizations	42% less than 1 year fulltime work experience	fulfillment		commitment, OCB, intent to remain, trust, performance
Tallman (2006) [conference]	N= 163, 60.5%♀, 10 Canadian organizations	77.8% 31 or older; 43.8% 5 years or more tenure	Content	Cross-sectional	Psychological contract dimensions
Tekleab, Takeuchi & Taylor (2005) [article]	N= 191, 75%♀, US university employees	47; 13.4	Global breach	Longitudinal	Justice, POS, LMX, Job satisfaction, intention to turnover, turnover
Tekleab & Taylor (2003) [article]	N, managers= 130, 49%♀ N, employees= 130, 75%♀ US University	Manager: 92% between 30-60 Employee: 86% between 30-60	Global fulfillment	Cross-sectional	Perceptions of obligations, job satisfaction, intent to leave, OCB, performance
Ten Brink (2004) [dissertation]	N= 1611, 27%♀, 5 Dutch organizations	40-44 years old; 47% 10 years or more tenure	Content, specific fulfillment	Cross-sectional	Commitment, OCB, development, mobility intentions
Ten Brink, Den Hartog, Koopman & Van Muijen (1999) [article]	N= 527, 80%♀, Dutch employees health care	Between 30-39 years; tenure 3-5 years	Specific fulfillment	Cross-sectional	Normative commitment, affective commitment, leadership, trust
Ten Brink, Den Hartog, Koopman & Van Muijen (2002) [article]	N, study 1: 762, 20%♀, Dutch rural company N., study 2: 74, 37%♀, Dutch public sector	S1: 39; 5-10 S2: 42; 5-10	Specific fulfillment	Cross-sectional	Affective commitment, trust
Thomas, Ravlin & Au (2005) [conference]	N= 241, 22%♀, Canadian technology company	76% over 30 years, 56% more than 10 years work exp.	Content, types	Cross-sectional	Creditor ideology, psychological contract
Thompson & Heron (2005) [article]	N= 429, 26%♀, UK 6 high-technology firms	34.26 (7.89)	Specific fulfillment	Cross-sectional	Justice, commitment
Turnley, Bolino, Lester & Bloodgood (2003) [article]	N= 134 dyads of supervisors, 45%♀, & subordinates, 56%♀, US MBA students	Supervisor: 41; 13.48 Subordinates: 32; 4.27 (3.66)	Specific fulfillment	Cross-sectional	In-role performance, organizational citizenship behavior
Turnley & Feldman (1999) [article]	N= 804, 45%♀, US managers	35.07 (7.9); 7.41 (7.27)	Specific fulfillment	Cross-sectional	Exit, voice, loyalty, neglect
Turnley & Feldman (2000) [article]	N= 804, 45%♀, US managers	35.07 (7.9); 7.41 (7.27)	Specific fulfillment	Cross-sectional	Intent to quit, neglect, OCB, job satisfaction
Van Dyne & Ang (1998) [article]	N= 155, 76%♀ vs. 59%♀, Singapore; contingent and regular workers	Contingent: 27; 1.5 Regular: 31; 5	Content	Cross-sectional	OCB, commitment
Yeh (2006) [conference]	N= 364, 100%♀, Taiwanese hospital nurses	87% between 20-35; 41.3% between 4-9 years in organization	Global breach	Cross-sectional	Commitment, job stress
Zagenczyk & Gibney (2005) [conference]	N= 84, 35%♀, US undergraduate & MBA students	25.4 (28.6) months tenure	Specific fulfillment	Cross-sectional	POS, identification, cynicism, turnover intentions
Zottoli (2003) [dissertation]	N= 358, 37%♀, US employees from insurance, internet company, government	Mean age 31-35; 3-4 years tenure	Specific fulfillment, global breach	Cross-sectional	OCB-I, OCB-O, Work deviant behaviors, violation

N.B. OCB-I, OCB-O= Organizational Citizenship Behavior towards Individuals/Organization; PC = Psychological

contract; POS= Perceived Organizational Support; PA= Positive Affectivity; NA= Negative Affectivity; LMX= Leader-

Member Exchange, WHI= Work Home Interference

Table 1: Conceptualizations of the Psychological Contract

<p><b>Expectations</b></p>	<ul style="list-style-type: none"> <li>• “A relationship may be hypothesized to evolve between the employees and the foremen which might be called the ‘psychological work contract’” (Argyris, 1960, p.96).</li> <li>• “A product of mutual expectations. These have two characteristics: (a) They are largely implicit and unspoken, and (b) they frequently antedate the relationship of person and company” (Levinson, Price, Munden, Mandl, &amp; Solley, 1962, p. 22).</li> <li>• “The individual has a variety of expectations of the organization and (...) the organization has a variety of expectations of him” (Schein, 1965, p.11).</li> <li>• “An implicit contract between an individual and his organization which specifies what each expect to give and receive from each other in their relationship” (Kotter, 1973, p.92)</li> <li>• “This contract is concerned with the organization’s expectations of the individual employee and the employees’ attempts to meet those expectations” (Dunahee &amp; Wangler, 1974, p.519-520).</li> <li>• “The sum total of all written and unwritten, spoken and unspoken, expectations, of the employer and the employee” (Baker, 1985, p.37).</li> <li>• “Idiosyncratic set of reciprocal expectations held by employees concerning their obligations (...) and their entitlements” (McLean Parks, Kidder &amp; Gallagher, 1998, p.698).</li> </ul>
<p><b>Individual beliefs and perceptions</b></p>	<ul style="list-style-type: none"> <li>• “Individual’s beliefs regarding the terms and conditions of a reciprocal exchange agreement between that focal person and another party” (Rousseau, 1989, p.123).</li> <li>• “Individual’s beliefs regarding reciprocal obligations” (Rousseau, 1990, p.390).</li> <li>• “Beliefs in reciprocal and promised obligations between employee and employer” (Robinson &amp; Rousseau, 1994, p.245).</li> <li>• “Individual beliefs, shaped by the organization, regarding terms of an exchange agreement between individuals and their organization” (Rousseau, 1995, p.9).</li> <li>• “Employees’ perceptions of what they owe to their employers and what their employers owe to them” (Robinson, 1996, p.574).</li> </ul>
<p><b>Agreement between two parties</b></p>	<ul style="list-style-type: none"> <li>• “Perceptions of mutual obligations to each other held by the two parties in the employment relationship, the organization and the employee” (Herriot, Manning &amp; Kidd, 1997, p.151).</li> <li>• “The perception of two parties, employee and employer, of what their mutual obligations are towards each other” (Herriot, 2001, p.38).</li> <li>• “The perceptions of both parties to the employment relationship – organisation and individual – of the reciprocal promises and obligations implied in that relationship” (Guest &amp; Conway, 2002).</li> <li>• “An exchange agreement of promises and contributions between two parties, an employee and an employer” (Janssens, Sels &amp; Van den Brande, 2003, p.1350).</li> <li>• “An agreement between management and an employee that the employee will be placed in situations where his or her needs for affection, aggression, dependency, and achievement of ego ideals can be adequately met” (Meckler, Drake &amp; Levinson, 2003, p.217-218).</li> </ul>
<p><b>Exchange relationship</b></p>	<ul style="list-style-type: none"> <li>• “Exchange relationship between two parties: employer and employee” (Anderson &amp; Schalk, 1998, p.638).</li> <li>• “It is perhaps time that the psychological contract should be recognized for what it is: a social exchange interaction” (Cullinane &amp; Dundon, 2006, p.119).</li> </ul>

NB. In order to obtain an overview of conceptualizations of the psychological contract, we searched through psychological contract literature (1960-2006) and collected conceptualizations of the psychological contract.



Table 2: Meta-analytic results of relations between aging, tenure and content and types of psychological contract

	80% Cred. Int.							
	k	N	mean r	$\rho$	SD of $\rho$	Lower	Upper	Var. expl.
<b>Age – psychological contract</b>	22	17209	-.04	-.05	.08	-.14	.05	20.91
<b>Tenure – psychological contract</b>	22	15899	.02	.02	.06	-.06	.10	29.73
<b>Age – transactional contracts</b>	6	1954	-.02	-.03	.10	-.16	.10	27.25
<b>Tenure – transactional contracts</b>	8	8637	.01	.01	.04	-.03	.06	45.38
<b>Age-relational contracts</b>	6	1954	-.05	-.06	.16	-.27	.14	12.70
<b>Tenure-relational contracts</b>	8	8637	.04	.04	.06	-.03	.12	27.77

k= number of studies; N= population; mean r = mean uncorrected correlation;  $\rho$  = true score correlation; SD of  $\rho$  = standard deviation of true score correlation; 80% Cred. Int. = 80% credibility interval; Var. expl. = percentage of variance in correlations explained by artifacts

Table 3: Meta-analytic results of relations between psychological contract breach and outcomes

Outcome	80% Cred. Int.							
	k	N	mean r	$\rho$	SD of $\rho$	Lower	Upper	Var. expl.
Job satisfaction	33	15839	-.43	-.52	.14	-.70	-.35	9.87
Commitment	37	17434	-.32	-.39	.12	-.54	-.24	14.80
Perceived Organizational Support	10	9056	-.37	-.43	.10	-.56	-.30	9.06
Trust	15	3641	-.52	-.62	.13	-.79	-.45	14.76
Justice	13	3773	-.41	-.48	.12	-.63	-.33	18.64
Feelings of violations	9	1903	.60	.69	.22	.41	.99	5.02
Negative affectivity	9	2740	.19	.24	.13	.07	.41	19.69
Turnover intentions	30	7330	.33	.41	.14	.22	.59	19.74
Job performance	22	4872	-.18	-.22	.08	-.32	-.11	47.73
Organizational citizenship behaviors	26	14269	-.14	-.19	.15	-.39	.01	11.19

k= number of studies; N= population; mean r = mean uncorrected correlation;  $\rho$  = true score correlation; SD of  $\rho$  = standard deviation of true score correlation; 80% Cred. Int. = 80% credibility interval; Var. expl. = percentage of variance in correlations explained by artifacts

Table 4: Meta-analytic results of relations between aging, tenure and affective and behavioral outcomes

	80% Cred. Int.							
	k	N	mean r	$\rho$	SD of $\rho$	Lower	Upper	Var. expl.
<b>Satisfaction</b>								
Age	14	5743	.06	.07	.10	-.07	.19	21.71
Tenure	11	10769	-.02	-.02	.08	-.13	.08	14.51
<b>Commitment</b>								
Age	19	10405	.12	.13	.12	-.02	.29	12.63
Tenure	23	13687	.05	.06	.10	-.07	.18	17.46
<b>Perceived Organizational Support</b>								
Age	4	4624	-.05	-.05	0	-.05	-.05	100.00
Tenure	5	7990	-.09	-.09	.05	-.15	-.03	23.54
<b>Trust</b>								
Age	4	1368	.03	.03	.02	.01	.05	93.22
Tenure	4	1368	-.01	-.01	.09	-.13	.10	30.12
<b>Justice</b>								
Age	4	1271	-.06	-.07	0	-.07	-.07	100.00
Tenure	5	1373	-.02	-.02	.09	-.13	.10	35.79
<b>Negative affectivity</b>								
Age	4	816	-.03	-.04	.01	-.05	-.02	98.46
Tenure	6	1156	-.03	-.03	.04	-.09	.02	76.11
<b>Turnover intentions</b>								
Age	17	5401	-.14	-.16	.05	-.22	-.09	56.93
Tenure	14	4625	-.06	-.07	.09	-.19	.05	32.16
<b>Performance</b>								
Age	9	2737	.11	.12	.07	.04	.21	48.35
Tenure	13	2905	.06	.06	0	.06	.06	100.00
<b>Organizational citizenship behaviors</b>								
Age	13	9103	.07	.08	.06	.00	.16	30.38
Tenure	19	12130	.05	.06	.08	-.05	.17	24.29

k= number of studies; N= population; mean r = mean uncorrected correlation;  $\rho$  = true score correlation; SD of  $\rho$  = standard deviation of true score correlation; 80% Cred. Int. = 80% credibility interval; Var. expl. = percentage of variance in correlations explained by artifacts

Table 5: Meta-analytic results of the moderating role of age and tenure in the relations between psychological contract breach and outcomes

Outcome	80% Cred. Int.							
	k	N	mean r	$\rho$	SD of $\rho$	Lower	Upper	Var. expl.
<b>Job satisfaction</b>	33	15839	-.43	-.52	.14	-.70	-.35	9.87
Age <37.6	18	5198	-.40	-.49	.17	-.70	-.27	11.38
Age >37.6	7	8024	-.42	-.51	.10	-.63	-.38	8.03
Tenure <7.57	10	10737	-.45	-.54	.08	-.65	-.44	11.20
Tenure >7.57	9	2366	-.37	-.44	.22	-.72	-.17	8.13
Cross-sectional	26	14518	-.44	-.54	.13	-.70	-.36	9.02
Longitudinal	7	1321	-.37	-.47	.18	-.70	-.24	16.49
Global	9	1534	-.43	-.54	.23	-.83	-.24	10.61
Specific	24	14314	-.43	-.52	.12	-.68	-.36	9.56
Journal	28	14744	-.44	-.53	.13	-.70	-.36	9.27
Other source	5	1095	-.38	-.45	.14	-.63	-.26	18.58
<b>Commitment</b>	37	17434	-.32	-.39	.12	-.54	-.24	14.80
Age <37.6	16	4447	-.38	-.46	.10	-.60	-.33	26.07
Age >37.6	12	9834	-.29	-.34	.10	-.48	-.21	11.43
Tenure <7.57	14	10841	-.30	-.36	.08	-.46	-.25	19.11
Tenure >7.57	13	3350	-.32	-.38	.18	-.61	-.15	12.06
Cross-sectional	33	16863	-.32	-.39	.12	-.54	-.24	14.33
Longitudinal	4	571	-.30	-.36	.17	-.58	-.14	21.23
Global	9	1881	-.45	-.54	.07	-.63	-.45	47.50
Specific	28	15553	-.31	-.37	.11	-.51	-.23	14.77
Journal	30	15419	-.33	-.39	.12	-.54	-.24	13.68
Other source	7	2015	-.31	-.37	.11	-.51	-.22	23.38
<b>Perceived Organizational Support</b>	10	9056	-.37	-.43	.10	-.56	-.30	9.06
Age <37.6	4	1351	-.50	-.59	.19	-.83	-.35	6.06
Age >37.6	4	7522	-.35	-.40	.04	-.45	-.36	28.08
Global	4	1096	-.55	-.62	.18	-.85	-.38	6.15
Specific	6	7960	-.35	-.40	.04	-.46	-.35	29.91
Journal	6	8222	-.37	-.42	.07	-.52	-.32	10.64
Other source	4	834	-.44	-.53	.23	-.82	-.24	7.97
<b>Trust</b>	15	3641	-.52	-.62	.13	-.79	-.45	14.76
Age <37.6	5	1117	-.57	-.68	.13	-.85	.52	14.49
Age >37.6	4	1448	-.47	-.56	.13	-.73	-.40	12.26
Tenure <7.57	4	1014	-.58	-.70	.13	-.87	-.54	13.38
Tenure >7.57	4	892	-.42	-.51	.16	-.71	-.31	15.32
Cross-sectional	10	2655	-.57	-.67	.11	-.82	-.53	15.59
Longitudinal	5	986	-.40	-.48	.07	-.57	-.39	50.22
<b>Turnover intentions</b>	30	7330	.33	.41	.14	.22	.59	19.74
Age <37.6	14	3449	.35	.42	.15	.23	.61	16.57
Age >37.6	7	1099	.23	.27	.18	.05	.50	20.49
Tenure <7.57	12	4472	.33	.42	.13	.26	.59	17.35
Tenure >7.57	10	1557	.31	.37	.21	.10	.64	14.08

<i>Cross-sectional</i>	22	5945	.33	.42	.14	.24	.60	18.74
<i>Longitudinal</i>	8	1385	.29	.35	.14	.17	.54	25.51
<i>Global</i>	9	1493	.41	.50	.16	.29	.70	19.42
<i>Specific</i>	21	5837	.30	.38	.13	.22	.54	22.12
<i>Journal</i>	24	6256	.33	.40	.14	.23	.58	20.01
<i>Other source</i>	6	1074	.32	.40	.17	.18	.62	18.65
<b>Job performance</b>	22	4872	-.18	-.22	.08	-.32	-.11	47.73
<i>Global</i>	7	1312	-.19	-.22	.11	-.35	-.08	35.57
<i>Specific</i>	15	3560	-.18	-.22	.07	-.30	-.13	57.13
<i>Journal</i>	16	3586	-.19	-.24	.09	-.35	-.12	44.00
<i>Other source</i>	6	1286	-.14	-.16	.00	-.16	-.16	100.00
<b>Organizational citizenship behaviors</b>	26	14269	-.14	-.19	.15	-.39	.01	11.19
<i>Age &lt;37.6</i>	14	3636	-.22	-.26	.17	-.48	-.04	14.52
<i>Age &gt;37.6</i>	4	7913	-.14	-.19	.00	-.19	-.19	100.00
<i>Tenure &lt;7.57</i>	18	12374	-.13	-.18	.16	-.39	.03	8.45
<i>Tenure &gt;7.57</i>	4	1433	-.15	-.19	.07	-.28	-.10	45.73
<i>Journal</i>	19	12783	-.14	-.19	.16	-.39	.02	8.80
<i>Other source</i>	7	1487	-.17	-.20	.09	-.32	-.08	43.19

k= number of studies; N= population; mean r = mean uncorrected correlation;  $\rho$  = true score correlation; SD of  $\rho$  = standard deviation of true score correlation; 80% Cred. Int. = 80% credibility interval; Var. expl. = percentage of variance in correlations explained by artifacts

Figure Caption

*Figure 1.* Research model of the meta-analysis

