Generativity at work: A meta-analysis

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ABSTRACT

Generativity entails both the motive and the behavior to support and guide younger people and to benefit “future generations.” Given its relevance for work and career outcomes, research on generativity in the work context has accumulated over the last three decades. To synthesize this work, we developed a conceptual model based on generativity, lifespan, resource, and motivation theories and conducted a meta-analysis ($k = 48, N = 15,356$). The results show that the generativity motive is positively related to person-related (e.g., age, tenure, agency and communion, work centrality) and context-related antecedents (e.g., challenging job demands, job autonomy). Moreover, the generativity motive is positively associated with motivational (i.e., work motivation, occupational self-efficacy), well-being (e.g., positive affect, job satisfaction, self-esteem), and career-related outcomes (e.g., mentoring relationship quality, career satisfaction). The fewer studies on generative behavior largely show a similar pattern. Overall, the findings (1) improve understanding of the nomological network of both the generativity motive and generative behavior at work, (2) point to the importance of generativity for favorable work outcomes, and (3) highlight that future research is needed to better understand the mechanisms and boundary conditions of effects of generativity at work.

1. Introduction

Generativity involves both the motive and the behavior to support and guide younger people and to benefit “future generations” (Erikson, 1950; McAdams & de St. Aubin, 1992). The construct was first introduced by Erik Erikson (1950) as part of his theory of psychosocial development. The theory positions generativity as the seventh of eight developmental tasks in life and assumes that it is particularly salient in middle age (i.e., roughly the period between 40 and 60 years). According to Erikson (1950), generativity is adaptive, contributing positively to personality development and well-being. Lifespan psychology research has indeed found that generativity is related to beneficial outcomes, including life satisfaction (McAdams et al., 1993) and psychological well-being (An & Cooney, 2006; Grossbaum & Bates, 2002). Over the last three decades, these findings have been extended to the work context, where generativity has been associated with several positive work and career outcomes, such as job satisfaction, work engagement, leadership effectiveness, and work participation past retirement age (Clark & Arnold, 2008; Kooij et al., 2013; Zacher, Rosing, Henning, et al., 2011; Zhan et al., 2015). Research has also highlighted that the workplace constitutes an important context in which generativity can be developed and expressed through behaviors that are valuable for both employees and organizations, such as coaching, mentoring, and leadership (Chaudhry et al., 2017; Passmore et al., 2013; Wanberg et al., 2006; Zacher, Rosing, Frese, et al., 2011).

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Despite much research demonstrating the importance of generativity for the work context, to date there exists no comprehensive theory of generativity at work. Studies on generativity in the work context have largely drawn on the general theoretical framework by McAdams and de St. Aubin (1992). This framework proposes that generativity is predicted by person-related factors, including the concern for others and to leave something lasting behind, and contextual factors, such as societal expectations to give back to younger people and “future generations”. Prior research on generativity at work has used a large variety of variables that broadly map onto these antecedents, including agency, communion, work centrality, and various job demands and resources (Ackerman et al., 2000; Sanders & McCready, 2010). With regard to outcomes, theory predicts that generativity is beneficial for well-being (e.g., Erikson, 1950; McAdams & de St. Aubin, 1992), and diverse positive work outcomes have been studied in relation to generativity (e.g., work motivation, job satisfaction; Clark & Arnold, 2008; Stamov-Roßnagel & Biemann, 2012).

The overarching goal of the present meta-analysis is to synthesize previous work to improve our understanding of the nomological network of generativity at work and to further develop theory on generativity in the work context. To achieve this goal, we first theoretically clarify the generativity construct. Past research has investigated both the generativity motive (i.e., the inner desire to support and guide younger people and to benefit “future generations”; e.g., Kooij & Voorde, 2011) and generative behavior (i.e., acts to support and guide younger people and to benefit “future generations”; e.g., Millová & Blatný, 2018). We distinguish both constructs in our meta-analysis, investigate their interrelation, and test whether they have differential associations with antecedent and outcome variables.

Second, we develop hypotheses on relationships between generativity (both the motive and behavior) and relevant antecedents and work and career outcomes. To this end, we integrate generativity theory with the lifespan theory of socioemotional selectivity (Carstensen, 1995), resource theories (Demerouti et al., 2001; Hobfoll & Wells, 1998), and self-determination theory (Deci & Ryan, 2000). By incorporating these theories into a conceptual model of generativity at work (see Fig. 1), we extend traditional generativity theory. Specifically, we include potential time-related antecedents of generativity (e.g., age, future time perspective), which are important in the work context considering workforce aging, contextual antecedents that are work-specific (e.g., job autonomy), and work-related outcomes of generativity. While we propose a causal model, we have to predominantly rely on cross-sectional data and therefore can only present correlational evidence in this meta-analysis.

Third, we meta-analyze the proposed relationships if they have been investigated in at least three independent samples. We also report moderator analyses to test whether relationships with antecedents and outcomes of generativity at work systematically vary between the generativity motive and generative behavior, types of generativity measurement, publication status, and different age ranges of the samples. Finally, we suggest directions for future research and derive implications for organizational practice.

### 2. Definition and operationalization

#### 2.1. The generativity construct

Erikson (1950) defined generativity as a distinct developmental stage that, if not resolved in midlife, results in stagnation and self-absorption (Erikson, 1982; Van Hiel et al., 2006). He posited that generativity is primarily expressed through raising children, but also through creating something that is worth leaving behind for “future generations.” Building on Erikson’s work, several scholars have further developed the generativity concept and, to this end, have moved away from conceptualizing generativity as a developmental stage. Kotre (1984), for instance, maintained that generativity is not attached to a certain age per se, but rather differently expressed across the adult lifespan. He distinguished four types of generativity: biological (e.g., childbearing), parental (e.g., nurturing children),

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**Fig. 1.** Conceptual model of potential antecedents and outcomes of generativity at work included in the meta-analysis.
technical (e.g., passing on skills and knowledge), and cultural generativity (e.g., passing on cultural ideas). According to Kotre (1984), these four types of generativity may be expressed in more agentic (i.e., self-focused) or more communal (i.e., other-focused) ways.

Drawing on Erikson (1950) and Kotre (1984), McAdams and de St. Aubin (1992) proposed a multidimensional framework of generativity, stating that the generativity motive stems from a combination of agentic (e.g., leaving a legacy) and communal (e.g., nurturing younger people) needs, as well as “external demands” (i.e., the expectation in society that adults increasingly invest resources into “future generations”). The generativity motive, in turn, is assumed to foster generative commitment (i.e., generativity-related goals and intentions), which stimulates generative behaviors, such as mentoring or volunteering. Eventually, according to McAdams and de St. Aubin (1992), individuals reflect on their lives and construct their identity around their generative behaviors, which provides them with a sense of meaning.

Adapting Erikson’s definition of generativity to the work context, researchers have typically investigated generativity as the extent to which workers are motivated to, or actually provide support to their younger colleagues or subordinates (e.g., Arnold & Clark, 2016; Clark & Arnold, 2008; Zacher, Rosing, Henning, et al., 2011). Research has found that the generativity motive and generative behavior are moderately positively related (Clark & Arnold, 2008; McAdams et al., 1993). The generativity motive (also referred to as values or concerns; e.g., Ackerman et al., 2000; Krumm, Grube, Hertel, 2013a) constitutes the “first conscious representation of generativity in the individual” (Hofer et al., 2008, p. 765), which may not necessarily result in generative behavior (Clark & Arnold, 2008). Generative behavior at work encompasses actions that benefit younger employees through activities such as mentoring, coaching, leadership, or teaching (Clark & Arnold, 2008).

Overall, generativity at work is considered to be a resource, positively contributing to employees’ well-being and organizational outcomes, such as knowledge retention (Calo, 2005, 2007; Garcia et al., 2018). Moreover, most studies conducted in the work context have followed Erikson (1950), who offered that generativity is especially salient at middle age, or socioemotional selectivity theory (Carstensen, 1995) to predict that generativity is especially important to older workers (Kanfer & Ackerman, 2004; Mor-Barak, 1995). To reconcile theorizing on age-related increases in generativity (Kanfer & Ackerman, 2004, Mor-Barak, 1995) with theoretical work suggesting that generativity is not necessarily age-related (Kim et al., 2017; Kotre, 1984), it is important to distinguish between mean age differences and interindividual differences within age groups. Evidence points toward some mean age differences in generativity, with most studies showing that generativity is strongest among middle-aged adults (e.g., Keyes & Ryff, 1998; McAdams et al., 1993). However, scholars have also acknowledged that generativity can be evident across the lifespan (Kim et al., 2017; Krahm et al., 2020), with some research showing interindividual differences also among adolescents and older adults past retirement age (Gruenewald et al., 2012; Pratt & Lawford, 2014).

2.2. Measuring generativity

An overview of the various operationalizations of the generativity motive and generative behavior used in empirical studies included in this meta-analysis can be found in Table S1 in the online appendix (https://osf.io/kze9p/). A shared feature of all measures is a downward intergenerational focus, that is, a focus on relatively older workers supporting relatively younger workers. This feature distinguishes generativity from related constructs such as altruistic and prosocial motives and behaviors. The latter are typically broader in scope, referring to the motive or behavior to benefit others independent of their age (Bolino & Grant, 2016). Past studies used either general measures (e.g., Peterson & Klohnen, 1995) or work-related measures of generativity (e.g., Kooij et al., 2011). Whereas general measures assess the generative motive or generative behaviors across different contexts, work-related measures assess individuals’ perceived importance, motivation, or behavioral prioritization of generativity-related tasks at work, such as passing on knowledge to younger coworkers. General measures conceive generativity as broad and evident in different life domains, such as work, leisure, or religious activities (McAdams & de St. Aubin, 1992), whereas work-related measures assume that generativity is context-specific (Clark & Arnold, 2008; MacDermid et al., 1996).

Among general measures of the generativity motive, the Loyola Generativity Scale is the most widely-used (McAdams & de St. Aubin, 1992). It assesses people’s concern for various generative behaviors, such as passing on knowledge, creating an enduring legacy, contributing positively to the community and society, and being creative and productive. This self-report measure has often been used in work-related studies (e.g., Arnold & Clark, 2016; Miranda-Chan & Nakamura, 2016).

Two general measures of generative behavior are the Generative Behavior Checklist (McAdams & de St. Aubin, 1992) and Peterson and Klohnen’s (1995) measure. Providing an alternative to self-reports, the latter measure involves trained raters who score interview answers according to their level of generative behavior.

Among context-specific (i.e., work-related) measures of the generativity motive is MacDermid et al.’s (1992) scale which covers generativity motives in the worker role, among other life roles. All of the remaining work-related measures of the generativity motive were developed in the context of age and work research (Kooij & Voorde, 2011; Mor-Barak, 1995; Templer et al., 2010). For instance, More-Barak (1995) developed and validated a self-report scale that assesses the extent to which generativity contributes to older workers’ meaning of work. Templer et al. (2010) measured generativity motives to continue working beyond retirement age. The Munster Work Value Measure (Krumm, Grube, Hertel, 2013a) assesses self-reported generativity values as part of a broader set of work values that might be particularly relevant to older workers. Kooij and Voorde (2011) developed a self-report scale assessing the importance of teaching, training, and sharing skills with younger people at work.

With respect to work-related measures of generative behavior, Hardigree (2008) used items from a job performance instrument that best reflect generative behavior (e.g., showing interest for subordinates’ careers) to assess generativity in managers. Zacher, Rosing, Henning, et al. (2011) developed a measure of leaders’ generative behavior, which has been used as both a self-report and other-report measure, with leader and follower ratings correlating moderately and positively (Zacher, Rosing, Henning, et al., 2011).
3. A conceptual model of generativity at work

Extending McAdams and de St. Aubin’s (1992) general framework of generativity, we develop a conceptual model that places generativity at work (both the motive and behavior) as a mediator between person- and work context-related antecedents and work outcomes (see Fig. 1). Consistent with McAdams and de St. Aubin (1992) as well as the basic tenets of motivational theories (e.g., McClelland, 1985), we assume that motives, such as the generativity motive, lead to motive fulfilling behavior, such as generative behavior. While we examine the relationship between the generativity motive and generative behavior, we cannot test multiple mediation models due to data constraints. Hence, our main goal is to meta-analytically investigate potential antecedents and outcomes of generativity based on correlational data.

Following McAdams and de St. Aubin (1992), we distinguish between person- and context-related antecedents of generativity at work. While McAdams and de St. Aubin (1992) focus on two person-related antecedents (i.e., agency and communion) and one contextual antecedent (i.e., societal expectations), we draw on the lifespan theory of socioemotional selectivity (Carstensen, 1995) and resources theories (Demerouti et al., 2001; Hobfoll & Wells, 1998) to propose additional antecedents of generativity at work. Based on socioemotional selectivity theory, we include time-related variables (e.g., age, future time perspective), which are key to better understand the role generativity plays across the adult (working) lifespan (Kim et al., 2017). Socioemotional selectivity theory posits that perceived time left in life determines the prioritization of emotionally meaningful goals, such as generativity, relative to instrumental and knowledge-related goals, such as acquiring new skills (Lang & Carstensen, 2002).

We also integrate resource theories (Demerouti et al., 2001; Hobfoll & Wells, 1998) as this allows us to make predictions regarding contextual influences that are work-specific. Traditional generativity theory is broader, focusing on societal influences and disregarding other contextual effects (Kim et al., 2017). According to conservation of resources theory (Hobfoll & Wells, 1998) and the job demands-resources model (Demerouti et al., 2001), job resources, such as autonomy, may aid employees’ development and help them to obtain additional personal and behavioral resources, such as generativity.

We further propose that generativity relates to different categories of favorable work outcomes, including motivational, well-being, and career-related outcomes. The generativity framework provided by McAdams and de St. Aubin’s (1992) does not explicitly outline outcomes of generativity. Based on self-determination theory (Deci & Ryan, 2000), however, we assume that intrinsic goals, such as generativity, can help to satisfy basic needs, thereby contributing positively to employees’ work engagement and well-being. Similarly, according to Mor-Barak (1995), generativity may add meaning to people’s work, which should positively influence career outcomes. Moreover, drawing on socioemotional selectivity theory (Carstensen, 1995), we expect that being generative at work can satisfy socioemotional goals, thereby beneficially well-being.

In the next sections, we explain the theoretical rationales for the assumed relationships in more detail. We do not differentiate between the motive and behavior when reviewing the theory for each relationship, but refer to both constructs using the general term “generativity.”

3.1. Person-related antecedents of generativity

3.1.1. Chronological and subjective age, tenure, and future time perspective

Erikson’s (1950) theory of psychosocial development states that generativity becomes particularly relevant in middle age (approximately 40–60 years). An increase in generativity with age is also predicted by socioemotional selectivity theory (Carstensen, 1995). This theory postulates that people, as they get older, increasingly perceive their time left in life as limited and this leads them to gradually prioritize emotionally meaningful goals, a prime example of which is generativity, over goals related to knowledge acquisition (Lang & Carstensen, 2002). Applied to the work context, older employees, who have limited time left in their lives and careers (Rudolph et al., 2018), should have higher levels of generativity than younger employees (Kooij & Voorde, 2011). Younger employees have a longer future time left in their careers and thus may focus more on getting ahead in their own careers (Kanfer & Ackerman, 2004; Zacher, Rosing, Henning, et al., 2011). Similar to chronological age, subjective age and tenure, which highly correlate with age (Kooij, de Lange, Jansen, Dikkers, 2008), might be positively related to generativity. Employees’ who perceive themselves as older (i.e., who have a higher subjective age) should also have a more constrained future time perspective and therefore seek meaningful goals and experiences, including generativity. Likewise, employees with higher job, organizational, and occupational tenure may perceive their time left as increasingly limited as they get closer to retirement (Rudolph et al., 2018), and hence focus more on meaningful goals, including generativity. In sum, we expect that chronological age, subjective age, and tenure relate positively to generativity (Hypotheses 1–3, respectively), whereas future time perspective is likely to relate negatively to generativity (Hypothesis 4).

3.1.2. Gender

According to generativity theory by McAdams and de St. Aubin (1992), agency and communion are key antecedents of generativity, which are both influenced by culturally defined gender roles (Eagly, 2009). In many cultures, women are expected to be more nurturing and, thus, might also be expected to show more communal forms of generativity. Moreover, based on findings that women tend to display more communal behavior at work than men (Eagly, 2009) and considering that most measures of generativity employed in the work context mainly cover the communal aspect of generativity, we expect that women report higher levels of generativity (Hypothesis 5).
3.1.3. Education

Education is thought to be a personal resource that affects individuals’ capability to be generative (Kim et al., 2017). Higher levels of education could increase workers’ generativity, as they might feel better equipped to pass on their knowledge to younger coworkers. A longitudinal study moreover showed that people with college degrees, compared to those with high school degrees, attach more importance to altruistic and social rewards (Johnson & Elder, 2002), which may include generativity. It has further been suggested that people who are well educated and successful may be more motivated to give something back and therefore, have higher generativity motivation (Keyes & Ryff, 1998; McAdams & Logan, 2004). In sum, we hypothesize that education is positively related to generativity (Hypothesis 6).

3.1.4. Health

Generativity may also be affected by employees’ health status. Conservation of resources theory (Hobfoll, 1989) maintains that people draw on their resources, such as health, to gain further resources, such as generativity. In the work context, employees who are physically and/or mentally healthier should be better able and more motivated to support and guide younger workers, or to make contributions that benefit younger cohorts of workers. Therefore, we expect that health is positively related to generativity (Hypothesis 7).

3.1.5. Agency and communion

According to McAdams and de St. Aubin’s (1992) generativity framework, the personality traits agency and communion are the main drivers of the generativity motive. While agency refers to being assertive and desiring power and achievement, communion entails being caring, helpful, and collaborative (Abele & Wojciszke, 2014). Thus, generativity is thought to be a combination of selfish as well as selfless traits. Agency is thought to motivate generativity, as generativity offers means to establish a lasting legacy of the self. Communion may result in generativity by virtue of caring deeply about younger people (Ackerman et al., 2000). As agency and communion are assumed to be inherent to the generativity construct, they should both be positively related to generativity in the work context (Hypotheses 8 and 9, respectively).

3.1.6. Work centrality

Work centrality is defined as the overall importance an individual attaches to work (Paullay et al., 1994). People with high work centrality perceive work as an integral part of their life, identify strongly with their work role, and dedicate more time to their work (Hirschfeld & Feld, 2000; Ng & Feldman, 2008). While research suggests that generativity can be experienced and expressed in various life domains (MacDermid et al., 1997), generativity might be most pronounced in domains people are highly invested in (Peterson & Stewart, 1996). The reason for this is that generativity might be most fulfilling and gratifying when experienced and expressed in central life domains (Peterson & Stewart, 1996). Hence, people who perceive their work as a central aspect of their life, may also experience higher generativity at work (Hypothesis 10).

3.2. Context-related antecedents of generativity

3.2.1. Challenging job demands

Job demands entail the amount of effort required to complete work tasks (Demerouti et al., 2001). Although all job demands require effort, some do not necessarily have negative consequences for motivation, performance, and well-being (LePine et al., 2005; Van den Broeck et al., 2010). Challenging job demands, as opposed to hindering job demands (e.g., interpersonal conflicts at work), include workload as well as job complexity and require effort, but can also be stimulating and positively contribute to goal attainment and personal growth (Van den Broeck et al., 2010). In our meta-analysis we could only test the relationship between challenging job demands and generativity, as there were not sufficient data to test relationships with hindering demands. We hypothesize that challenging job demands are positively related to generativity, because they may help employees to attain their goals, which may include generativity-related goals (Hypothesis 11).

3.2.2. Job autonomy

Autonomy constitutes a job resource, which generally can help employees to attain work goals, help to reduce job demands and their mental and physical consequences, and inspire personal growth and development (Demerouti et al., 2001). According to conservation of resources theory (Hobfoll & Wells, 1998), work environments that are rich in resources, such as autonomy, in turn aid employees to attain further resources, such as generativity. Having autonomy at work allows employees to utilize their job to meet their needs (Gagné, 2003), including a need for generativity. Based on this theorizing, job autonomy should positively relate to generativity (Hypothesis 12).

3.2.3. Additional employment characteristics

We identified a number of additional employment characteristics that have commonly been investigated in generativity at work research (e.g., Dendinger et al., 2005; Zacher, Rosing, Henning, et al., 2011; Zhan et al., 2015) and that are likely to relate to generativity, including work hours, supervisory status, number of employees supervised, and income. Similar to work centrality, work hours may positively relate to generativity, as people who spend more time at work might also experience more generative concern in this life domain. In contrast, people who work fewer hours might experience higher generativity motivation in other areas of life (e.g., family, community, religion). Employees with supervisory responsibilities, a larger leadership span, and higher income are likely to be in
higher positions, thus having more job-related resources, such as knowledge and opportunities to express generativity in the workplace. In sum, we expect that work hours, supervisory status, number of employees supervised, and income relate positively to generativity (Hypotheses 13–16, respectively).

3.3. Outcomes of generativity

3.3.1. Motivational outcomes

Self-determination theory distinguishes between intrinsic goal content (e.g., relationships) and extrinsic goal content (e.g., wealth; Vansteenkiste et al., 2006). Since generativity is considered to be an intrinsic goal (Deci & Ryan, 2008; Hofer et al., 2016) and intrinsic goals promote engagement in tasks, we expect that generativity is positively related to work motivation (Hypothesis 17). Another motivational outcome of generativity might be occupational self-efficacy (Dendinger et al., 2005), as passing on skills and knowledge can raise a sense of mastery, which is a source of self-efficacy (Bandura, 1997). Hence, we expect that generativity is positively associated with occupational self-efficacy (Hypothesis 18).

3.3.2. Well-being outcomes

According to self-determination theory (Deci & Ryan, 2008), pursuing intrinsic goals, such as generativity, is beneficial for well-being as this type of goal pursuit helps to satisfy basic needs. More specifically, generativity is thought to satisfy needs for relatedness and competence (Deci & Ryan, 2008; Hofer et al., 2016), which should have positive effects on employees’ affective well-being and job satisfaction. Furthermore, generativity positively adds meaningfulness to one’s work, which should benefit well-being (Allan et al., 2019; Mor-Barak, 1995). This is also consistent with socioemotional selectivity theory (Carstensen, 1995), which posits that positive emotions result from displaying meaningful (age-related) behavior.

Generativity can also be assumed to benefit employees’ self-esteem and positive affect, as coworkers and supervisors tend to react positively to generativity (Ackerman et al., 2000; García et al., 2018). Research has further suggested that generativity could be a resource that can protect against role strain (MacDermid et al., 1996). Hence, we expect that generativity is positively related to positive affect and negatively related to negative affect at work (Hypotheses 19 and 20, respectively). In addition, we hypothesize that generativity relates positively to job satisfaction (Hypothesis 21) and affective commitment (Hypothesis 22) and negatively to job strain (Hypothesis 23). Generativity should also be positively associated with general well-being variables of interest to organizational scholars, including life satisfaction (Hypothesis 24) and self-esteem (Hypothesis 25).

3.3.3. Career-related outcomes

Some positive career-related outcomes reflect behavioral manifestations of generativity, which according to traditional generativity theory (McAdams & de St. Aubin, 1992) should fulfill generativity motives. One of these beneficial career-related outcomes is mentoring, which is thought to positively affect the career of the mentor (Ghosh & Reio Jr, 2013) as well as the protégé (Allen et al., 2004). Generativity is thought to enhance mentoring relationships, as generative mentors might be strongly motivated to invest their resources in younger protégés and to develop high-quality relationships (Doerwald et al., 2015). Similar to mentoring, volunteer work often aims to benefit other people and thus enables individuals to express their generativity motive (Son & Wilson, 2011). As generativity of older workers tends to be high, volunteering is thought to be an important post-career outcome (Pundt et al., 2015; Zhan et al., 2015). Moreover, as generativity at work encompasses concerns and behaviors to leave something lasting behind (Zacher, Rosing, Frese, et al., 2011), it may positively affect workers’ sense that they made a meaningful contribution to their organization and their career satisfaction. According to Mor-Barak (1995), generativity is an important part of people’s meaning of work which, in turn, may guide the decision to work beyond retirement age (Fasbender et al., 2016). Taken together, we expect generativity to be positively related to mentoring relationship quality, volunteering work, meaningful contribution, career satisfaction, and motivation to continue working (Hypotheses 26–30).

3.4. Moderators

3.4.1. Generativity motive vs. generative behavior

Generativity theory and empirical evidence suggest that the generativity motive and generative behavior are related but distinct constructs (Clark & Arnold, 2008). Accordingly, we investigate differences in the magnitude of relationships with potential antecedents and outcomes of generativity at work. Differences may emerge as generative behavior is more proximal to employee outcomes than the more distal generativity motive (Lee et al., 2011). Moreover, it may be that the generativity motive does not result in positive outcomes, if the need is not satisfied through generative behavior (Clark & Arnold, 2008). However, it has also been shown that the benefits of generative behavior might be contingent on the reactions of recipients of generativity (e.g., Cheng, 2009).

3.4.2. Type of measure

General measures of generativity assess generativity across various life domains, while work-related measures are contextualized and assess generativity in the work domain (Clark & Arnold, 2008). We explore if the magnitude of relationships with antecedents and outcomes of generativity differs depending on the type of measurement used. Methodological work conducted within research on personality (Ones & Viswesvaran, 1996) and the theory of planned behavior (Ajzen & Fishbein, 1977; Irving & Smith, 2020), suggest that measures show stronger relationships with criteria if they fit regarding their conceptual specificity or generality. Accordingly, one would expect that work-related measures of generativity show stronger relationships with work-related antecedents (e.g., work
centrality) and work outcomes (e.g., work motivation) than general measures of generativity. However, as many items of the most frequently used general measure of the generativity motive, the Loyola Generativity Scale, tap into the construct of generative accomplishment (see also the Discussion section), scores obtained with this scale may more strongly relate to positive work and non-work outcomes than other, more work-specific measures (Clark & Arnold, 2008).

3.4.3. Publication status
As publication bias can diminish the validity of results and conclusions drawn from meta-analyses (Kepes et al., 2012), we included publication status as a moderator to investigate whether the relationships between generativity and its antecedents and outcomes vary systematically between published and unpublished studies.

3.4.4. Age range
Finally, we also tested whether full versus restricted age range of the sample moderates relationships between chronological age and generativity as well as tenure and generativity (note that relationships between the other time-related variables and generativity were investigated in studies that sampled across the full age range). Based on theories predicting an age-related increase in generativity (Carstensen, 1995; Erikson, 1950), the magnitude of these relationships might be smaller among samples with a restricted age range than among samples with a wider age range.

4. Method

4.1. Inclusion and exclusion criteria
Prior to our literature search we set a number of inclusion and exclusion criteria. First, we only included studies that were empirical and quantitative, and available in English. This implies that review articles or articles that were solely qualitative were excluded from our meta-analysis (e.g., Calo, 2007; Taneva et al., 2016). Second, we only included studies that employed measures of the generativity motive or generative behavior (see Table S1 in the online appendix: https://osf.io/kze9p/), excluding for instance studies that used measures of opportunities for generativity at work (Bal et al., 2011; Henry et al., 2015; Peng et al., 2019) or team generativity (Carmeli et al., 2016). Third, to be included, studies had to be conducted in a work context or report links between generativity and some work-related variable. For instance, a study by Peterson and Klohnen (1995) was not conducted in a work context but reported links between generativity and job satisfaction and was therefore included. Fourth, for inclusion in the meta-analysis, studies had to measure generativity and report relationships of generativity with at least one other construct. Fifth, if relationships with different constructs resulting from the same dataset were reported, they were all included (e.g., Peterson & Klohnen, 1995; Vandewater et al., 1997). Sixth, we only included time-one relationships of longitudinal studies in our meta-analysis because they have the largest sample size and there were too few studies available to meta-analyze longitudinal relationships. Seventh, if articles included multiple datasets (e.g., Garcia et al., 2018; Kooij et al., 2013; Templer et al., 2010), we treated them as independent samples.

4.2. Literature search
The literature search was conducted between January 2017 and August 2017, and updated in November 2019. We first searched the electronic databases Web of Science and PsycINFO combining the term “generativity” with each potential antecedent and outcome of our model in Fig. 1, and with more general work-related terms such as “workplace” or “employee.” In addition, we searched the aforementioned databases using the broader term “generativ*” in combination with each antecedent and outcome variable of Fig. 1, and the general work-related terms. This was done to ensure that we also captured articles that used variations of the term generativity (e.g., papers using the term “generative concern”). We performed follow-up searches and a forward search for each relevant article in Google Scholar, which is in line with recommendations by Harari et al. (2020). We also examined the reference lists of relevant articles to find additional literature. Articles were considered as relevant based on a thorough examination of their abstract, method, and results, using the inclusion and exclusion criteria outlined above. In sum, 32 articles and four dissertations including data from \( k = 38 \) independent samples were eligible for inclusion in the meta-analysis. Included articles are marked with an asterisk in the references.

We additionally made several efforts to obtain unpublished data sets. We contacted researchers via email that had previously published articles on generativity and asked for unpublished or in-press articles on the topic. Specifically, we contacted 28 researchers and received responses from 18 (64% response rate). We furthermore posted requests in professional mailing lists. Through these efforts, we were able to obtain a total of 10 unpublished datasets that were eligible for inclusion in the meta-analysis, resulting in a final sample of \( k = 48 \) independent samples for inclusion in the meta-analysis (\( N = 15,356 \)).

4.3. Measures of constructs
Our meta-analysis included relationships between generativity and each antecedent and outcome that was included by a minimum of three independent samples (\( k \geq 3 \)). This is a common criterion for meta-analyses (e.g., Rudolph et al., 2017; Seibert et al., 2011). On average, effect sizes were based on \( k = 7 \) studies (\( SD_k = 6.09 \)). Whenever similar variables were not included by at least three samples, we first tried to meaningfully group constructs before excluding them, which is typically done in meta-analyses, wherever there are not sufficient studies to analyze a construct alone (Rudolph et al., 2018; Brady et al., 2020). Table 1 provides an overview of the synthetic construct groupings.
| Synthetic construct       | Operationalizations                                                                 |
|--------------------------|-------------------------------------------------------------------------------------|
| Generativity motive      | Generativity motives (general)                                                      |
|                          | Generativity work motives/ work values/ work task motives                            |
|                          | Generativity reasons to continue working                                             |
|                          | Coding of generative concern in interview narratives                                 |
|                          | Generativity striving                                                               |
| Generative behavior      | Coding of generative behavior statements in interview narratives<sup>a</sup>         |
|                          | Behavioral prioritization of generativity over own career goals<sup>b</sup>          |
|                          | Generative work behavior                                                             |
| Tenure                   | Job/ organizational/ occupational tenure                                             |
| Future time perspective  | Open ended future time perspective                                                  |
|                          | Limited future time perspective                                                     |
|                          | Focus on opportunities                                                              |
| Health                   | Concerns about own health                                                           |
|                          | Subjective general health                                                           |
|                          | Spouse-rated general health                                                          |
| Agency                   | Masculinity                                                                         |
|                          | Agency at work/ at home                                                             |
|                          | Status striving                                                                     |
|                          | The social motives of power and achievement                                         |
| Communion                | Femininity                                                                          |
|                          | Communion at work/ at home                                                          |
|                          | Communion striving                                                                  |
|                          | The social motive of affiliation                                                     |
| Challenging job demands  | Job complexity                                                                       |
|                          | Working hard, fast, and a lot                                                        |
| Job autonomy             | Decision authority                                                                  |
|                          | Job control                                                                         |
| Work hours               | Work status (part-time/full-time)                                                    |
|                          | Average work hours per day/week                                                      |
| Supervisory status       | Managerial position                                                                 |
|                          | Managerial responsibility                                                            |
|                          | Supervisory responsibilities                                                         |
|                          | Managerial level                                                                    |
| Work motivation          | Work engagement                                                                     |
|                          | Overall work motivation                                                              |
| Affect at work           | Affective experience (affect checklist)                                              |
|                          | Affective experience at work                                                         |
|                          | The Positive and Negative Affect Schedule (PANAS)                                    |
|                          | Mean frequency of 4 pleasant and 5 unpleasant emotions                               |
| Job satisfaction         | Satisfaction with current work situation                                            |
|                          | Job satisfaction                                                                    |
|                          | Pre-retirement job satisfaction                                                     |
| Occupational self-efficacy| Perceived competence in worker role                                                  |
| Job strain               | Job-family role strain                                                               |
|                          | Pre-retirement work stress                                                          |
|                          | Emotional exhaustion                                                                |
|                          | Burnout (emotional exhaustion, personal accomplishment, depersonalization)          |
|                          | Need for recovery                                                                   |
| Mentoring quality        | Mentoring support provided by the mentor                                            |
|                          | Past mentoring support provided by the mentor                                        |
|                          | Mentoring relationship quality                                                       |
| Motivation to continue working | Motivation to continue working          |
|                          | Intentions to continue working                                                      |
|                          | Considerations to retire (reverse)                                                   |
|                          | Desired retirement age                                                              |
| Volunteering work        | Post-retirement volunteering status                                                  |
|                          | Post-retirement civic engagement                                                    |
| Self-esteem              | Self-esteem                                                                         |
|                          | Core self-evaluation                                                                |

<sup>a</sup> An example statement is “I recently devised a method of salvaging scrap which saved the company £62,000” (Clark & Arnold, 2008, p. 477).

<sup>b</sup> A sample item is “I use more time for rearing young academics than for making progress in my own career” (Zacher, Rosing, Frese, et al., 2011, p. 244).
Table 2
Meta-analytical results of antecedents and outcomes of the generativity motive.

| Hypothesis | Antecedents of the generativity motive | Outcomes of the generativity motive |
|------------|--------------------------------------|-------------------------------------|
| H1(+)      | Chronic age (all studies)            | Generative behavior                 |
|            | 31 12813 0.092 0.101 0.098 0.067,0.136 | 4 1097 0.462 0.517 0.101 0.418,0.617 |
|            | Age (restricted range)a               | Work motivation                      |
|            | 16 5367 0.020 0.023 0.075 –0.014,0.060 | 11 4942 0.243 0.277 0.139 0.141,0.413 |
|            | Age (full range)a                    | Communion                            |
|            | 15 7446 0.144 0.158 0.078 0.118,0.197 | 4 607 0.215 0.249 0.104 0.147,0.351 |
|            | Subjective age                        | Work centrality                      |
|            | 3 1582 0.045 0.046 0.157 –0.132,0.224 | 6 1160 0.387 0.475 0.177 0.333,0.617 |
|            | Tenure (restricted range)             | Challenging job demands              |
|            | 11 4136 0.120 0.127 0.080 0.080,0.174 | 3 1857 0.183 0.205 0.038 0.161,0.248 |
|            | Tenure (full range)                   | Job autonomy                          |
|            | 9 3687 0.139 0.147 0.060 0.108,0.186 | 5 2669 0.226 0.270 0.105 0.178,0.362 |
|            | Open future time perspective           | Work hours                           |
|            | 6 3548 0.048 –0.001 0.071 –0.058,0.056 | 8 2901 0.117 0.122 0.059 0.080,0.163 |
|            | Gender (0 = male, 1 = female)         | Supervisory status                    |
|            | 18 7910 –0.002 0.000 0.057 –0.026,0.026 | 5 2794 0.119 0.123 0.209 –0.060,0.307 |
|            | Education (higher = higher levels)    | No. of employees supervised           |
|            | 12 6350 0.051 0.054 0.054 0.024,0.085 | 5 2122 0.064 0.067 0.012 0.056,0.077 |
|            | Health (higher = better health)       | Income                               |
|            | 11 7223 0.092 0.103 0.073 0.060,0.146 | 3 1550 0.149 0.155 0.017 0.136,0.174 |
|            | Agency                                | Generative behavior                  |
|            | 4 607 0.243 0.277 0.139 0.141,0.413 | 4 1097 0.462 0.517 0.101 0.418,0.617 |
|            | Commination                           | Work motivation                      |
|            | 4 607 0.215 0.249 0.104 0.147,0.351 | 11 4942 0.243 0.277 0.139 0.141,0.413 |
|            | Occupational self-efficacy            | Communion                            |
|            | 3 387 0.266 0.347 0.117 0.215,0.480 | 4 607 0.215 0.249 0.104 0.147,0.351 |
|            | Positive affect                       | Work centrality                      |
|            | 7 2278 0.329 0.363 0.135 0.263,0.462 | 6 1160 0.387 0.475 0.177 0.333,0.617 |
|            | Negative affect                       | Challenging job demands              |
|            | 8 2319 –0.112 –0.120 0.066 –0.166 | 3 1857 0.183 0.205 0.038 0.161,0.248 |
|            | Job satisfaction                      | Job autonomy                          |
|            | 19 5091 0.215 0.252 0.101 0.206,0.297 | 5 2669 0.226 0.270 0.105 0.178,0.362 |
|            | Affective organizational commitment   | Work hours                           |
|            | 4 1422 0.325 0.354 0.196 0.162,0.546 | 8 2901 0.117 0.122 0.059 0.080,0.163 |
|            | Job strain                            | Supervisory status                    |
|            | 4 2189 –0.079 –0.086 0.051 –0.136 | 5 2794 0.119 0.123 0.209 –0.060,0.307 |
|            | Life satisfaction                     | No. of employees supervised           |
|            | 6 1830 0.241 0.282 0.070 0.225,0.338 | 5 2122 0.064 0.067 0.012 0.056,0.077 |
|            | Self-esteem                           | Income                               |
|            | 3 1831 0.277 0.306 0.033 0.268,0.343 | 3 1550 0.149 0.155 0.017 0.136,0.174 |
|            | Mentoring relationship quality        | Generative behavior                  |
|            | 4 549 0.334 0.388 0.121 0.270,0.506 | 4 1097 0.462 0.517 0.101 0.418,0.617 |
|            | Volunteering work                     | Work motivation                      |
|            | 3 2850 0.169 0.187 0.062 0.117,0.257 | 11 4942 0.243 0.277 0.139 0.141,0.413 |
|            | Meaningful contribution               | Communion                            |
|            | 3 764 0.404 0.501 0.101 0.386,0.616 | 4 607 0.215 0.249 0.104 0.147,0.351 |
|            | Career satisfaction                   | Occupational self-efficacy            |
|            | 3 764 0.227 0.280 0.112 0.154,0.407 | 3 387 0.266 0.347 0.117 0.215,0.480 |
|            | Motivation to continue working        | Positive affect                       |
|            | 6 2480 0.075 0.090 0.110 0.002,0.178 | 7 2278 0.329 0.363 0.135 0.263,0.462 |

Note. k = number of independent samples; N = total sample size; r = sample size-weighted correlation; \( r_c \) = sample size-weighted and reliability-corrected correlation; \( SD_r \) = standard deviation of \( r_c \); CI = confidence interval for \( r_c \); CV = credibility interval for \( r_c \); % var. = variance due to sampling error. *Samples with an age range of less than 40 years were considered as having a restricted age range. bThe residual variance of these estimates was negative. This occurs when the sampling error variance is larger than the observed variance, which is a common problem of meta-analyses with a small k (Barsky & Kaplan, 2007; Steel & Kammeyer-Mueller, 2003).

Age (chronological and subjective) and tenure were assessed in years. Both gender (0 = male, 1 = female) and supervisory status (0 = no supervisory responsibilities, 1 = supervisory responsibilities) were dummy coded. Education, subjective health, and future time perspective were coded such that higher values indicate a higher educational level, better health, and a more open-ended future time perspective, respectively.

4.4. Meta-analytic procedures

Each study was coded independently by the first author and a research assistant. Whenever discrepancies in coding were apparent, these were resolved by re-examining the primary studies. We coded sample characteristics (e.g., sample size, demographics), Cronbach’s alphas, and correlations. Moreover, we coded whether the measure of generativity assessed the generativity motive or generative behavior (coded 0 and 1 respectively). Several published and unpublished studies used multiple measures of the generativity motive (e.g., Arnold & Clark, 2016), or its antecedents or outcomes. In that case, we computed composite scores, following recommendations by Rudolph et al. (2020) and using the formula provided by Schmidt and Hunter (2015). If intercorrelations among
the measures were not reported and we thus could not compute a composite, we used the average correlation. If generativity was assessed by multiple sources, we computed the composite score and used it for subsequent analyses. If sample size varied for the different sources, we took a conservative approach and used the smallest sample size reported. In a similar vein, if different sample sizes were reported across correlations, we took the smallest reported among the variables of interest. If generativity was assessed for specific domains (e.g., work or parental generativity; De Haan & MacDermid, 1994; MacDermid et al., 1997), we took the work-related measure, as the focus of this meta-analysis is generativity at work. If a study failed to report Cronbach’s alpha, we substituted the missing value with the average alpha of that construct across the remaining studies.

We followed Hunter and Schmidt’s (2004) procedures for our meta-analysis and corrected for sampling and measurement error. We estimated sample size-weighted correlations (r) as well as sample size-weighted and reliability-corrected correlations (rc). The variables age, gender, tenure, education, supervisory status, number of employees supervised, income, and work hours were not corrected, as they are rarely affected by measurement error (Kooij et al., 2011; Ng & Feldman, 2008). We computed the 95% confidence intervals and the 80% credibility intervals for rc. If the 95% confidence interval does not contain zero, r is considered to be significant. If the 80% credibility interval includes zero, this indicates the presence of moderators. In addition, we calculated the percentage of variance due to sampling error (% var. SE). According to Hunter and Schmidt (2004), if sampling error explained less than 75% of the observed variance, moderators are likely to be present.

We also examined whether the magnitude of the relationship between age and generativity as well as tenure and generativity varied by the age range of the sample. To this end, we first coded each study regarding its age range restriction. In line with previous research by Moghimi et al. (2017), we considered samples with an age range of less than 40 years as restricted (coded 0) and samples with an age range of 40 or more years as having a full age range (coded 1), as the latter type of sample comprises young, middle-aged, and older employees simultaneously. Following recommendations by Steel and Kammeyer-Mueller (2003), we then used weighted least squared regression analysis specifying random effects models to test whether age range restriction moderates relationships between age and generativity as well as tenure and generativity.

In a similar vein, we tested whether relationships differ between studies examining relationships with the generativity motive and studies examining relationships with generative behavior. We also tested whether type of measurement (i.e., general measures vs. work-related measures) and publication status moderate relationships between generativity and its potential antecedents and outcomes. Please note that we only conducted moderator analyses if the categorical moderator was assessed by at least k = 2 studies at each level.

5. Results

We investigated two categories of potential antecedents (i.e., person- and context-related antecedents) and three types of potential outcomes (i.e., motivational, well-being, and career-related outcomes) of generativity. Table 2 shows the meta-analytic results of relationships with the generativity motive that were examined in a minimum of three samples. In total, there were k = 40 independent samples that included relationships with some of the assumed antecedents and/or outcomes of the generativity motive. Table 3 presents the meta-analytic results of relationships with generative behavior. In total, there were k = 13 independent samples that included relationships with some of the assumed antecedents and/or outcomes of generative behavior.

5.1. Generativity: relationship between motive and behavior

The meta-analysis of k = 4 studies indicated that the generativity motive is positively related to generative behavior (rc = 0.52), with the effect size being large in magnitude.

5.2. Person-related antecedents of generativity

The results of the meta-analysis showed significant positive relationships between chronological age and the generativity motive (rc = 0.10) and generative behavior (rc = 0.15), supporting Hypothesis 1. Sample range restriction in age moderated the relationship between age and the generativity motive, such that the relationship was stronger in samples with a full age range (rc = 0.16) than with a restricted age range (rc = 0.02, Z = −3.10, p < .01). We could not test if range restriction moderates the relationship between age and generative behavior because there were not sufficient studies with a restricted age range.

The meta-analysis showed no significant relationship between subjective age and the generativity motive (rc = 0.05) and, therefore, Hypothesis 2 was not supported. There were not enough studies available to meta-analyze associations between subjective age and generative behavior. In line with Hypothesis 3, tenure was significantly positively related to the generativity motive (rc = 0.13) and to generative behavior (rc = 0.18). The relationship between tenure and the generativity motive was moderated by range restriction, such that the relationship was stronger in samples with a full age range (rc = 0.15) than with a restricted age range (rc = −0.04, Z = −3.51, p < .001). We could not test moderating effects of range restriction for the relationship between tenure and generative behavior as there were not enough studies with a restricted age range. In contrast to Hypothesis 4, future time perspective was not significantly associated with the generativity motive (rc = −0.001). There were not sufficient data on links between future time perspective and generative behavior to meta-analyze.

Contrary to Hypothesis 5, there was no significant association of gender with the generativity motive (rc = 0.00) or generative behavior (rc = −0.05). Results did show a significant but small positive relationship between education and the generativity motive (rc = 0.05), while education was not significantly related to generative behavior (rc = 0.03). Hypothesis 6 was hence only partially
supported.

With regard to health, results revealed a small positive relationship with the generativity motive ($r_c = 0.10$), suggesting that, consistent with expectations, better health is associated with a stronger generativity motive. There was no significant relationship between health and generative behavior ($r_c = 0.03$). Thus, Hypothesis 7 was only partially supported.

Agency ($r_c = 0.28$) and communion ($r_c = 0.25$) were positively related to the generativity motive, which supports Hypotheses 8 and 9, respectively. There were not sufficient studies on associations between agency, communion, and generative behavior to meta-analyze.

In line with Hypothesis 10, work centrality was positively related to the generativity motive ($r_c = 0.48$). There were not enough studies on work centrality and generative behavior to meta-analyze.

5.3. Context-related antecedents of generativity

Consistent with Hypothesis 11, challenging job demands were positively related to the generativity motive ($r_c = 0.21$). There was an absence of studies reporting correlations between these job demands and generative behavior.

The meta-analysis also revealed that job autonomy is positively related to the generativity motive ($r_c = 0.27$), providing support for Hypothesis 12. There were not sufficient studies reporting associations between job autonomy and generative behavior. In line with Hypothesis 13, work hours were positively related to the generativity motive ($r_c = 0.12$) and generative behavior ($r_c = 0.10$). In support of Hypothesis 15, number of employees supervised had a positive, albeit very small relationships with the generativity motive ($r_c = 0.07$) and generative behavior ($r_c = 0.08$). Income was positively associated with the generativity motive ($r_c = 0.16$), lending support to Hypothesis 16. There were not sufficient studies to meta-analyze associations between income and generative behavior.

5.4. Outcomes of generativity

5.4.1. Motivational outcomes

Results revealed that the generativity motive was moderately positively related to work motivation ($r_c = 0.42$). Generative behavior also had a positive relationship with work motivation ($r_c = 0.22$). Hypothesis 17 was thus supported. The generativity motive had a positive meta-analytic correlation with occupational self-efficacy ($r_c = 0.35$), providing support for Hypothesis 18. There were no studies on links between generative behavior and occupational self-efficacy.

5.4.2. Well-being outcomes

In line with Hypothesis 19, the generativity motive ($r_c = 0.36$) and generative behavior ($r_c = 0.14$) were each positively correlated with positive affect. The generativity motive was negatively related to negative affect ($r_c = -0.12$), whereas generative behavior was not significantly related to negative affect at work ($r_c = -0.01$). Hypothesis 20 was therefore only partially supported. Consistent with Hypothesis 21, the generativity motive ($r_c = 0.25$) and generative behavior ($r_c = 0.13$) were each positively related to job satisfaction. Results of the meta-analysis further indicated a positive association between the generativity motive and affective organizational commitment ($r_c = 0.35$), providing support for Hypothesis 22. There were no studies reporting relationships between generative behavior and affective organizational commitment. The generativity motive was negatively associated with job strain ($r_c = -0.09$), lending support to Hypothesis 23. The effect size, however, was rather small. There were no studies on generative behavior and job strain. In line with Hypothesis 24, the generativity motive was positively related to life satisfaction ($r_c = 0.28$). There were too few studies to meta-analyse associations between generative behavior and life satisfaction. Consistent with Hypothesis 25, results revealed that the generativity motive is positively related to self-esteem ($r_c = 0.31$). There were not enough studies to analyze relationships between generative behavior and self-esteem.

5.4.3. Career-related outcomes

In support of Hypothesis 26, the generativity motive was positively associated with mentoring relationship quality ($r_c = 0.39$). The meta-analysis furthermore showed that the generativity motive was positively related to post-retirement volunteering work ($r_c = 0.19$), which is in line with Hypothesis 27. The generativity motive was also positively associated with perceived contribution (i.e., a person’s sense that he/she has meaningfully contributed to their organization, $r_c = 0.50$) and career satisfaction ($r_c = 0.28$), providing support for Hypotheses 28 and 29, respectively. Note that the three samples, while independent, all stemmed from the same study (Templer et al., 2010). Specifically, this study found that generative motives to continue working were positively related to career satisfaction and perceived contribution in three samples of self-employed, bridge-employed, and people in career jobs (Templer et al., 2010).

The meta-analysis revealed that the generativity motive had a small positive correlation with the motivation to continue working ($r_c = 0.09$), but that generative behavior was negatively related to the motivation to continue working ($r_c = -0.15$). Hence, Hypothesis 30 was only partially supported.

5.5. Moderator analyses

The results of the moderation analyses for type of measurement and publication status can be found in Table S2 of the online
Table 3
Meta-analytical results of antecedents and outcomes of generative behavior.

| Antecedents of generative behavior | k | N      | r     | r_c   | SD_r  | 95% CI      | 80% CV    | % var. SE | Hypothesis |
|-----------------------------------|---|--------|-------|-------|-------|-------------|-----------|-----------|------------|
| Age (all studies)                 | 8 | 2541   | 0.145 | 0.150 | 0.155 | 0.043, 0.257 | -0.025, 0.335 | 12.6       | H1(+), supported |
| Tenure (all studies)              | 7 | 2413   | 0.175 | 0.180 | 0.189 | 0.094, 0.279 | 0.073, 0.288 | 27.8       | H3(+), supported |
| Gender (0=male, 1=female)         | 7 | 2411   | -0.050| -0.052| -0.078| -0.109, 0.006| -0.124, 0.020 | 47.9       | H5(+), not supported |
| Education                         | 5 | 1757   | 0.028 | 0.029 | 0.099 | -0.050, 0.107| -0.064, 0.121 | 35.5       | H6(+), not supported |
| Health                            | 5 | 1743   | 0.026 | 0.025 | 0.086 | -0.050, 0.100| -0.061, 0.110 | 39.1       | H7(-), not supported |
| Work hours                        | 4 | 1602   | 0.127 | 0.131 | 0.051 | 0.081, 0.180 | 0.116, 0.146 | 94.4       | H13(+), supported |
| Supervisory status                | 4 | 2077   | 0.095 | 0.099 | 0.179 | -0.076, 0.274| -0.123, 0.321 | 5.9        | H14(-), not supported |
| Number of employees supervising   | 4 | 1184   | 0.074 | 0.077 | 0.069 | 0.010, 0.144 | 0.030, 0.124 | 71.1       | H15(+), supported |

Outcomes of generative behavior

|                        | k | N      | r     | r_c   | SD_r  | 95% CI      | 80% CV    | % var. SE | Hypothesis |
|------------------------|---|--------|-------|-------|-------|-------------|-----------|-----------|------------|
| Work motivation         | 4 | 1602   | 0.206 | 0.216 | 0.157 | 0.062, 0.371| 0.024, 0.409 | 9.2        | H17(+), supported |
| Positive affect         | 3 | 1056   | 0.129 | 0.141 | 0.048 | 0.086, 0.195| b         | –         | H19(+), supported |
| Negative affect         | 3 | 1056   | -0.010| -0.012| 0.041 | -0.058, 0.034| b         | –         | H20(-), not supported |
| Job satisfaction        | 8 | 1610   | 0.116 | 0.134 | 0.113 | 0.056, 0.212| 0.020, 0.248 | 37.7       | H21(+), supported |
| Motivation to continue working | 4 | 1186   | -0.147| -0.151| 0.126 | -0.274, 0.295| -0.027, 0.321| 20.3       | H30(-), not supported |

Note. k = number of independent samples; N = total sample size; r = sample size-weighted correlation; r_c = sample size-weighted and reliability-corrected correlation; SD_r = standard deviation of r_c; CI = confidence interval for r_c; CV = credibility interval for r_c; % var. SE = variance due to sampling error. ^As there was only one study with a restricted age range, we cannot report meta-analytic results for full age range and restricted age range separately. b The residual variance of these estimates was negative. This occurs when the sampling error variance is larger than the observed variance, which is a common problem of meta-analyses with a small k (Barsky & Kaplan, 2007; Steel & Kammermueller, 2003).

appendix (https://osf.io/kze9p/). The meta-analytic correlations with the generativity motive and generative behavior are displayed in Tables 2 and 3, respectively.

5.5.1. Generativity motive vs. generative behavior

The moderator generativity motive versus generative behavior was only significant for two out of 11 tested relationships. The relationship between generativity and work motivation was stronger for the generativity motive (r_c = 0.42) than for generative behavior (r_c = 0.22, Z = -2.36, p = .02). Furthermore, the association between generativity and negative affect was more strongly negative for the generativity motive (r_c = -0.12) than for generative behavior (r_c = -0.01, Z = 2.75, p < .01).

5.5.2. Type of measure

Moderation results showed that type of measure (general vs. work-related) emerged as a significant moderator for three associations between generativity and its antecedents and outcomes. Studies that used a general measure of the generativity motive (e.g., the Loyola generativity scale, McAdams & de St. Aubin, 1992) reported significantly stronger positive relationships with health (r_c = 0.41) than studies that used work-related measures of a generativity measure (r_c = 0.09, Z = -3.86, p < .001). In a similar vein, stronger positive associations between the generativity motive and mentoring were observed in studies employing a general measure of the generativity motive (r_c = 0.46) than in studies employing measures of work-related generativity (r_c = 0.28, Z = -2.20, p = .03). With regard to generative behavior, general measures (e.g., the generative behavior checklist, McAdams & de St. Aubin, 1992) showed stronger correlations with job satisfaction (r_c = 0.29) than work-related measures (r_c = 0.05, Z = -3.85, p < .001). Taken together, type of measurement moderated only a few of the investigated relationships between generativity and its assumed antecedents and outcomes but if effects emerged, they pointed towards stronger effects among studies using general measures than among studies using work-related measures of generativity.

5.5.3. Publication status

Based on the available data, we were able to test moderating effects of publication status for 12 out of 30 relationships with the generativity motive. Publication bias moderated relationships between the generativity motive and age, gender, tenure, education, and health. Specifically, the relationship between the generativity motive and age was weaker for published (r_c = 0.07) than for unpublished studies (r_c = 0.17, Z = -1.99, p = .05). The relationship between gender and the generativity motive was slightly positive for published (r_c = 0.03) but slightly negative for unpublished studies (r_c = -0.04, Z = 2.54, p = .01). Unpublished studies showed stronger associations between tenure and the generativity motive (r_c = 0.15) than published studies (r_c = 0.06, Z = -2.85, p < .01). Moderation analysis further showed that unpublished studies (r_c = 0.08) reported slightly stronger relationships with education than published studies (r_c = 0.03, Z = 2.07, p = .04).

With regard to generative behavior, we tested moderating effects of publication status for 5 out of 13 relationships. Publication status only moderated links between age and generative behavior, such that the relationship was stronger for published (r_c = 0.36) than for unpublished studies (r_c = 0.11, Z = 6.40, p < .001). In sum, except for the relationship between age and generative behavior, there was little indication for publication bias.
6. Discussion

The overarching aims of this meta-analysis were to improve our understanding of the nomological network of generativity and to further develop theory on generativity at work. To this end, we synthesized three decades of research on potential antecedents and work-related outcomes of the generativity motive and generative behavior. In the following, we first summarize and critically discuss our findings, and derive theoretical as well as practical implications. We then discuss limitations of our study and outline avenues for future research.

6.1. Key findings

We found mixed support for the person-related antecedents proposed by our conceptual model (see Fig. 1). In line with Erikson’s (1950) theory of psychosocial development and socioemotional selectivity theory (Carstensen, 1995), we found that chronological age and tenure were positively associated with generativity. The magnitude of these relationships was rather small, however. Furthermore, subjective age and future time perspective were not significantly related to the generativity motive, which seems to be contradictory to predictions made by socioemotional selectivity theory (Carstensen, 1995). It is important to note, however, that socioemotional selectivity theory posits that a limited future time perspective results in a prioritization of socioemotional goals, such as generativity, over information seeking goals, such as expanding one’s network (Carstensen, 1995). The studies included in this meta-analysis, however, did not test which of the aforementioned goals are prioritized over others, but instead reported correlations between time perspective and generativity. In any case, these age-related findings suggest that generativity can be evident at any point in (working) life and might just be slightly more salient at middle age (McAdams & Logan, 2004). This is also in line with research from the developmental psychology literature, suggesting that the generativity motive may already be evident in adolescents (Pratt & Lawford, 2014) and continues beyond retirement age (e.g., Cheng, 2009). However, there is a lack of longitudinal studies on generativity at work that investigate how generativity develops and manifests itself over the working lifespan.

Furthermore, while higher levels of generativity in women might be expected based on common stereotypes holding that women are more communal than men (Eagly, 2009), this was not supported by the current evidence. Similarly, associations between generativity and education, which is thought to be a resource for generativity (Kim et al., 2017), were either negligibly small (for the generativity motive) or non-significant (for generative behavior). This suggests that generativity at work does not depend on gender or educational background.

In line with predictions, we also found that, a healthy, personal resource, was positively related to the generativity motive but, unexpectedly, not to generative behavior. Further research is needed to better understand the role of health as a potential resource for generativity at work. Consistent with McAdams and de St. Aubin’s (1992) framework of generativity, communal as well as agentic traits were positively related to the generativity motive, suggesting that selfless (i.e., caring about others) and selfish traits (i.e., establishing a lasting legacy of the self) fuel this motive. Interestingly, among all potential antecedents, work centrality displayed the strongest positive relationship with the generativity motive. This could be interpreted as support for a context-specific view of generativity, which suggests that generativity is not necessarily present in all life domains (MacDermid et al., 1997), but is particularly evident in areas of personal significance.

Our conceptual model of generativity at work suggests several context-related antecedents of generativity; this was overall supported by the results of the meta-analysis. Challenging job demands were positively related to the generativity motive, which is in line with research highlighting the positive outcomes of challenging job demands (e.g., Van den Broeck et al., 2010). We also observed positive associations between job autonomy and generativity, which is consistent with conservation of resources theory (Hobfoll & Wells, 1998). People with high job autonomy may craft their job in such a way that it allows them to express their generativity, which might be a personal resource at work, considering the positive links with favorable work outcomes. The results further indicated that generativity is weakly positively related to other employment characteristics, including work hours, number of employees supervised, and income. These associations may reflect the tendency for those with generally higher engagement and responsibilities in the work domain (as opposed to other life domains) to view this domain as a context to enact generativity. As a caveat, occupying a supervisory position by itself was not significantly associated with the generativity motive and generative behavior. This suggests that only some supervisors are driven by generative concerns, whereas others may be driven by alternative motives such as self-improvement and status attainment.

Our results furthermore provide support for most of the outcomes of generativity that we included in our conceptual model. In line with the basic tenets of self-determination theory (Deci & Ryan, 2000), generativity – which constitutes an intrinsic life goal – was positively related to motivational (i.e., work motivation and occupational self-efficacy) and well-being outcomes (i.e., positive affect, job satisfaction, affective commitment, lower job strain, life satisfaction, and self-esteem). It is likely that generativity provides meaning to one’s identity and work (McAdams & de St. Aubin, 1992; Mor-Barak, 1995), which in turn may positively impact work-related well-being. The observed positive links with career-related outcomes suggest that generativity may motivate employees to invest time and effort in relationships with younger people (Doerwald et al., 2015), potentially explaining relationships with mentoring and post-retirement volunteering. Further research is needed though to support this assumed mechanism. The current evidence further suggests that the generativity motive is positively related to post-retirement career satisfaction and perceived contribution to the organization (Templer et al., 2010); generativity behavior was not assessed. Possibly, generativity fulfills intrinsic needs to meaningfully contribute to one’s work or organization (Mor-Barak, 1995; Templer et al., 2010).

The link between generativity and the motivation to continue working was equivocal: The generativity motive was weak and positively related to the motivation to continue working, whereas a negative link was found with generative behavior. One potential
exploration might be that employees who have behaved very generative at work have already satisfied their generativity motive at work, and therefore, this motive may no longer fuel their motivation to work past retirement age. We note that research on these topics was scarce, precluding us from drawing conclusions about the directionality of these relationships.

With respect to moderators, we found similar correlation patterns for the generativity motive and generative behavior. This might be as motives often serve as a proxy of motive-fitting behavior (McClelland, 1985). Accordingly, individuals who rate their generativity motives high may also display high levels of generative behavior. We further found only little evidence for moderating effects of operationalization or publication status.

6.2. Theoretical and practical implications

Overall, the results of the meta-analysis partially supported the conceptual model of generativity at work that we developed. Our findings illustrate additional antecedents of generativity at work (e.g., work centrality), including work-specific contextual influences (e.g., job autonomy), that have so far received limited attention. Previous theorizing on generativity at work has predominantly focused on age or age-related variables, such as future time perspective as central predictors of generativity (e.g., Grant & Wade-Benzoni, 2009; Kanfer & Ackerman, 2004; Zacher et al., 2015). However, we observed only weak or no relationships between age-related variables and generativity. Context-related variables, including work centrality and job autonomy, overall displayed stronger associations with generativity across studies. As proposed by McAdams and de St. Aubin (1992), however, generativity may arise from the interaction between person-related factors and external demands. Hence, future theory should consider interactions between person-related variables such as age, knowledge, work centrality, agency, and communion, on the one hand, and context-related variables, such as job resources, job demands, and organizational climate, on the other. Such an approach would provide a more comprehensive test of McAdams and de St. Aubin (1992) framework in the work context. Future theory could thereby also address questions about what is required at the individual and organizational level in order to become generative at work.

Considering its associations with favorable work outcomes, our findings suggest that generativity might be a valuable personal resource at work. Therefore, generativity could be incorporated into resource theories. For example, prior research on the job demands-resources model (Demerouti et al., 2001) has found that personal resources can explain associations between job resources and work engagement (Xanthopoulou et al., 2007) and mitigate the detrimental effects of role overload on job strain (Tremblay & Messevey, 2011). Generativity has so far not been considered in theoretical or empirical work on the job demands-resources model but might act as a mediator and moderator in associations between job resources and work engagement, and between job demands and job strain, respectively.

Third, our review of the extant literature shows that an important task for future theoretical work on generativity is to specify and test the mechanisms through which generativity affects work outcomes. Lifespan researchers have, for instance, proposed that satisfaction of needs for symbolic immortality (someone’s sense that he or she has made a lasting contribution; Huta & Zuroff, 2007) could be a potential mediator between generativity and well-being. The work context is one life domain in which people may strive to create a legacy (Wade-Benzoni et al., 2010; Zacher et al., 2012). Generative behavior may help to fulfill such legacy goals at work, resulting in higher well-being.

In terms of practical implications, our findings show that generativity is associated with many desirable work outcomes, including work motivation, affective organizational commitment, and work relationships (i.e., mentoring). Thus, practitioners may be well advised to implement human resource (HR) strategies that provide an opportunity for employees to enact their generativity motive. Although many researchers have argued that HR strategies should take into account generativity, particularly with regard to managing older workers (see for instance Calo, 2005; Hertel et al., 2013), research on this topic is limited and thus provides little guidance with respect to effective HR strategies that address the generativity motive. However, our meta-analysis indicates that giving employees the opportunity to mentor might be an excellent way to express generativity. Importantly though, generativity at work is not limited to mentoring and might also be expressed through leadership (Zacher, Rosing, Henning, et al., 2011), coaching (Calo, 2005), or being involved in activities surrounding an organizations’ social responsibilities (e.g., as an ambassador; Calo, 2005). These propositions await empirical testing, preferably with intervention studies.

6.3. Limitations and future research

Our meta-analysis has a number of limitations. Results of the meta-analysis relied on cross-sectional data and thus preclude drawing any conclusions with regard to causality. Longitudinal studies on generativity were overall very rare and experimental or intervention studies on generativity at work were lacking. In fact, we identified only four longitudinal studies that examined relationships between the assumed antecedents and outcomes of generativity (Kooij & Voorde, 2011; Milllová & Blatný, 2018; Westermeyer, 2004; Zhan et al., 2015). Another limitation is that some meta-analytic relationships were based on a small number of studies (i.e., k between 3 and 5). This bares the risk of second-order sampling error, which means that our meta-analytical estimates are still influenced by sampling error (Hunter & Schmidt, 2004). However, on average, our estimates were based on k = 7 studies (SDk = 6.09) with N = 2916 (SDN = 2642) participants. Even though it is desirable to have more studies when conducting meta-analyses, estimates based on a relatively small number of studies are nevertheless informative and preferable to estimates from a single study (Hunter & Schmidt, 2004).

Another limitation concerns the measures used to assess generativity. One of the most prominent measures of the generativity motive, the Loyola Generativity Scale (McAdams & de St. Aubin, 1992) has been criticized for its heterogeneity. More specifically, more than half of the items are thought to reflect generativity accomplishments instead of the generativity motive, which raises
Concerns about the validity of the scale as a measure of the generativity motive (Clark & Arnold, 2008; Zacher, Rosing, Henning, et al., 2011).

Moreover, almost all work-related measures of generativity assess the communal component of the construct (i.e., selfless motives and behaviors to support and guide the “next generation”) and neglect the agentic component (i.e., concerns and behaviors to establish an enduring legacy). We encourage researchers to extend existing measures and to add items that capture legacy concerns to ensure that the construct is assessed in all its facets. This is especially important as research has repeatedly shown that generativity is a blend of selfless and selfish traits (Ackerman et al., 2000; Newton et al., 2014). With regard to generative behavior, we recommend that researchers avoid relying on self-report measures. The generativity motive is an inherently internal construct that can be validly assessed with self-report. However, research has shown that individuals’ perceptions of their generative behavior can deviate from what is perceived by others. For example, one study found that leaders’ self-ratings of generativity correlated only moderately with ratings by followers ($r = 0.38$; Zacher, Rosing, Frese, et al., 2011). Therefore, future research on actual generative behavior should rely on both self-report measures and ratings by others, such as supervisors or co-workers.

Importantly, our work adds to construct clarity by differentiating between the generativity motive and generative behavior at work. We found that both constructs are moderately and positively related, yet distinct ($r_c = 0.52$). However, to further enhance construct clarity, future research needs to systematically test how the generativity motive and generative behavior differ from related constructs, such as altruistic or prosocial work motives and behavior. Another issue with current construct definitions of generativity in the work context is that they are rather narrow in their content, focusing mainly on mentoring, leadership, and knowledge sharing, which may best capture generative tasks of older but not necessarily younger workers. It is conceivable that generativity also involves other motives and behaviors that benefit “future generations” of employees, such as establishing environment friendly practices at work or fighting for better work conditions of younger people – tasks which may not strongly rely on knowledge and experience. We therefore recommend that researchers further develop the concept definition of generativity at work by for instance talking to practitioners and experts, working with focus groups, or conducting and reviewing case studies (Podsakoff et al., 2016). Understanding of the construct can also be enriched by clarifying the counterpart of generativity in younger people. In other words, how does younger people’s concern to give back to older people fit in the construct? Generative reciprocity at work might be expressed through upward intergenerational support, or reversed mentoring (Chaudhuri & Ghosh, 2012), and through taking care of older people as part of the job or outside of the work context.

An additional key task for future research is to provide a more nuanced picture of when, why, and for whom generativity is beneficial. For example, research on opportunities for generativity has started to elucidate some of the boundary conditions of generativity at work. Specifically, one study found that among older (but not younger) workers, opportunities for generativity at work were positively related to intergenerational contact quality, which in turn reduced age bias (Henry et al., 2015). Another study suggests that it is particularly important for older workers’ job satisfaction that their generativity needs are met through opportunities to be generative at work (Krumm, Grube, Hertel, 2013b). Peng et al. (2019) found that work meaningfulness could explain the relationship between opportunities to be generative and bridge employment intentions. Research has also demonstrated potential negative consequences when employees do not get the opportunity to be generative, even though it was promised to them. For example, Bal et al. (2011) showed that psychological contract breach regarding generativity was negatively associated with taking initiative, although the effects were mitigated by adaptive emotion regulation.

7. Conclusion

The goal of this study was to synthesize research on the motive and behavior to support and guide the “next generation” at work. Consistent with our conceptual model, we found that person-related (e.g., age, work centrality), and contextual antecedents (e.g., challenging job demands), were positively associated with generativity. In addition, generativity was positively related to motivational (e.g., work motivation), well-being (e.g., job satisfaction), and career-related outcomes (e.g., mentoring relationships quality, career satisfaction). Taken together, our findings (1) improve our understanding of the nomological network of both the generativity motive and generative behavior at work, (2) point to the importance of generativity for favorable work outcomes, and (3) highlight that future research is needed to better understand the mechanisms and boundary conditions of generativity at work.

CRediT authorship contribution statement

Friederike Doerwald: Conceptualization, Methodology, Formal analysis, Investigation, Writing – original draft, Writing – review & editing, Visualization, Project administration, Supervision, Funding acquisition. Hannes Zacher: Conceptualization, Methodology, Formal analysis, Writing – original draft, Writing – review & editing, Visualization, Supervision, Funding acquisition. Nico W. van Yperen: Conceptualization, Methodology, Writing – original draft, Writing – review & editing, Visualization, Funding acquisition. Susanne Scheibe: Conceptualization, Methodology, Writing – original draft, Writing – review & editing, Visualization, Funding acquisition.

Declaration of competing interest

The authors declare that there are no known conflicts of interest with regard to the submitted paper entitled “Generativity at Work: A Meta-Analysis.”
Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.jvb.2020.103521.

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