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Generational Differences in Work-Related Attitudes: A Meta-analysis

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Abstract
Purpose Differences among generations on a wide variety of outcomes are of increasing interest to organizations, practitioners, and researchers alike. The goal of this study was to quantitatively assess the research on generational differences in work-related attitudes and to provide guidance for future research and practice.
Design/Methodology/Approach We conducted a meta-analysis of generational differences on three work-related criteria: job satisfaction, organizational commitment, and intent to turnover. Our review of published and unpublished research found 20 studies allowing for 18 generational pairwise comparisons across four generations (Traditionals, Baby Boomers, Generation Xers, and Millennials) on these outcomes using 19,961 total subjects.
Findings Corrected mean differences for job satisfaction ranged from .02 to .25, for organizational commitment they ranged from −.22 to .46, and for intent to turnover the range was −.62 to .05. The pattern of results indicates that the relationships between generational membership and work-related outcomes are moderate to small, essentially zero in many cases.
Implications The findings suggest that meaningful differences among generations probably do not exist on the work-related variables we examined and that the differences that appear to exist are likely attributable to factors other than generational membership. Given these results, targeted organizational interventions addressing generational differences may not be effective.
Originality/Value This is the first known quantitative review of research on generational differences in the workplace.

Keywords Generational differences · Meta-analysis · Job satisfaction · Organizational commitment · Intent to turnover

There is a growing sense among a group of authors, consultants, trainers, and management gurus that there are substantive and meaningful generational differences between individuals in today's workplaces. These differences are often summarized in terms of descriptors on sets of characteristics that define each generation and differentiate it from others. In terms of the way the generations are sometimes described, members of the Silent (aka Traditional or Mature)[1] generation are labeled conservative and disciplined (Strauss and Howe 1991), Baby Boomers are called time-stressed and materialistic (Strauss and Howe 1991), Generation Xers are identified as skeptical and individualistic (Kupperschmidt 2000), and Millennials are believed to be socially conscious, yet highly cynical

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[1] Strauss and Howe (1991) use the term "Silent Generation" but most of the studies that were meta-analyzed used the term "Traditional" and therefore we refer to this group as "Traditional" throughout the "Results" section. The term "Mature" is also occasionally used.

and narcissistic (Twenge et al. 2008). Popular-press articles have made claims about how these differences impact outcomes in a variety of settings; among the most cited are the effects of generational differences on work-related outcomes such as commitment, satisfaction, motivation, risk-taking, and leadership style. Professional organizations such as the Society for Human Resource Management have conducted surveys of their members about generational differences (Burke 2004), and practitioners and consultants have seized on alleged generational differences developing seminars and interventions designed to help organizations deal with them.

Before proceeding, it is important to note that generations, as they have generally been written about, refer to groups of individuals (i.e., cohorts) based on shared experiences at similar ages. The idea is that common experiences shared by individuals of a particular age at a particular point in time create similarities (e.g., attitudes, political orientations, general dispositions) among those in the cohort. For generations, these common experiences have been suggested to be events like the Depression, World War II, the Civil Rights movement, and the September 11 terrorist attacks. In contrast, age refers to variation between individuals associated with aging caused by maturation, life stage, or other developmental factors. These two ideas are computationally connected in that age is often used to define generational membership and the two are sometimes used interchangeably in the generational literature. That said, because nearly all the empirical research on generational differences uses the conceptualization of generations as cohorts of individuals created by shared experiences, we used that approach for the present effort.

While generational stereotypes are widely held and promulgated (a recent Google search on "generation differences in the workplace" returned over 18 million hits), empirical evidence backing them up has been mixed at best, and the research faces challenging conceptual, definitional, methodological, and statistical issues. Recent reviews (e.g., Giancola 2006; Macky et al. 2008b; Parry and Urwin 2010), several special issues of journals (e.g., *Journal of Managerial Psychology*, 2008; *Journal of Business and Psychology*, 2010; *Perspectives on Psychological Science*, 2010), and a report by Sackett (2002) to The National Academies have raised questions about the empirical evidence supporting such differences and the methodological challenges associated with studying them. Given that most publications on generational differences appear in the popular press, the peer-reviewed literature is limited, and the inherent methodological challenges, there are questions as to whether the claimed differences actually do exist.

What is clear is that today's workplaces include employees with a broad range of ages and generational membership, and this variation raises questions about the workplace and the dynamics among employees. According to the International Labour Organization (2010), for the active workforce in the United States in 2008, 5% was over 65 years of age, 37% was between the ages of 46 and 65, 33% was between the ages of 30 and 45, and 25% of the workforce was under age 30 meaning that individuals from at least four generations are represented. Many individuals born immediately before or during World War II are still employed in organizations, often times in upper management and executive positions. Those born later, in the 1960s, 1970s, 1980s, and 1990s, are entering or advancing towards mid-career in their workplaces. All these individuals are in the workforce at the same time, creating the potential for cohort-based differences, difficulties, and disputes.

Similar to what happened with gender and racial diversity in the workforce, generational variation of workers raises questions about the nature, characteristics, and, most importantly, the consequences of supposed generational differences. Although a great number of primary research studies, including several meta-analyses, have been conducted on gender (e.g., Ng and Feldman 2008) and racial differences (e.g., Roth et al. 2003) in the workplace, there is no such comprehensive quantitative review of the research on generational differences in work-related outcomes (Twenge et al. 2010, addressed a few of these issues and Parry and Urwin 2010, reviewed the literature on work values, noting general findings and trends).

The purpose of this article, therefore, is to meta-analyze the effects of generational differences on work-related outcomes. We begin by examining the definitional and theoretical underpinnings of hypothesized generational differences. Next, we review the literature on how and why generational differences might have an impact on various outcomes before turning to methodological issues and challenges in conducting this type of research. Finally, we present a meta-analysis of primary studies of generational differences for several work-related outcomes.

Definitional and Theoretical Issues

Defining Generations

There are several definitions of the term generation that are used in the generational differences literature. The definitions are similar but have expanded over time. Mannheim (1952) described generations as social constructions whereby those of a particular age or set of ages are defined by historical and social events. In essence, a generation is a cohort of similarly aged people who experience common historical events. This idea was echoed by Ryder (1965), who described a generation more specifically as an

"aggregate of individuals who experienced the same event within the same time interval" (p. 845). Several recent studies have used Kupperschmidt's (2000) definition of a generation as "an identifiable group that shares birth years, age, location, and significant life events at critical developmental stages" (p. 66), adding a developmental aspect to the definition. Other researchers have used similar definitions suggested by Strauss and Howe (1991) and Smola and Sutton (2002).

What is consistent across these conceptualizations is that a generation is defined as a group of individuals, who are roughly the same age, and who experience and are influenced by the same set of significant historical events during key developmental periods in their lives, typically late childhood, adolescence, and early adulthood. Further, these differences are not attributable solely to an individual's age but rather to the common influence of shared experiences on the cohort.

How Do Generational Cohorts Develop?

The premise behind generations is that individuals are influenced by historical events and cultural phenomena that occur during key developmental stages (Noble and Schewe 2003; Twenge 2000) and may lead to the formation of impactful collective memories (Dencker et al. 2008). These historical, social, and cultural effects, along with other factors, have been hypothesized to impact the development of individual's attitudes, values, and personality characteristics (e.g., Caspi and Roberts 2001; Caspi et al. 2005). Parry and Urwin (2010) note the differences between the more demographically framed concept of cohorts, based solely on shared birth year, and the more sociologically framed concept of generations, which include the historical events that impact the cohort. The latter approach is the one generally used by those studying generational differences.

It is worth noting that the significant historical events that may help define generations vary greatly depending on location and experience. Historical and cultural events experienced by individuals growing up in the United States in the 1950s and 1960s were very different in key ways from those experienced by individuals growing up in Russia, China, or Brazil, raising questions about the generalizability of generations across cultures. As generational conceptualizations are often based on historical events in the United States, caution must be exercised in generalizing cohorts, years, and labels to individuals who did not experience those same events (e.g., Parry and Urwin 2010).

What Are the Different Generations?

The most common typology of generations in the United States was suggested by Strauss and Howe (1991), who used demographic and historical data to identify generations going back >400 years. They defined a generation as: "a special cohort-group whose length approximately matches that of a basic phase of life, or about twenty-two years" (p. 34). Their taxonomy includes four generations that are present in the modern workplace: Silent, Baby Boomer, Thirteenth (aka Generation X), and Millennial, although each of these specific labels has a history that precedes Strauss and Howe.[2]

When Are the Generations?

Though most authors across countries have adopted common labels and the same general time frames containing their members, there is substantial variance on exactly when each generation starts and ends. Figure 1 graphically represents the range of birth years used by various authors. For example, the Baby Boom generation, about which there seems to be the most agreement on start and end dates, has starting years ranging from 1943 to 1946 and ending years from 1960 to 1969. Generation X has starting years varying from 1961 to 1965 and continuing on to 1975 to 1981. There is a similar pattern for the Silent and Millennial generations. It is clear that although the labels may be generally agreed upon, the actual start and end dates used to define each generation vary widely (Smola and Sutton 2002). This lack of consistency has implications for the conceptual definition of the generations, their operationalization (i.e., when they start and finish), and the assessment of their impact on outcomes.

What Impact Do Generations Have and How?

It is the cohort-shared characteristics and experiences that have interested researchers and popular-press writers, speakers, and consultants. If a simple and concise description of a cohort of individuals could be generated, and if these descriptions were broadly applicable to them, they could have significant ramifications for their behavior in a variety of settings. Generational membership could become an easy and convenient proxy for the characteristics of an entire population of individuals. Along these lines,

[2] "The Silent Generation" gained widespread use after it appeared in a late 1951 TIME magazine article about "today's youth" (TIME 1951, November 5), although it may have first appeared a few years earlier. The term "Baby Boom" was first used to describe children born post World War II by Westoff (1954) in a piece on differential fertility rates. "Generation X" was first used in a book by Hamblett and Deverson (1965) to describe teenagers who were living outside of acceptable conservative mores and was popularized in Coupland's novel, *Generation X: Tales for an Accelerated Culture* (Coupland 1991). The term "Millennials" appeared in various popular-press articles and was later discussed in detail in Howe and Strauss's (2000) book, *Millennials Rising*.

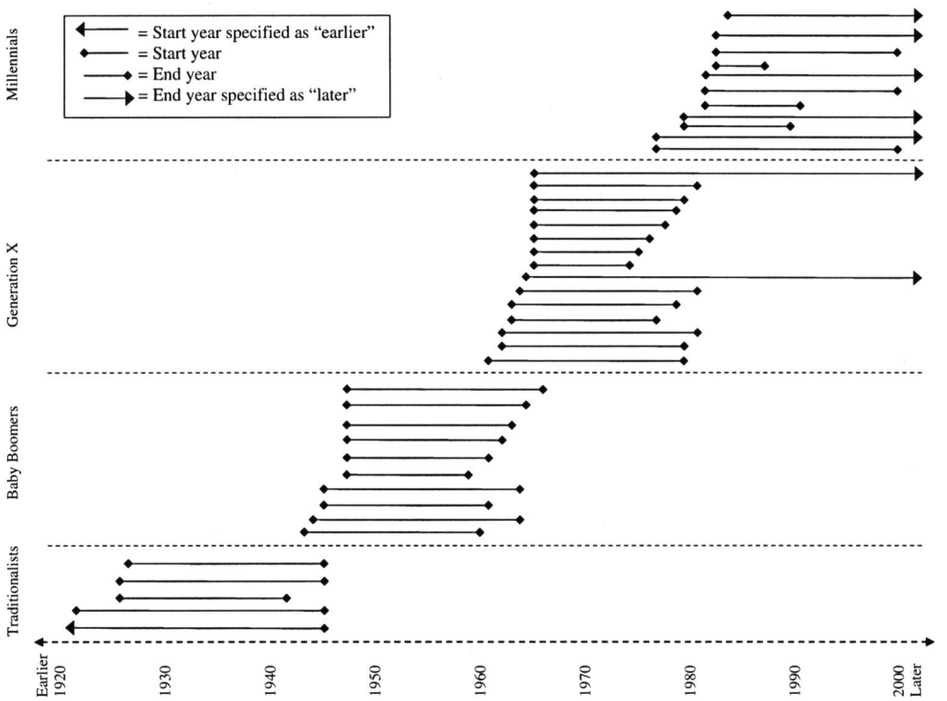

Fig. 1 Graphical representation of the birth years used to define generations in empirical studies considered for inclusion in the meta-analysis

researchers have investigated generational differences in domains as diverse as work values (Smola and Sutton 2002), learning orientation (D'Amato and Herzfeldt 2008), the use of influence tactics (Landry 2009), anxiety and neuroticism (Twenge 2000), depression among children (Twenge and Nolen-Hoeksema 2002), and narcissism (Trzesniewski et al. 2008).

One setting in particular where generational differences have been widely written about is the workplace. In a work setting, such simplifications and generalized differences among groups of employees could have major implications for the way organizations recruit, hire, train, reward, promote, and terminate their employees. For example, if all Generation Xers want autonomy in their jobs, work may need to be redesigned to increase independence or if Millennials are attracted to organizations by their level of technological savvy, recruiting practices may need to be modified to include virtual recruiting fairs. A recent special issue of the *Journal of Business and Psychology* (2010) examined this potential impact, dedicating the entire issue to enhancing understanding of Millennials in the workplace with research on topics such as work attitudes, work ethic, career perspectives, and performance. Numerous other authors and generational consultants (e.g., Shapira 2009, July 9) have also written about generational differences in the workplace and the potential benefits to organizations of understanding and capitalizing on these differences.

Some researchers have investigated differences in work-related outcomes across the generations. For example, a study by Westerman and Yamamura (2007) looked at differences in job satisfaction between Baby Boomers and their younger counterparts of Generations X and Y, hypothesizing that Baby Boomers would have lower satisfaction than Generations X and Y. They found that there were no significant mean differences in satisfaction between generations. Likewise, Cennamo and Gardner (2008) did not find significant differences in job satisfaction among Baby Boomers, Generation X, and Generation Y.

A study by D'Amato and Herzfeldt (2008) looked at differences between early and late Baby Boomers and early and late Generation Xers in organizational commitment, hypothesizing that older generations would have higher organizational commitment than younger generations. They found that Baby Boomers reported significantly higher organizational commitment than did Generation Xers. However, the generalizability of these finding to other organizational commitment research may be limited by the fact that they conceptualized commitment differently from the normative, affective, and continuance approach typically used. Davis et al. (2006) also hypothesized that Baby Boomers would have higher affective, normative, and continuance organizational commitment than Generation Xers. They only found significant differences for normative commitment, and the pattern of results was contrary to their hypotheses (Generation Xers were higher than Boomers).

A study by Kowske et al. (2010) provided a stronger test of differences in work attitudes among Boomers, Xers, and Millennials by controlling for age and time period effects.

They used cross-classified hierarchical linear modeling (HLM) to isolate cohort effects (i.e., generation) from age and time-period effects. This technique estimates variance components for each group classification variable (i.e., time-period and cohort) and each individual level independent variable (i.e., age) controlling for the other two effects. Thus, they were able to estimate the percentage of variance attributable to cohort alone, holding age and period constant. They found little support for differences among the generations in work satisfaction and turnover intentions. Of the few differences in outcomes they did report, the effect sizes were quite small, causing the authors to question their meaningfulness.

Other researchers have looked at different work-related variables such as motivation (e.g., Wong et al. 2008), training (e.g., Sayers 2007; Szamosi 2006), work life conflict and spillover (e.g., Beutell and Wittig-Berman 2008; Dilworth and Kingsbury 2005), and leadership style (e.g., Collins et al. 2009; Rodriguez et al. 2003), but there are few studies in each of these areas.

It is worth noting that little of the research on generational differences has a solid, theoretical foundation underpinning either the concept of generations or the specific hypotheses about the impact that such generations have. For example, Cennamo and Gardner (2008) cite general societal trends and some tangential generational research to support their hypotheses. D'Amato and Herzfeldt (2008) base their arguments on research on age differences as well as popular-press pieces and age differences research. Twenge et al. (2010) and Jurkiewicz (2000) also relied on popular-press pieces and anecdotal evidence while Smola and Sutton (2002) used research questions instead of hypotheses. In turn, Westerman and Yamamura (2007) cite Smola and Sutton's findings to support arguments. Overall, there is a limited theoretical support for the hypotheses about specific differences among the generations on work-related outcomes and the reasons for them.

Sociological research may provide some theoretical support for specific hypotheses about generational differences. Life course theory examines how significant social–historical events and experiences shape the behavior of individuals and generations of individuals over their entire lives and even across generations (e.g., Elder 1994, 1998; Gade 1991, 2009; MacLean and Elder 2007). While the life course literature does not directly address generational differences as conceptualized in our research, this theory's longitudinal perspective and focus on how individuals and their cohorts are shaped by the social–historical contexts they experience, fits well into the broader conceptualization of generational differences and might be used to support specific hypotheses about how and why groups of individuals might vary.

Issues in Studying Generational Differences

As noted above, not only is there little agreement on which birth year ranges define the generations in question but also a lack of consensus on what the significant shared experiences are that shape generational behavior, what collective individual differences are influenced by experience, and what behavioral outcomes are produced by these collective individual differences. There is also limited empirical research on what differences do exist, how big the differences are, or what effect they have on various outcomes, leaving many of the generalizations about these differences largely unsupported. Further, there is substantial debate about the best methods to test for generational differences.

Starting with the developmental and definitional issues, some have questioned whether individuals at the same stage of development will experience cultural and historical events similarly (e.g., Giancola 2006). In terms of defining a generation, most researchers have accepted Strauss and Howe's (1991) taxonomy of generations but, as noted above, there are varying start and end dates used. Regarding the specific generational differences, there have been empirical efforts designed to identify the discriminating characteristics and to quantify them but once again, these studies are limited in number and seem to show conflicting results when hypothesized differences are tested.

Methodologically, the main challenge in studying generational differences seems to be disentangling the differences attributable to generational membership from those due to other factors such as age and/or time period. Multiple researchers (Macky et al. 2008b; Rhodes 1983; Trzesniewski and Donnellan 2010) have identified this confound issue as the primary methodological challenge in studying generational differences. In addition, organizational experience, tenure, and technological advancements are also often confounded with age and generation and are also potential explanations for observed differences.

Despite this potentially critical limitation, almost all the studies on generational differences have conceptualized and operationalized the differences using cross-sectional designs. Empirical studies using longitudinal designs are rare and studies that include a conceptualization of the changing nature of generational differences over time are rarer still. Besides work in life course theory that looks at how significant social–historical events and experiences shape the behavior of individuals and generations of individuals over their entire lives (e.g., Elder 1994, 1998; Gade 1991, 2009; MacLean and Elder 2007), research in generational differences has almost unanimously approached the question cross-sectionally both in concept and in measurement.

Summary

Given all these issues, there is a need for better understanding about generational differences. While the review above might seem to indicate that there is not enough conceptual and methodological clarity to justify a meta-analysis, we argue just the opposite. First, there is precedent for conducting meta-analyses even when the underlying primary studies have systematic conceptual, methodological, or definitional issues (e.g., Rind et al. 1998). Second, for research areas where the primary literature has limitations, meta-analysis can help address some of those issues by quantifying extant findings, identifying conceptual gaps, suggesting areas for future research, and offering guidance for practice. The results of such a meta-analysis can therefore serve two purposes, both to summarize existing research and to identify gaps therein that need to be addressed by future efforts. Thus, with the limitations in mind, the goal of our research was to determine the extent to which research has found generational differences.

Method

Rules for Inclusion in the Meta-analysis

In order to identify all possible studies examining generational differences in work-related criteria (e.g., job satisfaction, organizational commitment, intent to stay/quit), the PsycINFO, ABI/Inform Complete, and EBSCO Host databases were searched. Each search included a combination of key terms for generation (generation, generational differences, generational cohort, birth cohort, baby boomer, generation X, generation Y, or millennial) and work-related outcomes (job satisfaction, commitment, intent to turnover/quit or intent to stay/remain, leader, leadership, training, attrition, retention, promotion, rewards, motivation).

After eliminating non-scholarly pieces (e.g., newspaper and magazine articles), our search efforts resulted in 265 abstracts (including articles, books, and dissertations). An additional 14 studies were collected through review of the past 3 years (2007–2009) of conference programs from the Society of Industrial Organizational Psychology and Academy of Management. To gather additional unpublished research on generational differences or any additional published studies, several messages were posted on two listservs, RMnet and HRDivnet; this resulted in an additional 31 investigations. The research team also contacted several journal editors and researchers in the area of generational differences asking for unpublished or in press pieces and obtained an additional 19 possible articles.

Overall, our efforts resulted in 329 published and unpublished empirically based articles across all work attitude areas searched. In reviewing all abstracts collected, 234 were eliminated because they (a) were unrelated to the workplace (e.g., generational differences in attitudes toward money), (b) did not include empirical quantitative data, (c) did not include a comparison of at least two generational cohorts (e.g., focused exclusively on Baby Boomers),[3] (d) did not report an effect size that was meta-analyzable (e.g., *d* or *r*), or (e) did not examine work-related criteria.

For the remaining 95 research efforts, the full text was reviewed to ensure that each met the criteria for inclusion. These studies were divided among three doctoral students to determine which should be included in the meta-analysis. Each article was reviewed by two of the students; any disagreements between reviewers were discussed with the group until a consensus was reached. Several inclusionary rules were established.

First, the research had to empirically and quantitatively test hypotheses on generational differences. Several articles focused on differences among age-range groups (dividing individuals by birth decade or at a specific age, e.g., Mottaz 1987).[4] Of the studies that used age-range groups, several had groups that did not map onto the generations as they have been defined (e.g., age-range groups cut across multiple generations). One study grouped individuals such that they were comparable with the generations but even so, there were several age-range groups that would have been excluded because they could not be assigned to only one generation. This would have left just a partial set of results from only one study. Accordingly, this study was excluded from the meta-analysis.

Second, the articles had to examine at least one of our focal criteria. Several articles examined tangential criteria (e.g., satisfaction with dress code rather than job satisfaction, or commitment to one's occupation rather than organizational commitment), which were excluded (e.g., Hu et al. 2004). Third, the study had to examine work outcomes using measures capable of being meta-analyzed. For example, several articles presented only ordinal data and thus were excluded (e.g., Jurkiewicz and Brown 1998, asked their participants to rank 15 work-related motivational factors in terms of what they wanted from their jobs).

[3] Because of variation in start and end dates across studies, we adopted the generational assignments used by the authors of the primary studies.

[4] Ng and Feldman (2010) reported that >90% of studies using age treated the variable as continuous and even when studies used age-range groups, they typically calculated correlations and not group differences. Similarly, our search revealed very few studies that used age-range groups to make group comparisons.

Finally, there needed to be a sufficient number of articles within each work outcome to include the outcome in the study (e.g., $k = 2$ for each comparison).[5] Based on the selection criteria, there were a sufficient number of primary studies to be meta-analyzed for job satisfaction, organizational commitment, and intent to stay/quit.[6] However, for training, leadership, and motivation, there were too few eligible studies to proceed with the meta-analysis. Studies within each of these categories tended to include widely varying criteria, had small sample sizes, or there were simply no primary studies to meta-analyze.

Therefore, of the 95 studies fully reviewed, 20 met our inclusion criteria and included sufficient information to calculate effect sizes. After these determinations were made, an additional faculty coder examined a subset of randomly selected articles from those eligible for inclusion. This rater confirmed the inclusion/exclusion determinations in each case and detected no errors in the coding of coefficients from those articles that were included.

Each of the included studies focused on at least one of the following work outcomes: job satisfaction ($k = 9$), organizational commitment (including general, affective, continuance, and normative, $k = 18$), and/or intent to stay/quit ($k = 7$). Therefore, differences between generations were compared across these three criteria using a total of six measures. Because of the relatively small number of effect sizes, we did not conduct any publication bias analyses (McDaniel et al. 2006; Rothstein et al. 2005).

Research Context

The primary studies included in our meta-analysis were conducted between 1995 and 2009. Seven of the studies appeared in academic journals, eleven were doctoral dissertations, one was a conference presentation, and one was an unpublished study. Four of the studies were conducted outside the United States, including one in Canada, one in Europe, and two in New Zealand. The studies included a mix of organization-specific and multi-organization samples. All the studies used cross-sectional designs.

Meta-analytic Procedure

We computed *d*s from reported means and standard deviations, using the meta-analytic procedures of Hunter and Schmidt (2004) to correct observed differences for sampling error and unreliability. We used Schmidt and Le's (2004) software to conduct the meta-analysis and compute credibility intervals, conducting separate meta-analyses for each of the six possible generation pairwise comparisons (Traditionals-Boomers, Traditionals-Generation X, Traditionals-Millennials, Boomers-Generation X, Boomers-Millennials, and Generation X-Millennials) for each of the six criterion variables. In each comparison, the younger generation's mean was subtracted from the older generation's mean such that a positive *d* indicates that the older generation's score was higher and a negative *d* indicated that it was lower on the criterion of interest.

When authors of original studies reported an internal consistency reliability coefficient for the job satisfaction, organizational commitment, or intent to turnover/remain measures, we used this value to correct the observed value for unreliability. When reliabilities were not reported, we used the reliability value generally reported in scale development papers for that measure. If established reliabilities were not available, we imputed the reliability based on the average internal consistency of the other studies included in the meta-analysis for each type of criterion measure based on the procedure used by Judge et al. (2002). For the 20 primary research studies, reliabilities were published in 13 of them, generally reported reliabilities were used for three, and the remaining four were imputed.[7] Although we did correct for unreliability of the criteria, we did not correct for range restriction.

In addition to reporting the estimated mean corrected *d*s, we also report the standard deviation, the 90% confidence intervals, and the 80% credibility intervals of the corrected *d*s. The confidence interval informs conclusions about the precision of the mean, providing an estimate of the variability around the estimated mean difference. The credibility interval informs conclusions about unexplained variance, variance that is not due to sampling error or differences in measurement error across studies. A wide credibility interval, or one including zero, indicates that additional moderator variables may be affecting the relationship of interest.

Possible moderators were determined by examining the primary studies. As all the primary studies used cross-sectional methods, methodology could not be tested as a moderator. Characteristics of the samples did vary somewhat but too few of the studies reported generation-specific

[5] While there is no universally agreed upon criteria for the number of studies and subjects necessary for meta-analysis, several recent meta-analyses have been published with just 2–4 studies and with sample sizes in the hundreds (e.g., Tourangeau and Yan 2007).

[6] Studies use the terms "intent to stay/remain" and "intent to quit/turnover" as indicative of the underlying construct turnover intentions. Therefore, studies examining any variation of turnover intentions were combined. Scales were reverse coded where appropriate.

[7] As an alternate approach to dealing with single item scales, we implemented Riketta's (2008) suggested procedure. For single item scales, he used the reliabilities imputed by Wanous and Hudy (2001), setting single-item scale reliabilities to .7. We found that the *d*s never varied >.02 after replacing the imputed reliabilities with .7. Because our original imputation method produced more conservative estimates, we report those results in the tables.

means for variables such as organizational tenure, subject age, or gender to conduct moderator analyses. Country of data collection varied and we did run the analyses with non-US data sets removed. Overall, because of the relatively small number of primary results data and the wide variation in information that was reported, we were able to conduct moderator analyses only for country of data collection. Ideally, we would have tested the birth years used to define generations as a moderator; however, although the primary studies agreed on the names of the generations, the start and end dates for each generation varied too widely (i.e., there was essentially no agreement) to conduct this analysis.

Results

Table 1 presents the sample and effect sizes from all the studies used in the meta-analysis. Table 2 presents additional details on the studies, data, and samples. Table 3 shows the demographics of all the primary studies in the meta-analysis including the *k*s and *N*s for each of the six criteria and for each of the six generation comparisons. As can be seen, comparisons between Boomers and Generation X and between Generation X and Millennials were possible for all six criteria. Boomers and Millennial comparisons were possible for four of the six criteria and Traditionals could only be compared with Boomers and Generation X on job satisfaction and not with Millennials. Because of the small number of primary studies overall, we included in the meta-analysis generation pairs if there were as few as two primary studies, assuming the study *N*s were sufficiently large enough to suggest stable estimates. This resulted in a total of 18 comparisons. It is worth noting that most of the studies had fairly large sample sizes. Had we used Huffcutt et al.'s (1996) weighting procedure for dealing with substantial variation in sample sizes among primary studies, every study in the meta-analysis would have been coded into the largest group, minimizing any concerns about large samples unduly impacting the overall results.

Table 4 shows the results of the meta-analyses on the six work-related criteria including *d* and corrected *d*, the standard deviation of the corrected *d*, 90% confidence intervals, 80% credibility intervals, and the percentage of variance in the corrected *d* accounted for by sampling error (% SE) for each of the 18 comparisons. Figure 2 shows the corrected *d*s along with the upper and lower 80% credibility intervals for each of the generation comparisons for each of the dependent variables. For job satisfaction, the corrected *d*s ranged from .02 to .25. The general pattern was that older generations were slightly more satisfied than younger generations. That said, these effect sizes would be classified as "small" according to Cohen (1988).[8] These small differences along with the low percent of variance attributable to sampling error for four of the five comparisons suggest that generation membership has little practical impact on job satisfaction and that other unmeasured variables may be important for job satisfaction.

Turning to organizational commitment, the results were similar, with corrected *d*s ranging from −.07 to .51 for general commitment, .09 to .22 for affective, −.05 to .42 for normative, and −.26 to .30 for continuance. The corrected *d* for Boomers and Generation Xers in general commitment (.51) could be considered moderate, indicating that Generation Xers, contrary to the popular literature, tended to report higher levels of commitment. However, there was no discernable pattern to the results. Older and younger generations varied in levels of commitment, with older generations sometimes being more and sometimes less committed. Again, the absolute magnitudes of most of the differences were small, many of the credibility intervals included zero, and a number of comparisons showed low percentage of variance attributable to sampling error.

The final criterion of interest, intent to turnover, showed slightly larger differences with corrected *d*s ranging from −.62 to .05. Two of the three generation comparisons showed corrected *d*s of −.53, for Boomers and Millennials, and −.62, for Generation X and Millennials, indicating that younger generations were more inclined to leave their organization than older generations. One of the three credibility intervals included zero.

We ran several of the meta-analyses with and without studies with large sample sizes to ensure they were not influencing the results. For most of the meta-analyses, there was little change (*d*s were within .00–.05) when these studies were removed. However, when Dudley et al.'s (2009) study was removed from the Boomers and Millennials comparison for job satisfaction, the corrected *d* dropped from .11 to −.05. Removing Wieck et al.'s (2009) findings from the Generation X and Millennials comparison for intent to turnover changed the corrected *d* from −.62 to −.17 suggesting these studies disproportionately impacted the estimated effect sizes; in both cases removing these studies lowered the estimates of *d*.

Given that some of the primary studies used data that were collected in countries other than the United States, and that the conceptualizations of the generations used in the research were based on historical US events, we re-ran our meta-analyses using only Anglo countries (US, Canada, New Zealand) and then again after removing all non-US countries. These results are also reported in Table 4. For the Anglo-only analyses, the results were essentially

[8] We use Cohen's (1988) benchmarks when interpreting the effect sizes: .2–.3 is considered small, around .5 is considered moderate, and .8 and higher is considered a large effect.

Table 1 Primary study sample characteristics and effect sizes

Study	N_T	N_B	N_X	N_M	N_{Total}	d					
						Job sat	General comt	Affective comt	Normative comt	Continuance comt	Intent to turnover
Carley (2009)											
Boomers–Gen X		131	102		233	−.27					
Boomers–Millennials		131		60	191	−.03					
Gen X–Millennials			102	60	162	.25					
Cennamo and Gardner (2008)											
Boomers–Gen X		117	288		405	.00		.16			−.30
Boomers–Millennials		117		83	200	.19		.17			−.45
Gen X–Millennials			288	83	371	.20		.00			−.15
Chan (2006)											
Gen X–Millennials			60	60	120	.17					
Curry (2008)											
Boomers–Gen X		49	51		100	−.10					
D'Amato and Herzfeldt (2008)											
Boomers–Gen X		474	1,192		1,666		.53				.10
Daboval (1998)											
Boomers–Gen X		44	123		167		2.08				
Davis et al. (2006)											
Boomers–Gen X		197	185		382			−.12	−.25	.14	
Dilworth and Kingsbury (2005)											
Traditionals–Boomers	441	1,463			1,904	.25					
Traditionals–Gen X	441		833		1,274	.32					
Boomers–Gen X		1,463	833		2,296	.09					
Dudley et al. (2009)											
Boomers–Gen X		2,871	2,871		5,742	.01					
Boomers–Millennials		2,871		2,871	5,742	.14					
Gen X–Millennials			2,871	2,871	5,742	.13					
Eaton (2009)											
Traditionals–Boomers	18	260			278	−.31					
Traditionals–Gen X	18		106		124	−.60					
Boomers–Gen X		260	106		366	−.29					
Boomers–Millennials		260		46	306	−.34					
Gen X–Millennials			106	46	152	−.06					
Faulk (1997)											
Boomers–Gen X		206	51		257		.11				
Hess and Jepsen (2009)											
Boomers–Gen X		100	107		207			.14			−.32
Boomers–Millennials		100		77	177			.38			−.50
Gen X–Millennials			107	77	184			.24			−.18
Hollman (2008)											
Boomers–Gen X		116	219		335			.22	.20	.41	
Gen X–Millennials			219	20	239			−.25	−.27	.35	
Leiter et al. (2009)											
Boomers–Gen X		193	255		448						.65
Macky et al. (unpublished)											
Boomers–Gen X		484	399		883	.09	.19				
Boomers–Millennials		484		103	587	.03	.08				

Table 1 continued

Study	N_T	N_B	N_X	N_M	N_{Total}	*d*					
						Job sat	General comt	Affective comt	Normative comt	Continuance comt	Intent to turnover
Gen X–Millennials			399	103	502	−.06	−.11				
Miller (2007)											
Boomers–Gen X		61	48		109			−.02			−.21
Boomers–Millennials		61		41	102			.28			−.36
Gen X–Millennials			48	41	89			.30			−.15
Moody (2008)											
Boomers–Gen X		79	48		127		.22				
Boomers–Millennials		79		74	153		.33				
Gen X–Millennials			48	74	122		.11				
Patalano (2008)											
Gen X–Millennials			100	103	203			.99	1.08	−.90	
Sujdak (2003)											
Boomers–Gen X		81	43		124	−.04	.18				.32
Wieck et al. (2009)											
Boomers–Gen X		864	601		1,465						−.06
Boomers–Millennials		864		94	958						−.49
Gen X–Millennials			601	94	695						−.94

Boomers Baby Boomers, *Gen X* Generation X, N_T sample size of Traditionals, N_B sample size of Baby Boomers, N_X sample size of Generation X, N_M sample size of Millennials, N_{Total} combined sample size, *job sat* job satisfaction, *comt* commitment

Table 2 Primary study details of data and methods

Study	Data collection method	Year of data collection	Subject pool	Jobs held by subjects
Carley (2009)	Paper	N/A	Healthcare professionals	Physicians, physicians' assistants, nurses, and physical/occupational therapists
Cennamo and Gardner (2008)	Online	N/A	Employees from law firms, media corporations, construction industry, pharmaceutical distribution, and information technology	N/A
Chan (2006)	Combination	N/A	Employees	Professional jobs
Curry (2008)	Paper	N/A	Employees of a regional healthcare organization	N/A
D'Amato and Herzfeldt (2008)	Online	N/A	Employees	Managerial jobs
Daboval (1998)	Paper	N/A	Employees of a manufacturing company	N/A
Davis et al. (2006)	Online	N/A	Employees from various state agencies and universities	Information technology jobs
Dilworth and Kingsbury (2005)	Archival	1997	Employees	N/A
Dudley et al. (2009)	Online	2006	Employees	Managerial and non-managerial jobs
Eaton (2009)	Online	N/A	Employees of a federal organization, including civilian, military, and contract	Secretarial, professional, and technical jobs
Faulk (1997)	Paper	1995–1996	Employees from a petroleum refinery, an airplane manufacturer, and a university	N/A
Hess and Jepsen (2009)	N/A	N/A	Employees from the following industries: insurance, finance, non-profits/ government, manufacturing	Administrative, managerial, HR, sales/ marketing, customer service;

Table 2 continued

Study	Data collection method	Year of data collection	Subject pool	Jobs held by subjects
Hollman (2008)	Online	N/A	Employees of UPS	N/A
Leiter et al. (2009)	N/A	N/A	Employees of various acute care facilities	Nurses
Macky et al. (unpublished)	Online	2005	Employees from a variety of organizations	N/A
Miller (2007)	Paper	N/A	Employees of various hotels	Front office and housekeeping supervisors and hourly employees
Moody (2008)	Paper	N/A	Employees from various financial services institutions	N/A
Patalano (2008)	Online	N/A	Employees of a large internet services company	N/A
Sujdak (2003)	Online	N/A	Members of an information technology professional association	Information technology jobs
Wieck et al. (2009)	Online	N/A	Employees of a large hospital system	Nurses

N/A data was not reported in the study

Table 3 Demographics for all studies

Outcome	Traditionals–Boomers			Traditionals–Gen X			Traditionals–Millennials			Boomers–Gen X			Boomers–Millennials			Gen X–Millennials		
	K	N_T	N_B	*K*	N_T	N_X	*K*	N_T	N_M	*K*	N_B	N_X	*K*	N_B	N_M	*K*	N_X	N_M
Job satisfaction	2	459	1,723	2	459	939	–			8	6,513	5,549	5	3,863	3,163	6	3,826	3,223
Organizational commitment																		
General	–			–			–			6	1,368	1,856	2	563	177	2	447	177
Affective	–			–			–			5	591	847	4	394	221	5	762	324
Normative	–			–			–			2	313	404	–			2	319	123
Continuance	–			–			–			2	313	404	–			2	319	123
Intent to turnover	–			–			–			7	1,890	2,534	4	1,142	295	4	1,044	295

Boomers Baby Boomers, *Gen X* Generation X, *K* number of primary studies, – fewer than 2 primary studies, N_T combined sample size of Traditionals, N_B combined sample size of Baby Boomers, N_X combined sample size of Generation X, N_M combined sample size of Millennials

the same, with corrected *d*s decreasing only slightly in both cases (.04 and .10). For the US-only analyses, nine of the eleven comparisons were similarly affected with changes in corrected *d*s ranging from .00 to .12. Two of the corrected *d*s did show a larger change with general commitment between Boomers and Generation X increasing from .51 to .68 and for intent to turnover for Generation X and Millennials changing from −.62 to −.81. That said, overall, the changes for all 13 additional analyses were fairly small and non-systematic suggesting that removing the European, Canadian, and New Zealand samples did not make a substantial difference in the meta-analytic results.

As some researchers have suggested that job satisfaction and organizational commitment (specifically affective commitment) are conceptually related and therefore should be treated as a single marker of job attitudes (e.g., Harrison et al. 2006; Le et al. 2010), and that such a combination has been used in previous meta-analyses (Riketta 2008), we ran a meta-analysis combining job satisfaction and affective organizational commitment. Specifically, we meta-analyzed affective commitment and job satisfaction together for all the generational comparisons for which we had data on both variables. The results of this analysis generally mirror the results for job satisfaction, with *d*s not varying >.01 from the results for job satisfaction alone (see Table 4).

Looking at the corrected *d*s in a different way, we see that Traditionals were slightly more satisfied than both Boomers ($d = .18$) and Generation Xers ($d = .25$). Boomers in turn showed higher general commitment ($d = .51$) and continuance commitment ($d = .30$) than Generation Xers. All other Boomer–Generation X differences were essentially zero (i.e., <.10). Comparing Boomers and Millennials, one can see that Boomers had slightly higher job satisfaction ($d = .11$), general commitment ($d = .14$), and affective commitment ($d = .22$) and lower intent to turnover ($d = -.53$). The last set of comparisons is for Generation X and Millennials. Here,

Table 4 Generational differences by criterion variable

Outcome	*K*	N_{Total}	*d*	$d_{corrected}$	$\sigma_{corrected}$	90% Confidence Interval		% SE	80% Credibility Interval	
						Lower	Upper		Lower	Upper
Job satisfaction										
Traditionals–Boomers	2	2,182	.18	.18	.18	−.12	.48	11	−.05	.42
Traditionals–Gen X	2	1,398	.24	.25	.26	−.18	.69	8	−.08	.59
Boomers–Gen X	8	10,149	.02	.02	.07	−.10	.13	46	−.07	.10
Without Dudley et al. (2009)	7	4,407	.02	.02	.10	−.17	.21	40	−.11	.15
Without Dilworth and Kingsbury (2005)	7	7,853	−.01	−.01	.06	−.13	.12	51	−.09	.08
US only	6	8,861	.01	.01	.07	−.11	.13	37	−.08	.10
Boomers–Millennials	5	7,026	.10	.11	.10	−.05	.28	26	−.01	.24
Without Dudley et al. (2009)	4	1,284	−.04	−.05	.15	−.29	.20	40	−.23	.14
US only	3	6,239	.11	.12	.11	−.06	.29	17	−.02	.25
Gen X–Millennials	6	7,049	.12	.13	.02	.07	.18	89	.10	.15
Without Dudley et al. (2009)	5	1,307	.07	.08	.05	−.04	.19	86	.01	.14
US only	4	6,176	.13	.14	.00	.14	.14	100	.14	.14
Organizational commitment										
General										
Boomers–Gen X	6	3,224	.46	.51	.46	−.25	1.27	4	−.08	1.10
Anglo only	5	1,558	.38	.41	.61	−.60	1.42	4	−.38	.58
US only	4	675	.63	.68	.86	−.74	2.10	4	−.43	1.79
Boomers–Millennials[a]	2	740	.13	.14	.00	.12	.16	100	.14	.14
Gen X–Millennials[a]	2	624	−.07	−.07	.00	−.07	−.07	100	−.07	−.07
Affective										
Boomers–Gen X	5	1,438	.08	.09	.07	−.05	.24	76	.001	.19
US only	4	1,033	.05	.06	.09	−.09	.21	68	−.06	.18
Boomers–Millennials	4	615	.20	.22	.00	.22	.22	100	.22	.22
US only	3	415	.22	.24	.04	.17	.32	96	.19	.30
Gen X–Millennials	5	1,086	.19	.21	.41	−.39	.82	11	−.32	.74
US only	4	715	.29	.33	.48	−.47	1.12	10	−.29	.95
Normative										
Boomers–Gen X	2	717	−.04	−.05	.22	−.42	.32	23	−.33	.23
Gen X–Millennials	2	442	.35	.42	.71	−.75	1.60	4	−.49	1.34
Continuance										
Boomers–Gen X	2	717	.27	.30	.09	.13	.48	64	.19	.42
Gen X–Millennials	2	442	−.22	−.26	.65	−1.34	.81	5	−1.10	.57
Intent to turnover										
Boomers–Gen X	7	4,424	.05	.05	.26	−.38	.48	10	−.28	.38
Anglo only	6	2,758	.01	.01	.33	−.53	.55	9	−.41	.43
US only	5	2,353	.06	.07	.32	−.46	.60	9	−.34	.49
Boomers–Millennials	4	1,437	−.48	−.53	.00	−.53	−.53	100	−.53	−.53
Without Wieck et al. (2009)	3	479	−.45	−.50	.00	−.50	−.50	100	−.50	−.50
US only	3	1,237	−.48	−.54	.00	−.54	−.54	100	−.54	−.54
Gen X–Millennials	4	1,339	−.57	−.62	.42	−1.32	.08	8	−1.16	−.08
Without Wieck et al. (2009)	3	644	−.16	−.17	.00	−.17	−.17	100	−.17	−.17
US only	3	968	−.72	−.81	.36	−1.41	−.22	11	−1.28	−.35
Job satisfaction and affective commitment										
Boomers–Gen X	12	11182	.02	.02	.07	−.10	.14	50	−.07	.11

Table 4 continued

Outcome	K	N_{Total}	d	$d_{corrected}$	$\sigma_{corrected}$	90% Confidence Interval		% SE	80% Credibility Interval	
						Lower	Upper		Lower	Upper
Boomers–Millennials	8	7441	.11	.12	.10	−.04	.28	35	−.01	.25
Gen X–Millennials	10	7764	.13	.14	.16	−.12	.40	19	−.07	.34

This table excludes comparisons for which K was <2

Boomers Baby Boomers, *Gen X* Generation X, K number of primary studies; N_{Total} combined sample size across generations, $d_{corrected}$ estimated true score mean difference, $\sigma_{corrected}$ standard deviation of the estimated true score mean difference, *% SE* the percentage of variance accounted for by sampling error

[a] For these comparisons, there was not a sufficient number of primary studies to analyze only the studies with US samples

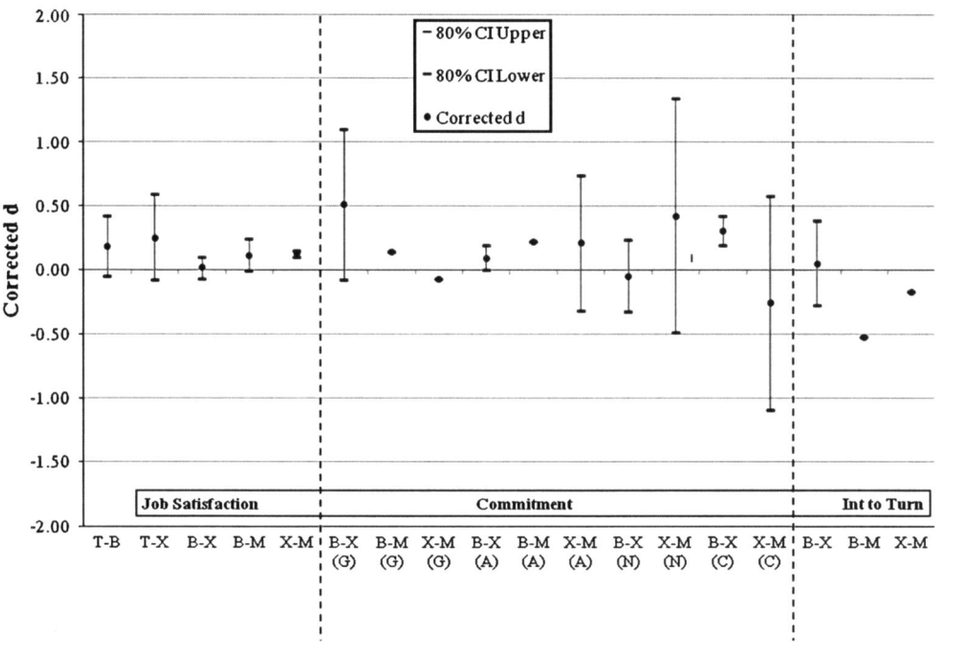

Fig. 2 Corrected *d*s and credibility intervals for each criteria and for all generation comparisons. *Note* For generation comparisons, *T* Traditionalist, *B* Baby Boomer, *X* Generation X, *M* Millennial. For commitment, *G* general, *A* affective, *N* normative, *C* continuance, *CI* credibility interval

one can see that Generation Xers were slightly more satisfied with their jobs ($d = .13$) and showed higher levels of affective ($d = .21$) and normative commitment ($d = .42$). Although Generation Xers showed lower levels of general ($d = -.07$) and continuance commitment ($d = -.26$), they also demonstrated lower levels of intent to turnover ($d = -.62$). Overall, the pattern of results suggests that older generations may be slightly more satisfied with their jobs, less likely to leave their jobs, and varied in whether they are more, less, or not at all different in terms of their commitment.

Discussion

The results of the meta-analysis generally do not support the notion that there are systematic, substantive differences among generations in work-related outcomes. The majority of generational comparisons that were analyzed showed *d*s of less than one-quarter of a standard deviation when corrected for unreliability. Of the few differences that did emerge, the largest *d*s were approximately one-half of a standard deviation. Even then, extant research suggests that alternate explanations besides generational membership are plausible. Given the many and varied claims about generational differences, the generally small effect sizes identified contradict such assertions and offer an important contribution to the scholarship in this area. Overall, our results, like those of Sackett (2002) and others, provide little evidence supporting the existence of significant and meaningful differences that are attributable to generation membership. They also raise questions about the efficacy of organizational interventions designed to address such differences and support the conclusions of Parry and Urwin

(2010) who found mixed results for studies of generational differences.

A review of the meta-analytic results does reveal three weak, if discernable, patterns. First, we found that older generations were slightly more satisfied with their jobs than younger generations. Although the *d*s were fairly small (.02–.25), older generations were more satisfied with their jobs than younger generations. However, this finding is not surprising given that research suggests chronological age and tenure both tend to be positively correlated with job satisfaction (e.g., Hunt and Saul 1975; Kacmar and Ferris 1989; Ng and Feldman 2010). Because age and tenure naturally co-vary, several authors have examined their relative contribution in predicting job satisfaction. Some have found that tenure is a more stable predictor of job satisfaction than age (Bedeian et al. 1992) but others have found the opposite (Morrow and McElroy 1987). Although these results are conflicting, they suggest that age or tenure, not generational membership, may explain the differences observed in job satisfaction. This finding was confirmed by Ng and Feldman's (2010) meta-analysis that found the relationship between age and job satisfaction was .18 but dropped to .12 after controlling for tenure.

The second pattern is that while there were small to moderate differences among generations on commitment, the generational cohorts varied in whether they were more or less committed, or not at all different. That is, there was no discernable pattern of relative differences of older versus younger generations. Research on commitment has found that while chronological age tends to be positively correlated with organizational commitment, meta-analytic findings suggest that it is not a strong predictor. A meta-analysis by Ng and Feldman (2010) found relationships between age and commitment, controlling for tenure, to be .17 for affective, .11 for normative, and .05 for continuance, which are fairly small effect sizes. Mathieu and Zajac (1990) found that the most robust antecedents of organizational commitment were individual differences (e.g., perceived personal competence), job characteristics (e.g., challenge and job scope), and leadership-related variables (e.g., leader communication and participative leadership). Likewise, Meyer et al. (2002) found the strongest predictors of organizational commitment to be perceived organizational support, transformational leadership, role ambiguity, and organizational justice. The meta-analytic results herein suggest that generational membership appears to be a mixed predictor at best and research suggests that other variables are likely more responsible for any differences.

Finally, older generations were somewhat less likely to leave their jobs (*d*s of .05 to −.63) than younger generations. However, previous research on intent to leave has shown that although chronological age tends to be negatively related to turnover intentions, it adds little predictive value above and beyond job involvement, education, and tenure (Parasuraman 1982). Healy et al. (1995) found a meta-analytic correlation between age and actual turnover of −.08, a finding confirmed by Ng and Feldman's (2009) meta-analytic result of −.14. Further, attitudinal variables such as job satisfaction and organizational commitment tend to be more strongly related to turnover intentions than age (Arnold and Feldman 1982). Again, these results suggest that other variables besides age are stronger predictors of outcome variables such as turnover intentions.

In addition to the above, research has suggested other possible explanations for observed generational differences. For example, in a meta-analysis of changes in personality across the life course, Roberts et al. (2006) found that social dominance (a facet of extraversion), conscientiousness, and emotional stability tend to increase in young adulthood. Judge et al. (2002) found that these traits are positively related to job satisfaction, which could explain the higher levels of job satisfaction among the older generations. This suggests that personality differences across the life course could explain some of the generational effects observed.

A study by Fried and Ferris (1987) examined variation in job characteristics offers possible explanations for some of the effects attributed to generational membership. They found that as employees get older and progress through their careers, their jobs may be characterized by a greater degree of autonomy, skill variety, and task significance. These job characteristics are positively related to job satisfaction and, with the exception of task significance, negatively related to absenteeism. A related argument is put forth by Ng and Feldman (2010), who discuss several theories which might explain age-based differences including the job-congruence model (White and Spector 1987) and socioemotional selectivity theory (Carstensen 1992). While these studies looked at different outcome variables and propose competing frameworks, they do demonstrate that other mechanisms besides generations may be causing observed differences.

Overall, we found little support for differences between groups of individuals based on generational membership. Comparing the results obtained from the present meta-analysis and those of related primary studies and meta-analytic efforts supports this conclusion. Further, the results for studies using generations and those using age were very similar, suggesting that chronological age, or some other variable, is likely responsible for the small effects that were observed. For example, a meta-analysis by Healy et al. (1995) found a small, negative relationship between age and actual turnover while Ng and Feldman's (2009) meta-analysis had similar results. A second meta-analysis by Ng

and Feldman (2010) found small correlations between age and job satisfaction and also between age and affective, normative, and continuance commitment. Primary studies by Kowske et al. (2010) found little support for generational differences in satisfaction and turnover intentions even after separating the effects of age and generation. The results of these studies (meta-analytic correlations and variance-accounted-for estimates) are very similar to the findings reported in our study, suggesting that unique variance attributable to generational differences is minimal.

Limitations

Meta-analytic efforts are dependent on the existence of quality primary research that can be analyzed. In our case, there were several limitations in the primary research that should be mentioned. First, there were a relatively small number of studies available. Given the extensive coverage of generational differences in the media and popular press, we were somewhat surprised to find only 95 studies across six work-related outcomes that could potentially be included. From that group, three outcomes, including job satisfaction, commitment, and intent to leave/quit among 20 primary studies provided sufficient empirical evidence to be included in the meta-analysis. Among the 20 studies we identified, not all generations were compared to each other on all outcomes. As a result, we were able to make 13 comparisons involving Generation X but only two involving Traditionals.

It is worth noting that more than half of the studies were non-published works. On the one hand, the use of such studies in a meta-analysis raises questions about the theoretical soundness and methodological rigor of the work. On the other hand, the use of non-published works lessens the significance of publication bias. Given that all the non-published studies used the same methods as the published studies and that each used a criterion measure that was well-established and validated, we feel confident that their inclusion strengthens the meta-analysis overall.

The small number of studies, the few work-related criteria that could be analyzed, and the uneven number of comparisons across generations all limited our effort. Even so, our study demonstrated that empirical support for the existence of generational differences in work-related outcomes is far from expansive and the mixed results are anything but conclusive. Both our review of the research on generational differences in work outcomes and our meta-analyses on three of those outcomes revealed little evidence supporting popular press and consultant claims of the importance of such differences.

Second, all research studies included in this meta-analysis used cross-sectional designs to assess generational differences. Although there have been a few efforts across domains that have used alternative approaches such as cross-classified HLM (work attitudes; e.g., Kowske et al. 2010) or cross-temporal meta-analysis (CTMA)[9] (personality; e.g., Twenge et al. 2008), most research on generational differences and almost all research focused on work-related outcomes have employed cross-sectional designs. As has been discussed by previous researchers (e.g., Macky et al. 2008b; Parry and Urwin 2010; Rhodes 1983; Trzesniewski and Donnellan 2010), there are numerous limitations to cross-sectional research when studying generational differences, particularly the inability to separate variance attributable to generational, age, and period effects. However, the majority of studies have conceptualized and measured generational differences in this way.

Of the few studies that did use a different methodology, each was excluded from our analysis either because it did not focus on work-related outcomes or because the analytic approach produced effect sizes that did not parallel those of the cross-sectional studies. For example, CTMA produces a comparison of generations controlling for age. Cross-classified HLM produces an estimate of the variance accounted for in a given outcome by generation membership, holding age, and time-period effects constant. Neither is conceptually parallel to a *d*-score produced by the cross-sectional studies. Nonetheless, the very small effect sizes that have been found using alternate techniques suggest their inclusion would not likely have changed the results one way or another. The limited number of primary studies and the cross-sectional design they employed suggests a third limitation of our research: our inability to assess moderators that may impact the relationship between generation membership and outcomes. There were some variables present that might have affected the results, such as the varying range of generations' birth years, countries in which the data were collected, as well as the gender and organizational tenure of generational members, but due to the small number of primary studies and the results they reported, no moderator analyses were possible.

We were able to run the analyses with first the European and then all non-US samples removed (i.e., Anglo-only and US-only, respectively). The results showed there were relatively small changes in the effect sizes and the changes that were present were non-systematic, suggesting that the country in which data were collected was not an important factor in the results. Our findings echo those of some researchers who have similarly failed to find any cross-cultural effects on generations (e.g., Hui-Chun and Miller 2003) but are counter to other studies which have found

[9] Cross-temporal meta-analysis (CTMA) uses cross-sectional panel data to compare members of different groups at different times when they are at the same age (e.g., 18 year olds in 1960 vs. 18 year olds in 2000).

country of origin to have an impact (e.g., Murphy et al. 2004). It is worth noting that these findings were for criteria other than work-related outcomes, and it is unclear whether they would generalize to those studied herein.

Overall, given the generally small effect sizes we found and the number of comparisons that fell below Schmidt and Hunter's (1977) 75% rule, there are likely undetected moderators at work. It is also possible that there are other unknown main effects that account for most of the variance.

All these limitations again raise the broader question about the utility of conducting a meta-analysis given the conceptual and methodological challenges of assessing generational differences. As noted previously, the benefits of conducting a meta-analysis in spite of these limitations is two-fold. First, as with all meta-analytic studies, the results of the effort summarize the extant research given the way the phenomena of generations and generational differences in workplace outcomes have been studied. As with Rind et al.'s (1998) meta-analysis of child sexual abuse demonstrated, even when there is disagreement on the definition of the underlying phenomenon of interest, a meta-analysis can prove useful in summarizing extant findings. While they had sufficient primary studies (nearly 60 studies and over 35,000 subjects) and the domain faced fewer methodological challenges than generations, disagreements about the definition and operationalization of abuse raised questions about the efficacy of the study. Nonetheless, their effort was key both in terms of summarizing the research and in calling the question about the problems with the underlying research.

Second, limitations in primary studies identified by a meta-analytic effort point to areas and needs for future research. As Rind et al. (1998) noted in their meta-analysis, the construct they were studying was of "questionable scientific validity" (p. 46) because of definitional and conceptual issues. Because of this, they called for a more thoughtful, comprehensive, and valid approach to studying the phenomenon of interest, a call that could not have been made without the meta-analytic effort. Therefore, the findings of this study and the limitations that were discovered in the process of conducting it suggest specific areas in need of additional research which are discussed below.

Future Research and Implications

The findings of this meta-analysis and limitations noted above point both to the need for additional research on generational differences as well as the need for organizations to exhibit caution in adopting interventions designed to address such differences. Clearly, there is a need for additional, scientifically sound, primary research on generational differences in work-related outcomes. Within this general area, we identified three specific areas that should be investigated. First, future research on generational differences should strive to assess more work-related criteria, collect data on all generations in the workplace, and make more comparisons across cohorts. Although our meta-analytic results found few differences across groups on three outcomes, we were unable to test additional outcomes, to test all pairwise comparisons of generations for each outcome, or to assess moderators that could be affecting the underlying differences.

A second area to be addressed is the need for improved methodological approaches for studying generational differences. The limitations of cross-sectional research designs in this area have been demonstrated and efforts by Kowske et al. (2010), Twenge and Campbell (2010), and others to employ new and better methodologies are a positive development. That said, the recent exchange in *Perspectives on Psychological Science* between Twenge, Tresniewski, and others pointed out that there is still much work to be done in order to identify and develop stronger methodological approaches for studying such differences.

Finally, and perhaps most importantly, these meta-analytic results showing generally small effect sizes, along with the mixed findings from primary studies and the many conceptual and review pieces which raise questions over the extent and nature of generational differences (e.g., Joshi et al. 2010; Macky et al. 2008b; Sackett 2002), point to the need for additional conceptual work. Much more research is needed to fully develop the concept of generations. That is, we need to determine exactly what generations are, what impact they have and, most importantly, why. Such research needs to be done before we can determine if generational membership affects outcomes and, if so, exactly how. It may be that there is a mechanism that has not yet been fully explicated; or, as this meta-analysis and other research suggests, generational membership may be, at best, a proxy for other, more direct, proximal, and complex causes of such differences. The fact that the popular press and generational gurus continue to write and consult about such differences, and that organizations are seeking out and adopting strategies for dealing with these perceived differences suggests there is likely some phenomenon occurring. The question of whether these differences are attributable to generational membership, age, maturity, or other individual differences, remains unanswered.

In terms of practical implications, many organizations have begun implementing programs and interventions in an effort to capitalize on supposed generational differences (e.g., Shapira 2009, July 9). These strategies are often aimed at recruiting, retaining, and motivating members of particular generations and include or suggest specific approaches for how members of different generations should be treated. However, our review of the theoretical

underpinnings of such differences and the results of meta-analysis suggest that such interventions may be premature at best. Given these findings, treating members of different generations differently may not be an effective strategy. A more effective approach may be to conduct needs assessments that address observed differences among individuals and develop interventions based on characteristics identified through this process. This evidence-based strategy is a proven way to deal with individual differences rather than relying on unsubstantiated generalizations about entire groups of employees based on generational membership.

Conclusions

In summary, our meta-analytic effort indicates that where generational differences do exist on work-related outcomes, they are relatively small and the inconsistent pattern of results does not support the hypothesis of systematic differences. Given this and the general dearth of studies supporting generational differences in work-related outcomes, it is clear that a better conceptualization of generational phenomena and better methods for conducting empirical research are needed. Further, the findings should give caution to organizations looking to adopt interventions based on the assumption that generations differ in meaningful ways. For both research and practice, a better understanding is needed of the actual role that generational membership has on any such differences relative to the contribution of related variables such as age, maturity, work experience, and individual characteristics in predicting work-related and other outcomes.

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