

Generational differences at work? A meta-analysis and qualitative investigation

Daniel M. Ravid¹

David P. Costanza²

Madison R. Romero³

¹The University of New Mexico

²University of Virginia

²The George Washington University

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Correspondence concerning this article should be addressed to:

Daniel M. Ravid
Department of Management
The University of New Mexico
Albuquerque, NM, 87106
505.277.6471
Contact: dmr@unm.edu

Abstract

Despite substantive criticisms of generations and mounting evidence suggesting that “generational differences” do not exist, generational characterizations remain widely popular among academics and practitioners who use them to explain employee thoughts and behaviors. The current research examined academic literature as a source that may have contributed to perpetuating generational stereotypes. In Study 1, we meta-analyzed the generations literature to examine the extent that findings in this research conveyed a sense that generational differences exist. Results of the meta-analysis revealed few systematic, meaningful differences among generations on a variety of outcomes. To follow up on why the generations literature generally promotes the idea of systematic differences despite the mixed and limited evidence for them, in Study 2, we conducted a qualitative investigation of the meta-analyzed articles, looking for explanations about why research and practice using generations persist despite the lack of evidence. Results of the qualitative analysis showed that researchers often discounted null or equivocal findings and seldom raised questions about the underlying concept of generations. Our findings reinforce that researchers and practitioners should continue to seek better explanations for differences among workers, investigate the origins of generational stereotypes, and work to understand why academics and practitioners continue supporting and propagating this questionable concept.

Keywords: *generations, generational differences, meta-analysis, qualitative analysis, stereotypes*

Pre-Print

Generational differences at work? A meta-analysis and qualitative investigation

A recent viral video showed the Australian Federal Police Commissioner responding to a question about their workforce development practices by discussing generational differences: "...we learned too that Gen Z, the younger generation, need three times a week praise from their supervisors. The next generation only need three times a year, and my generation only need once a year" (Hannaford, 2023). Sentiments such as these, that generations differ meaningfully and merit differential treatment in workplaces, continue to be popular and pervasive in organizational science and practice. Business schools continue to include generational differences in their curricula (Rutgers Business School, n.d.) consultants market solutions to help manage multi-generational workforces, popular press pieces attribute various workforce trends to generation-based characteristics and behaviors (Stahl, 2022), and academic researchers continue to attempt to identify generational differences and make recommendations based on these purported findings (Gabrielova & Buchko, 2021; Peretz et al., 2022; Sesen & Donkor, 2023).

Despite ongoing interest and focus, the research supporting the existence of generational differences and their utility for organizations and managers is limited. An emerging scientific consensus is that the study of generationally-based differences lacks theoretical foundation, conceptual coherence, and methodological rigor (Costanza et al., 2012; Rauvola et al.,

2019; Rudolph & Zacher, 2020) and a recent National Academies of Science report recommended against using generations in workplaces, concluding that generational characteristics should be viewed as stereotypes or biases (National Academy of Sciences, 2020). Still, academics continue to research generations and organizations continue to use generations in practice.

Why?

It is possible that the scattered and voluminous nature of over two decades of generations research has left readers unclear about what the literature actually conveys about generational differences. Previous qualitative reviews of the generations research have come to contradicting conclusions (e.g., Lyons & Kuron, 2014; Rudolph et al., 2018; Twenge, 2010). Whereas Twenge (2010) and Lyons and Kuron (2014) concluded that research had uncovered generational differences on a number of work-relevant variables, Rudolph et al.'s (2018) concluded that the generations studies they reviewed only provided mixed and equivocal evidence for generational differences. The lone meta-analytic synthesis of the generations literature (Costanza et al., 2012), published over a decade ago, found little evidence for generational differences but was limited by the few primary studies published at the time. Confusion about what the academic literature actually suggests about generational differences may have led many to assume that this highly publicized phenomenon is based in robust empirical evidence.

Therefore, the purpose of this paper is to clarify what the generations literature has conveyed about actual generational differences¹ and provide guidance for researchers and practitioners considering studying or using generational characterizations in the future. To achieve our goals, we conducted two studies. In Study 1, we meta-analyzed the results of generational differences studies ($K = 143$ independent samples) to examine the extent to which empirical findings from the academic literature have or have not communicated to readers that meaningful differences among generation cohorts exist. Our meta-analysis includes a range of work-related variables: work values, job engagement, job satisfaction, commitment, turnover intentions, work-life balance, and stress/burnout. Most notably, work values are central to most models of generational formation (Campbell et al., 2015; Twenge et al., 2012), and primary research on them was not available to be included in the previous meta-analysis of the generations literature.

In Study 2, we qualitatively analyzed the discussion sections of over 130 studies of generational differences to explore the possibility that, independent of empirical findings, the way in which academics have discussed generations in articles has conveyed that generational differences exist and impact work. We looked for evidence in these discussion sections

¹ Lester et al. (2012) distinguished between “actual generational differences” as trait-based differences across individuals that are due to generational membership and “perceived generational differences” which are perceived differences among individuals due to beliefs about generations.

that may explain why researchers continue to search for generational differences, rationalize failures to find these differences, and make practical recommendations about generational differences despite prominent concerns about generations studies. Taken together, these studies offer several important contributions to the literature, both in challenging generational assumptions and in understanding the mechanisms that may lead businesses to continue to use and promote generations and researchers to continue a potentially problematic area of research.

First, the large number of studies exploring generational differences that have been conducted in the past two decades enables us to address two notable limitations of previous meta-analytic studies of generational differences (i.e., Costanza et al., 2012). Specifically, Costanza and colleagues' meta-analysis was somewhat constrained by a small sample of primary studies which limited their analytic power and the work variables they were able to include in their analysis. As the most comprehensive examination of the generations literature to date, including 143 independent samples and 158,000+ individuals, our meta-analysis has substantially greater statistical power than previous studies to identify the presence of consistent generational differences in the literature.

We also expand the number of work-relevant variables analyzed to include work values, job engagement, job satisfaction, commitment, turnover intentions, work-life balance, and stress/burnout. A failure to find generational differences on variables that are closely aligned with what

promoters of generations argue are representative of generations would be another piece of evidence that substantially undercuts generations as a viable framework for understanding employee differences. Thus, our meta-analysis provides tests of important components of generations theory and summarizes the empirical messages readers of the generations literature have received over the past twenty years regarding purported differences among generational cohorts.

Second, we synthesized qualitative messages about generational differences present in the literature. Previous reviews (Costanza et al., 2012; Lyons & Kuron, 2014) have primarily focused on the synthesis of empirical findings from generations studies to summarize this body of research. This is a logical approach for estimating the true effects of some phenomenon, but is deficient for understanding the qualitative message that a body of literature is conveying to consumers. Indeed, a comprehensive accounting of the qualitative messages about generations conveyed in generations studies may be more important than the empirical findings in these studies for understanding why individuals continue to use, promote, and research generations. Finally, we offer a clear set of recommendations for authors considering researching generations, for practitioners worried about how to deal with workers of widely varying ages in the workplace, and for journal editors and reviewers responsible for evaluating new generations research.

Background

Although the modern conceptualization of age-based generational cohorts dates back to the 1950s and 1960s (e.g., Mannheim, 1952; Ryder, 1965), widespread interest in generationally-based differences pertaining to work and the workplace is a relatively more recent phenomenon (Costanza et al., 2020). Discussion about generational differences at work took off following the publication of books by Strauss and Howe (1991) and Howe and Strauss (2000) that focused on generations, Millennials in particular. Since Howe and Strauss's 2000 publication, the idea that generations influence a variety of work processes has become widely popularized and promulgated (see Costanza & Finkelstein, 2015; Costanza et al., 2020).

Over the past twenty years, generational differences have, for example, been cited as the reason for shifts in employee attitudes and behaviors, including increases in job hopping (Waikar et al., 2016) a declining employee work ethic (Twenge et al., 2010), increasingly competitive and contentious work environments (Praefder, 2017), and the increase in freelance and contract work (Gilchrest, 2019). Generational characterizations have been used to make research and practical recommendations to managers (e.g., Rodriguez et al., 2019), teachers (e.g., Shatto & Erwin, 2016), and employees (Myers & Sadaghiani, 2010) on how to tailor policies, practices, and treatments to specific generational cohorts. All of this has occurred despite the very limited evidence for the existence of generational differences.

There are a variety of reasons for the popularity of generational

characterizations (see Rudolph et al., 2021). Attributing thoughts and behaviors to generation is an accessible and relatable approach to sensemaking and social identity (Rauvola et al., 2019). Like a zodiac sign, generational labels provide an opportunity to identify with a group and differentiate from others. Further, research has demonstrated how easily stereotypes are formed and adopted (Eagly & Koenig, 2021) and the difficulty of disabusing such stereotypes (Paluck et al., 2021). Once beliefs about generational differences are formed, recalling and identifying experiences that confirm these priors becomes easy, while belief in incongruent experiences may be ignored or rationalized (Eagly & Koenig, 2021). Once stereotypes have formed, belief in their validity may strengthen over time, and disabusing people of such stereotypes gets harder.

Generations as a Concept

Birth-cohort generations refer to the grouping of individuals born during roughly the same time period (e.g., 1980 – 2000) who, due to similarity in birth year, are assumed to develop certain similarities in attitudes, behaviors, and cognitions. For instance, members of the Silent Generation (aka Traditionals) are labeled as conservative and disciplined (Williams & Page, 2011), Baby Boomers (Boomers) are said to be time-stressed and materialistic, Generation Xers (Gen X) are labeled as skeptical and individualistic (Beutell & Wittig-Berman, 2008), and Millennials (Gen Y) are believed to be socially conscious but narcissistic (Stein, 2013). Most recently, members of Generation Z (Gen Z) have been conceptualized as

confident, competitive, and dependent on technology (Twenge, 2017).

The common theory supporting generations is that shared experiences jointly experienced by individuals at a particular age and a particular time induce cohort-level similarities (Costanza et al. 2012) and models have sought to explain patterns of change across generations (Campbell et al., 2015). For instance, Strauss and Howe's (1991) cyclic model tied generational differences to long-term economic seasons. According to Strauss and Howe, generational characteristics align with economic cycles, which begin as expansive and greed-based and cycle towards contractive and civic-minded. The Modernization model (Inglehart & Welzel, 2005) suggests that cultures go through a process of modernization, with successive cultures progressing towards civically engaged individualism. Twenge et al. (2012) proposed a model that suggests that changes to culture, technology, democracy, and other localized influences lead generations toward more extrinsic self-focus, less civic engagement, and less inward focus. Common across all these models are the assumptions that: 1) broad-scale trends and events lead to differences *in values* among generations; and 2) these generation-shaping trends occur at a socio-cultural level.

Criticism of Generations as a Concept

In recent years, scholars have noted serious flaws to the generations concept (Costanza & Finkelstein, 2015; Costanza et al., 2020; Rudolph et al., 2018). The first issue raised has to do with how generational cohorts

come into existence: that shared experiences induce cohort-level similarities (Costanza et al., 2012). For example, it has been suggested that events such as the Columbine school shooting, the OJ Simpson trial, and the September 11, 2001 terrorist attacks, in combination with broader social trends such as “helicopter parenting,” induced trait level similarities (e.g., personality, values, attitudes, cognitions, and preferences) in Millennials (Howe & Strauss, 2000; Twenge, 2013).

Although there is little dispute that environmental factors affect how people grow, develop, and change throughout their lives, the idea that macro-level environmental factors shape individuals at the birth-years cohort level has been criticized as underdeveloped and overly reductive (Costanza et al., 2021). Little explanation has been offered for how or why macro-level trends and events lead to the formation of cohorts (see Corning & Schuman, 2015 for one proposed explanation), why individuals of a certain age who differ in so many ways should experience and be affected by these events similarly as to create cohort level similarity, or why these events shape individuals of a certain age in ways that individuals of other ages are not.

Generations are generally backward-looking (retrospectively, what events were important 20, 40, or 100 years ago), and there is little evidence or support for why and how a particular event today would create a new cohort over the next 20 years. Even if cohorts were being created by macro-level events today, we would not know about it for another 40-50 years,

after enough time had passed to be sure that certain events had lasting impact rather than temporary, ephemeral effects. In short, the formation of cohorts defined by age and contemporaneous period effects is not well-explained or backed by the literature and is impossible to identify in real-time.

A second issue that has been raised is that events suggested as shaping generational characteristics have occurred almost entirely in the United States. This raises questions about international studies of popularized generational characteristics (e.g., Baby Boomer materialism, Generation X skepticism, Millennial narcissism). Although U.S. events may receive global attention, there is little reason to think, and almost no empirical evidence, that the conditions commonly theorized to shape various generations (e.g., post-World War II suburbanization, the Watergate Scandal, Baby Jessica falling down a well) would have similar effects on those living across the world as they would those experiencing them locally as to create cohort-level similarities. While some research has attempted to identify generational cohorts and the events that shaped them in non-U.S. countries (e.g., Egri & Ralston, 2004), many studies have employed U.S.-centric generational conceptions to study and explain between-group differences in a variety of international research efforts (Brown, 2012; Shragay & Tziner, 2011). The application of U.S.-centric generational characterizations to multi-national and cross-cultural contexts raises concerns about the generations concept.

Another concern with generations comes with the conceptualization of generations as birth-year cohorts determined by age and period. In this framework, there are three possible factors that might explain what look like generational differences, age, period, and cohort (i.e., APC effects). *Age* effects are variation associated with maturation, life stage, or developmental factors. *Period* effects are variation associated with the events of a particular time period that simultaneously impact everyone regardless of age. *Cohort* effects are similarities among groups of individuals based on distinct characteristics or experiences (i.e., generations).

The problem is that when cohorts are defined by age and period, they are linearly related and, while observed effects could be attributable to any one or more of the three, determining how much of an effect each has is not possible. As such, researchers cannot disentangle “generational” effects from the often more plausible (e.g., Ng & Feldman, 2010) alternatives of age and/or period. Put another way, given the data and analytical techniques used, it is not possible to assign any observed effects conclusively to generational membership (for a full discussion, see Costanza et al., 2017). This issue is particularly pronounced in cross-sectional research (Costanza et al., 2017), but is not solved by other methodologies researchers have used to attempt to study generations (e.g., hierarchical linear modeling, cross-temporal meta-analysis; Rudolph et al., 2020). Finally, many have noted operationalization issues with generations.

Costanza et al. (2012) reviewed the start and end dates for generations across the literature, finding that different researchers used starting dates that varied by as many as four years and end dates that varied by as many as nine. Strauss and Howe (1991) defined generations in terms of 20-year birthyear cohorts, but it is unclear where one cohort ends and the next begins.

Criticisms of Generations in Practice

Others have noted several major concerns with using generations to guide decisions in workplaces. First, the use of generations in practice may place organizations in legal trouble. The Age Discrimination in Employment Act of 1967 (90-202 [S. 830] (29 U.S.C., Chapter 14) protects workers 40 years old and over from differential treatment based on age. This means that everyone born before 1980, approximately 60% of the workforce, including the oldest Millennials, fall under ADEA. Consequently, an organization using generational stereotypes to guide human resource policies is at risk of legal challenges from much of its workforce.

Second, using generational characterizations can hinder the performance of individuals and the organization. Generalizing characteristics to a large group of people can de-motivate individuals who perceive that their organization has already developed a schema about who they are and how they work (Salvi et al., 2022). Research has shown that age-based stereotypes are associated with lower worker engagement, organizational involvement, and reduced performance across a variety of

performance domains (Lamont et al., 2015; Manzi et al., 2019). These harmful effects may be particularly pronounced for younger workers, who may experience the most negative generation-based stereotypes (Francioli & North, 2021) with little legal recourse for discrimination based on them.

The use of generations may also result in self-fulfilling prophecies. Self-fulfilling prophecies occur when: first, someone (a perceiver) holds a false belief about another (a target); next, the perceiver treats the target in a way that matches his or her belief; finally, the target responds to the treatment in a way that confirms the initially false belief (Madon et al., 2011). For instance, based on the generational stereotype that certain generations are more likely to job hop than others, a characteristic notably unsupported by the evidence, a manager may invest less time and effort mentoring and building relationships with younger employees. This treatment, based on false expectations may, in turn, result in the younger employees feeling less supported by and committed to the organization and more willing to look elsewhere for employment, thus confirming the originally false expectation. Recent research suggests that widely held stereotypes, such as those associated with generations, may be particularly likely to result in self-fulfilling prophecies through cumulative effects (Madon et al., 2018). Thus, even if generational effects, as detailed by generational theory, do not exist, the fact that people believe in and use generational identities and characterizations means they can have very real and often harmful effects in workplaces.

Studies of Generational Differences

The conceptual, methodological, and practical criticisms of generations have not slowed the stream of academic research aimed at identifying generational differences. A few review articles have attempted to qualitatively summarize this body of research (Lyons & Kuron, 2014; Twenge, 2010), but to date, there has only been a single meta-analytic effort aimed at synthesizing studies of generations (Costanza et al., 2012). Costanza et al.'s meta-analysis examined generational differences in three work-relevant outcomes: job satisfaction, organizational commitment, and intent to turnover. At the time, those were the three variables with a sufficient number of studies and sample sizes to meta-analyze. For several other outcome variables (e.g., training, motivation, values) and most of the possible moderators (e.g., age, gender), there were too few primary studies to be included. Overall, they found little evidence for systematic, generationally-based differences.

One limitation to Costanza and colleagues' meta-analysis was that there was relatively weak theoretical justification in the primary studies for generational differences in the examined work outcomes (Lyons & Kuron, 2014). In their qualitative review of the generations literature, Lyons and Kuron (2014) suggested that work values, or generalized beliefs about the relative desirability of aspects of work, are foundational differences among generations and called for research exploring differences in work values as well as more proximal outcomes of these purported differences, such as

work-life balance. As noted, the broadness of generational theory limits the strength of support for generationally-based differences. However, generational differences in values and behaviors that stem from these values (e.g., work-life balance) do tend to be most central to models of generational formation, and therefore, if generational differences exist, we would expect to find cohort-level differences in these variables.

A second limitation of Costanza and colleagues' meta-analysis is the relatively small number of primary studies available to be included. Costanza and colleagues' study meta-analytically estimated generational effects based on K 's that ranged from 2 to 8 for specific work outcomes. Although meta-analytic synthesis of even two studies improves on other means of synthesis (Valentine et al., 2010), estimates based on few primary studies are likely to produce wide confidence intervals, even in instances with relatively low levels of variance among studies.

Nonetheless, despite Costanza and colleagues' mixed and mostly null findings, and despite the issues they raised with generations research, a great deal of research aimed at identifying generational differences has been conducted over the past decade. The accumulation of generations studies presents an opportunity to address limitations with Costanza et al.'s meta-analysis and, more importantly, an opportunity to better understand possible causes for the continued spread and use of generations in the face of contradictory evidence.

The Present Research

In Study 1, we explore the possibility that empirical findings from the academic literature have conveyed to readers that meaningful generational differences exist. To do this, we meta-analyzed studies of generational differences in the workplace on a number of work-relevant variables. In doing so, we also explore central components of “generations theory,” including the supposition that external events have shaped unique work values in each generation cohort. As an additional test of generations theory, we examined the extent to which findings in generations studies differed when authors used U.S. versus international samples. If sociocultural trends and events shape birthyear cohort-level characteristics, then sample origin should moderate effects.

In Study 2, we explored the possibility that independent of empirical findings, the way in which academics have discussed generations in articles may have conveyed to readers that generational differences exist and impact work. To address this possibility, we qualitatively analyzed the primary studies from our meta-analysis, investigating the extent to which the authors gave the impression that generational differences at work exist and influence work processes in their discussion sections. Given the disconnect between the research and recommendations for applied practice, an analysis of the discussion sections may shed light on the reasons behind the origin and perpetuation of generational characterizations and, more broadly, why some academic researchers continue to study and make practical recommendations about supposed

phenomena in the face of mounting contradictory evidence. Taken together, the current effort examined the degree to which work from the academic literature may have contributed to the acceptance and perpetuation of generational characterizations.

Study 1

As noted, theory for how or why specific macro-level events should shape specific characteristics in each birth-year cohort is overly broad (see Costanza & Finkelstein, 2015), but typically focuses on the role of social, political, and economic trends in shaping cohort-level values (Campbell et al., 2015). Based on this theory, proponents of generations have attributed a wide variety of other characteristics to generational membership, including job satisfaction (Benson & Brown, 2011), commitment (Stewart et al., 2017), turnover intention (Sujansky & Ferri-Reed, 2009), engagement (Park & Gursoy, 2012), motivation (Hill, 2002), personality (Twenge et al., 2010), and performance (Myers et al., 2010). We therefore conducted a broad search for work-related criteria to include in our meta-analysis.

Method

Literature Search

We conducted literature searches in January 2020 and October 2022 (PRISMA chart and search terms can be found in Online Supplement 1A). We first sought to identify all studies examining generational differences in job satisfaction, organizational commitment, or intention to stay/quit published since 2009, the last year included in the Costanza et al., (2012)

meta-analysis. We conducted a literature search in the ProQuest Central² using the terms “*generation*,” “*generational differences*,” “*Generation Z*,” “*Millennial*,” “*Generation Y*,” “*Generation X*,” and “*Baby Boomer*” in combination with the terms “*job satisfaction*,” “*work satisfaction*,” “*organizational commitment*,” “*work commitment*,” “*turnover intention*,” “*intention to quit*,” and “*intention to stay*,” limiting the search to scholarly articles, dissertations, theses, and conference proceedings. Our searches yielded a combined total of 1051 citations.

Next, we sought to identify work-related criteria (e.g., work values, job stress, engagement, motivation, leadership, performance) that were not included in Costanza and colleagues’ meta-analysis. We therefore conducted a literature search in ProQuest Central using the same generational search terms in combination with “*work values*,” “*reward preferences*,” “*work engagement*,” “*work stress*,” “*job stress*,” “*burnout*,” “*work motivation*,” “*leadership values*,” “*leadership preferences*,” “*work-family conflict*,” “*work-life balance*,” and “*job performance*.” This search yielded an additional 1438 scholarly sources. We also posted requests for any in-press data regarding generational differences to the Academy of Management’s Human Resources Management Division listserv, although we received no responses. We additionally conducted backward and forward searches of three prior generations review articles: Twenge (2010),

² ProQuest Central is an interface that includes a collection of different scholarly databases that may vary from university to university. For this study, the interface included the ProQuest Central database, ProQuest Dissertations & Theses Global, ABI/INFORM Collections, and several other databases. The full list of databases searched is included in Supplement 1A.

Costanza et al. (2012), and Lyons and Kuron (2014).

Eliminating redundant articles across searches resulted in a total of 1966 articles, which were split among six coders who read abstracts for content relevance. This effort resulted in 463 potentially relevant citations. Next, each of the 463 articles was read, and the work-related outcomes and the measurement instrument used to assess each construct were coded. Job satisfaction ($K = 86$)³, organizational commitment ($K = 85$), work values (68), turnover intention ($K = 40$) work engagement ($K = 31$), work-life balance (30), job stress and burnout ($K = 23$), and motivation ($K = 22$), were most frequently coded. Other outcomes represented in the search but having few generational comparisons available for a meta-analysis included work centrality ($K = 4$) and leadership preference ($K = 3$), along with several idiosyncratic outcomes (e.g., authenticity, attitudes towards fun, emotional intelligence). Among studies examining motivation, there was very little consistency in the way that the constructs were conceptualized and measured, with most studies employing self-developed measures and conceptually distinct operationalizations. In several studies (e.g., Acar, 2014; Perry, 2016), the conceptualization of motivation overlapped very closely with work values. These studies were included in analysis as work values. We excluded the remaining motivation studies as there was too little conceptual overlap for these studies to be coherently synthesized as a single

³ These sample sizes represent the total number of articles in which the variables were examined. Studies often differed in the generation cohorts that were studied and compared (e.g., one study may include Gen Y and Gen X and another study may include Boomers and Traditionals). Therefore, even when a variable appeared in three or more articles, there was not necessarily a sufficient sample of generational comparisons to meta-analyze.

construct. The above effort resulted in a dataset containing 406 articles that discussed generational differences in job satisfaction, organizational commitment, turnover intention, work engagement, work values, work-life balance, or stress/burnout.

Inclusion Criteria

Articles were split among three researchers who read through each article carefully to determine which articles would be included in the meta-analysis. Several inclusion rules were established. First, articles must have empirically compared generational groups, as commonly defined⁴, on a work outcome of interest. Articles that used age-range groups that could not be mapped onto specific generations or articles that combined multiple generations for analysis (e.g., Chawla et al., 2017) were excluded. Two articles that eliminated individuals born in “cusp years” (i.e., the first and last few years of each generational cohort) from analysis were also excluded (Haddad, 2013; Leiter et al., 2010) to maintain consistency in terms of conceptualization of generations and because eliminating these cusp members is likely to strengthen age effects.⁵

Second, articles must have examined job satisfaction, organizational

⁴ The start and end dates for generations are not universally agreed upon. The Pew Research Center (Dimock, 2019) sets them as Silent (1928-45), Boomer (1946-1964), Generation X (1965-80), Millennial (1981-1996), Generation Z (1996+), but researchers have often chosen different start and end dates that can vary from Pew’s operationalization by as many as five years. We included all studies that defined generations in ways that were relatively consistent (i.e., +/- 5-year start and end dates) with the Pew definition. Birthyear definitions for generations in each study included in analyses can be found in Online Supplement 1.

⁵ Including cusp year studies in analysis did not meaningfully change meta-analytic estimates for any of the generational comparisons. Cusp year studies are included in the full dataset provided in Online Supplement 2 and coded as “cusp.”

commitment, turnover intention, work engagement, work values, work-life balance, or stress/burnout. Articles that did not include any of these variables were excluded. Third, articles must have provided cohort sample sizes and a standardized mean effect size (i.e., Cohen's d) or information that can be transformed into a standardized mean effect size (e.g., means and standard deviations, t statistic) for generational comparisons. Authors of articles that did not provide such information were contacted via email. Articles that did not provide specified effect information, and from whom we did not hear back via email were excluded from the meta-analysis. Of the 389 articles fully reviewed, 140 met our inclusion criteria, including 120 articles not included in Costanza et al. (2012). The final dataset consisted of 143 independent samples, comparing job satisfaction ($K = 54$), organizational commitment ($K = 52$), turnover intention ($K = 28$), work values ($K = 27$), work engagement ($K = 23$), stress/burnout ($K = 11$), and work-life balance ($K = 11$) across at least two generational cohorts. References to all studies included in analyses can be found in Online Supplement 1E. The full meta-analytic dataset can be found in Online Supplement 2.

Coding Procedures

Three researchers were responsible for coding all articles, with approximately 40% of articles ($K = 60$) randomly assigned to multiple coders. Our goal was to create a low-inference coding system to reduce uncertainty and limit the need for subjective judgment. We developed a

coding form in Microsoft Excel that included columns for study ID, authors, title publication year, source, publication status (e.g., dissertation, conference presentation, publication), and sample characteristics including generational cohorts and their birthyear operationalizations, sample size, country of origin, and occupation. We also intended to code for generation cohort-specific characteristics within studies (e.g., age, tenure, gender distribution), but very few studies provided this information at the generation cohort level. Coders additionally recorded work variables included in each study, standardized effects for generational comparisons, or information that could be transformed into standardized effects (e.g., means and standard deviations) and scale reliabilities.

Consistent with previous meta-analytic efforts (e.g., Rudolph et al., 2017), we used a synthetic construct grouping approach to code for study variables in which substantively similar constructs were grouped. For instance, affective commitment, normative commitment, continuance commitment, and broader organizational commitment were synthetically grouped as organizational commitment. Similarly, work stress and burnout were grouped, general job satisfaction and facet-level job satisfaction were grouped, as were work-life balance, work-life conflict, and family-to-work spillover and work-to-family spillover. See Table 2 in Online Supplement 1B for the full list of synthetic groupings. To provide support for these groupings, we used the online metaBUS platform (Bosco et al., 2015). metaBUS is a search engine created to rapidly summarize search findings.

Several of these work variables were strongly interrelated according to the metaBUS database (e.g., general job satisfaction and facet-level job satisfaction, $r = .57$; affective commitment and organizational commitment, $r = .51$, burnout and subjective stress, $r = .51$). For instances in which a coder was unsure if a study variable fit within one of the synthetic groupings, the study team discussed and until there was a consensus agreement.

Studies examining work values have done so using a variety of measures to assess various work preferences (e.g., pay, career development, recognition, status). Despite the many labels and measures four higher-order categories of work values have consistently been identified (Lyons et al., 2010; Schwartz, 1992): 1) cognitive or intrinsic values (e.g., personal growth, interesting work, autonomy); 2) instrumental or extrinsic values (e.g., pay, benefits, security, feedback); 3) social/altruistic (e.g., relationships, contribution to society); and 4) prestige or status (e.g., authority, influence, prestige). We, therefore, coded studies for each of these four higher-order work values. Consistent with previous meta-analyses of work values (Jin & Rounds, 2012), when primary studies assessed and reported statistics for lower-order work values, we assigned each value to one of the four higher-order value categories based on their content. Lyon and colleagues' (2010) categorization of work aspects based on their revised value structure was used to guide categorization. All studies that included work values were coded by multiple researchers.

Across the total sample of studies, coding agreement was high. Eighty-one percent of studies coded by multiple researchers contained no discrepancies. Agreement on the categorization of specific values into higher-order categories was also high (85%). All disagreements were resolved through discussion and reference back to primary studies.

Analytic Procedures

Meta-analyses were conducted in R using the psychmeta package (Dahlke & Wiernik, 2019). We corrected observed standardized differences for sampling and measurement error and estimated meta-analytic effect size estimates using Hunter and Schmidt's (2004) random effects procedures. We corrected for sampling error by calculating sample size-weighted differences. We corrected for attenuation where possible (i.e., for multi-item scales). Artifact distributions were used when reliabilities for multi-item scales were not reported and linear composites were calculated (Hunter & Schmidt, 2004) when independent samples reported multiple standardized differences between two generations for the same synthetic outcome.

Possible moderators were determined by examining primary studies. Characteristics of the samples (e.g., job tenure, age, gender distribution) did vary, but too few studies reported generation-specific means for these variables to be included as moderators. Country of data collection and sample occupation did vary enough to include as a moderator. Ninety-one studies collected data in the US. The next most represented countries were Canada and South Africa, with 9 and 7 sources, respectively, followed by

India and Australia, with 5 and 4 sources, respectively. The most common occupations sampled were healthcare (e.g., $K = 31$), professional services (e.g., lawyers, consultants, banking, $K = 17$), government ($K = 14$) hospitality ($K = 10$), education ($K = 9$), and civil services (e.g., park services, correctional officers, $K = 7$). Following best practice, we used hierarchical subgroup meta-analysis for moderator analysis due to the relatively small subgroup K (Schmidt, 2017). In hierarchical meta-analysis, moderator categories are subgrouped with effects estimated for each subgroup. In addition to the mean observed standardized difference (\bar{d}) and the sample size-weighted and reliability-corrected mean standardized difference (i.e., mean delta; $\bar{d}_{w,r}$), we report the 95% confidence interval and the 80% credibility interval for $\bar{d}_{w,r}$. A sample size-weighted and reliability-corrected standardized difference is considered statistically significant when its associated confidence interval does not include zero. Ninety-five percent confidence intervals can be directly compared across different levels of the same moderator, with non-overlapping 95% confidence intervals suggesting that moderator subgroups are statistically different from one another ($p < 0.05$).

We additionally report the p value associated with a two one-sided test (TOST) procedure (Lakens, 2017) for each sample size-weighted and reliability-corrected standardized difference estimate. The TOST procedure tests an estimated effect against a null hypothesis that the true effect is more extreme than a specified lower and upper equivalence bound. When

90% confidence intervals for d fall within the equivalence bounds, the observed meta-analytic effect is statistically significant. As a general guideline, Cohen (1988) suggested that when interpreting d , an effect size of .2 -.3 can be interpreted as a small effect; effect sizes around .5 can be interpreted as a medium effect; and effect sizes of .8 or higher can be interpreted as a large effect. Giganic and Szodorai (2016) and Funder and Ozer (2019) set similar benchmarks, with a standardized difference of .2 representing small effects. We, therefore, set the equivalence bound at -.15 and .15, representing practically negligible effects (Wiernik et al., 2017). A TOST p value that is less than .05 indicates reasonable certainty that a generation effect falls within this specified range.

Publication Status Sensitivity Analysis and Outlier Analysis

We conducted two separate sensitivity analyses to address the influence of publication status on our conclusions (i.e., the “file-drawer” problem; see Rosenthal, 1979). To ensure a reasonable distribution of published and unpublished studies, we considered the comparisons across Gen Y, Gen X, and Boomers for our highest K work variables, intrinsic values, extrinsic values, job satisfaction, organizational commitment, and engagement. The first sensitivity analysis addresses the possibility of publication bias. Publication bias occurs when the results observed from available primary studies systematically differ from the results in the population of all possible primary studies (Rudolph et al., 2017). To address

this possibility, we used the PET-PEESE method (Stanley & Doucouliagos, 2014).

The PET-PEESE method is a conditional approach that uses a meta-regression model to adjust for small-study effects such as publication bias, modeling the relationship between the effect sizes and their standard errors using a weighted linear regression. A significant slope indicates the possible existence of publication bias. The intercept provides an estimate of the corrected mean effect. When the intercept is significant, the model is re-estimated with the variance instead of the standard error (i.e., the precision-effect estimate with standard error; PEESE) for a less biased estimate. PET-PEESE analyses were conducted using the metafor package (Viechtbauer, 2010) in R.

A second sensitivity analysis we employed was cumulative meta-analysis. Studies were sorted by sample size from high to low and iteratively meta-analyzed starting with the study that included the largest sample. When non-significant findings are being suppressed, the cumulative means will tend to “drift” towards greater magnitude effects as smaller sample size studies are added (McDaniel, 2009)⁶.

Next, we conducted a sensitivity analysis to examine data for outlier and influential cases. To detect possible outliers, we used Viechtbauer and Cheung’s (2010) diagnostics and multiconditional decision framework using

⁶ We additionally conducted a subgroup analysis comparing the effects found in unpublished dissertations and theses to published studies included in our analyses. A description of these analyses and results can be found in Online Supplement 1D.

the influence function in the metafor package (Viechtbauer, 2010) in R. The diagnostics combine eight indexes (e.g., externally studentized residuals, Cook's distance) and flags any observation with extreme values on at least one of the diagnostics. Across all estimated generational comparisons, 28 cases were flagged.

Consistent with best practices (Aguinis et al., 2013), each case was examined to determine if outlying/influential cases were errors and whether the exclusion of cases had substantial effects on interpretation of results. In most cases, excluding influential/outlying cases reduced estimated effect sizes, but, for parsimony, we report results with and without flagged cases only when the exclusion of these cases changed the interpretation of results (see Table 1). Results from analyses with and without all flagged cases can be found in Online Supplement 1D. It is important to note that outlying/influential cases may be legitimate observations drawn by chance from the ends of a distribution. However, substantial changes in the interpretation of results with the inclusion/exclusion of a single study point to the fragility of estimates.

Results

Meta-analytic results for generational comparisons are summarized in Table 1. Consistent with prior meta-analysis (e.g., Rudolph et al., 2017), we include analyses for all comparable relationship where $K \geq 3$. Readers should interpret results from analyses with small K s with caution. However,

as Valentine et al. (2010) note, even when $K = 2$, meta-analysis is superior to other means of synthesis.

Work Values

No statistically significant differences were observed among generations across any of intrinsic/cognitive work values, prestige work values, or social/altruistic work values. For extrinsic/instrumental work values, evidence for small differences (Cohen, 1988; Funder & Ozer, 2019; Giganic & Szodaria, 2016) was observed between Gen Y and Baby Boomers, ($d = .28$, CI: .20; .36), Gen X and Baby Boomers ($d = .33$, CI: .23; .43), and Baby Boomer and Traditionals ($d = .10$, CI: .01; .21). Results from TOST suggested that differences between Baby Boomers and Traditionals ($p = .044$) were unlikely to be of meaningful magnitude. It is worth noting that differences observed between Generation X and Baby Boomers were heavily influenced by the inclusion of Twenge et al. (2010), which was flagged as a possible outlier, and estimated effects were substantially smaller ($d = .14$) but still statistically significant without this study (see Online Supplement 1D, Table S5 for results with all flagged outliers).

Results from TOST provided further evidence that meaningful differences were unlikely between Gen X and Baby Boomers ($p = .005$) and between Baby Boomers and Traditionals. ($p < .001$) for intrinsic/cognitive work values, between Gen Y and Gen X ($p = .015$) for extrinsic/instrumental work values, or for Gen Y and Gen X ($p = .013$), Generation X and Baby Boomers ($p = .045$) or between Baby Boomers and Traditionals ($p = .003$)

for social/altruistic work values. In sum, there was little evidence that generations differed in their work values.

Work-Life Balance and Stress/Burnout

Little evidence was found for generational differences in work-life balance or for generational differences in stress/burnout. Effect sizes for generational comparisons ranged from $d = .02$ (CI: -.10; .16) to $d = -.10$ (CI: -.26; .03) for work-life balance and from $d = -.05$ (CI: -.35; .25) to $d = -.10$ (CI: -.39; .17) for stress/burnout and results from TOST suggested that Gen Y and Gen X did not meaningfully differ in work-life balance ($p = .015$). When flagged outlying/influential cases were removed from analysis, small but statistically significant differences were found between Gen X and Baby Boomers for work-life balance ($d = -.09$, CI: -.20; -.01) and stress/burnout ($d = .16$, CI: .06; .26).

Job Satisfaction and Turnover-Intention

Little evidence was found for meaningful differences between generations for job satisfaction. Small statistically significant differences were observed between Gen Y and Gen X ($d = -.07$, CI: -.13; -.02), Gen Y and Baby Boomers ($d = -.15$, CI: -.25; -.05), and Generation X and Baby Boomers ($d = -.09$, CI: -.15; -.04), but TOST analysis suggested that differences between Gen Y and Gen X ($p = .002$) and between Gen X and Baby Boomers ($p = .013$) were unlikely to be practically meaningful. Effect sizes for difference in turnover intention ranged from $d = .11$ (CI: .03; .19) for the Baby Boomers and Gen X comparison, to $d = .32$ (CI: .20; .43) for the Baby Boomer and Gen

Y comparison. The general pattern was that older generations had slightly less intention to turnover, with effect sizes interpretable as “small.”

Organizational Commitment

Effect sizes for general organizational commitment ranged from $d = -.06$ (CI: $-.16; .04$) for Gen Y compared to Gen X to $d = -.70$ (CI: $-1.00; -.30$) for Gen X compared to Traditionals, although note the very small sample size for comparisons that include Traditionals. Effect sizes for sub-components of organizational commitment ranged from affective commitment ranged from $d = -.03$ (CI: $-.37; .32$) for comparison of Gen Y to Baby Boomers for normative commitment to $d = -.63$ (CI: $1.00; -.25$) for the Gen X Traditionals comparison. Taken as a whole, meta-analytic results provided mixed evidence for generational cohort differences in organizational commitment, with differences found between older generations (Baby Boomers and Traditionals) and younger generations (Gen Y and Gen X) for affective commitment, but not other forms of organizational commitment.

Work Engagement

Effect sizes for overall work engagement ranged from $d = .06$ (CI: $-.15; .03$) for the comparison of Gen Y to Gen X to $d = -.79$ (CI: $-1.38; -.28$) for the comparison of Gen Y to Traditionals. Effect sizes for the sub-facets of work engagement ranged from $d = -.08$ (CI: $-.19; .36$) when comparing Gen Y to Gen X on the sub-facet of vigor, $d = .32$ (CI: $-.58; -.07$) when comparing Gen

Y to Boomers on the sub-facet of dedication. In general, older generations tended to be slightly more engaged.

Summary of Meta-analytic Effects for Generational Comparisons

Our results suggest that empirical findings from the academic literature have tended to report mixed, null, or small differences among generations on work-related outcomes. Table 2 shows the average strength of meta-analytic estimates for each generational comparison across work variables. Overall, the average strength of r for comparisons of GenY and Gen X (mean $r = .09$, $SD = .05$) and for comparisons of Gen X and Boomers (mean $r = .15$, $SD = .09$) across 16 work variables and for comparisons of Boomers and Traditionals (mean $r = .19$, $SD = .15$) across 8 work variables did not reach common benchmarks for what would be considered a “small effect” (Cohen, 1988; Funder & Ozer, 2019; Giganic & Szodorai, 2016). Averaging the strength of r for comparisons of GenY and Boomers (mean $r = .21$, $SD = .11$) across 16 work variables and the strength of r for comparisons of Gen X and Traditionals (mean $r = .32$, $SD = .27$) across seven work outcomes revealed small differences. Comparisons of Gen Y with Traditionals on 3 work variables (commitment, satisfaction, engagement) resulted in an average r of moderate strength (mean $r = .53$, $SD = .36$).

Moderator Analysis

We examined country of data collection as a hierarchical moderator. Studies were categorized as U.S. or non-U.S. Countries included in the non-U.S. analysis were Canada, Indonesia, New Zealand, Australia, Turkey,

Lithuania, Malaysia, South Africa, Finland, Israel, India, and mixed European. We considered any effects that contained at least $K=2$ for each subgroup. Moderator analysis did not provide evidence that effects significantly differed depending on whether studies were conducted with U.S. samples or with international samples. It is worth noting that, in several cases, these comparisons were across subgroups with small K s and, therefore, wide and crossing confidence intervals. However, even in instances in which estimates were based on relatively large samples, we did not find evidence for country as a moderator. We additionally looked at sample occupation as an exploratory moderator to see if estimates differed based on occupation (i.e., healthcare, hospitality, government). We found no evidence that estimates differed based on sample occupation. Results from moderator analysis are presented in Table S3 and Table S4 in Online Supplement 1C.

Publication Status Sensitivity Analysis

Sensitivity analyses provided mixed evidence that publication bias affected estimates in our study. More specifically, PET-PEESE estimates for the slope of the standard error for all comparisons were nonsignificant, suggesting a lack of evidence that publication bias affected estimates. Consistent with our meta-analytic results, the PET-PEESE estimates for the true standardized differences between generational cohorts for job satisfaction and affective commitment were all non-significant. Cumulative meta-analysis provided some evidence of “drift” associated with publication

status. More specifically, in analysis of satisfaction and commitment, the two highest *K* outcomes in our study, cumulative effects did tend to “drift” toward greater magnitude effects as small sample studies were entered into analysis, suggesting the presence of publication bias. However, such drift was not as evident for analysis of engagement, intrinsic, or extrinsic motivation. See Online Supplement 1D for more detailed findings from sensitivity analysis.

Discussion

Our findings suggest that empirical results from the academic literature have continued to report mostly null, mixed, or small differences among generations on key work-related outcomes. Overall, results from Study 1 differed little from those of Costanza et al. (2012), even with the greater number of primary studies. Of particular note, was the general lack of differences in work values observed among generations, as these purported differences are central to generational models (Campbell et al., 2015). There were small differences observed between older generations (Boomers) and younger generations (Gen Y and Gen X) on extrinsic/instrumental values. The strength of these differences was largely driven by an influential study with a very large sample size (Twenge et al., 2010). Across estimated comparisons for work values, there was a greater number of relationships for which TOST analysis suggested an absence of meaningful generational differences. Similarly, and contrary to some suggestions that differences in work values among generations should

result in differences in work-life balance (Lyons & Kuron, 2014), little evidence was found for differences in work-life balance or stress/burnout.

In terms of work variables in which significant differences were observed (commitment, engagement, turnover intention), effects were mostly small and plausibly explained by other factors. The trend that older generations tended to be more engaged, affectively committed, and higher in intent to stay than younger generations aligns with research on these work variables that shows older, more experienced, and longer-tenured employees higher in these variables (Cohen, 1993; Kim & Kang, 2017; Ng & Feldman, 2010). It is likely that differences observed were attributable to these age-related factors. This may be particularly true in comparisons of Gen Y and Traditionals, who may be separated in age by 50+ years.

As an additional examination of generations theory, we examined sample location as a potential moderator. Generations theory explicitly suggests generational characteristics as formed by sociocultural-level events and trends. If any observed differences were attributable to the effects of generation, as opposed to the effects of age, tenure, or other characteristics which are less culturally bound, then sample country should moderate those differences. We found no evidence that any effects varied based on whether the samples consisted of U.S. or non-U.S. individuals. Given research showing that cross-sectional studies of generations are particularly problematic when it comes to trying to identify generational effects (e.g., Costanza et al., 2017), it is concerning that the majority of

studies identified have employed cross-sectional methods.

Another result worth noting is the finding that there was small but noticeable publication bias among the primary studies. Although the PET-PEESE analysis did not find evidence that publication bias affected estimates, cumulative meta-analysis revealed some evidence of “drift,” suggesting that studies of generations that did not find statistically significant differences may have been placed in “the file drawer” (Rosenthal, 1979). These analyses indicate that even the small estimates observed may be somewhat inflated.

Study 2

Results from Study 1 indicated that studies of generational differences tended to find mixed, small, or null effects. These equivocal findings, in and of themselves, are unlikely to convince many of the usefulness of categorizing workers with generational labels to define their needs and behaviors. And yet, this practice continues, why? One possibility is that, independent of empirical findings, authors of generations research have interpreted and discussed their findings in ways that may have given the impression that generation-based differences have had substantive effects in workplaces. To explore this possibility, we qualitatively analyzed each article included in our meta-analysis, coding how authors conveyed their findings and recommendations independent of, and in relation to their results.

Method

We used a multi-stage qualitative coding procedure to investigate how authors of generations studies have discussed their findings and the impacts of generations in workplaces. First, for each article, we coded whether authors included a priori directional hypotheses regarding generational differences. When authors formed directional hypotheses about generational effects (e.g., "Generation X will be less engaged than Generation Y"), it was coded as "yes." When authors included nondirectional hypotheses about generational effects (e.g., "generations will differ in their engagement") or did not hypothesize about generational effects, it was coded as "no." For articles that included directional hypotheses about generational effects, we reviewed the study's Results section, coding how many of the directional hypotheses were found to be "fully supported," "partially supported," or "not supported." For each article included in the meta-analysis, we also coded how many generational groups were compared, on how many variables these groups were compared, and based on these data, how many total generational contrasts were examined. For instance, if a study compared three generational groups on three components of commitment, the total number of generational contrasts was coded as "9."

Next, two authors independently read the Discussion and Conclusion sections of each article to code how authors interpreted and conveyed their results about generational differences. Specifically, each author independently coded whether authors conveyed their results as providing:

1) clear support of generational differences; 2) partial/conflicting support for generational differences; or 3) no support for generational differences. For example, if an article used language like “overall, findings demonstrate stark, consistent differences between generations,” it was coded as *clear support*. If an article suggested that “differences among generations were observed on some variables of interest but not others,” it was coded as *partial/conflicting support*. Each author also coded whether the authors offered generations-based recommendations to organizations and practitioners and whether authors called for future research efforts exploring generation-based differences. There was relatively high agreement for coding of these variables (inter-coder agreement ranged from 74.4 % for coding of whether authors conveyed that their results supported generational differences, to 82.5% for whether authors called for future generations-specific research). All disagreements were reconciled through discussion.

Finally, coders noted instances in which articles: 1) explained or justified null or partial/conflicting findings as to generational differences; 2) advocated for the use of generations in workplaces; or 3) encouraged future generations-specific research. For each of these categories, we coded specific examples of recurring language, phrasing, and articulations, clustering them into broad themes. For instance, several articles noted sampling size limitations in explaining null or partial/conflicting findings. Several other articles identified sample demographics as a possible

explanation for null findings. These two themes were combined into a broad theme of *sampling-based justifications* for null or partial/conflicting findings. This iterative process of clustering and theme identification was used to identify core themes for each of the three specified categories. After coding all the articles, the preliminary themes were reviewed again and simplified into an overall set of common themes representing explanations and justifications for continued acceptance of and reliance on generations.

Results

Full results from content-coding of 137 codable articles can be found in Online Supplement 3 along with example excerpts from each article supporting the coding decisions. Overall, relatively few studies (22.6%) formed a priori directional hypotheses about generational differences, and of those that did, relatively few found support for their hypothesis. Authors of thirty studies formed a total of 127 a priori directional hypotheses about generational differences. Of these hypotheses, about 64% were not supported, 21% were partially supported, and 15% were fully supported by results. In general, generations studies tended to search for differences among cohorts in an exploratory manner across a wide variety of variables. On average, studies examined generational differences on a little over 8 variables ($SD = 9.6$) across about 3 cohorts, equaling approximately 24 generational contrasts examined per study, with about 4.8 ($SD = 5.9$) of these contrasts showing differences at a statistical significance of $p < .05$.

In terms of how authors interpreted and conveyed these findings in

their Discussion sections, the majority reported finding support or partial/conflicting support for generational differences. In total, 44 studies conveyed that their results provided clear evidence for generation differences, 61 studies reported finding partial/conflicting evidence for generational differences, and 32 studies reported finding little to no support for generational differences. Many authors based their conclusions on a few observed differences among many examined variables, with some authors interpreting descriptive differences in the strength of correlations or beta coefficients as evidence for generational differences (e.g., Benson & Brown, 2011; Cennamo & Gardner, 2008; Grobler & Rensburg, 2019; Lu & Gursoy, 2016). When authors did observe null or partial/conflicting support, they often pointed to situational characteristics like sample demographics or external factors like economic downturns or methodological error (e.g., survey design) or sampling error (e.g., industry) to explain these results (see Table 4 for a summary of these justifications).

In total, 95 articles ($\approx 69\%$) offered generation-based practical recommendations to organizations (see Table 3). Many articles coded as finding mixed/partial support for generation differences or as not finding evidence for generation differences offered generation-based practice recommendations nonetheless. Fifty out of 63 ($\approx 82\%$) articles coded as finding partial/conflicting evidence for generation differences offered generation-based practice advice and 10 out of 32 (31%) articles that conveyed not finding any support for generation differences still offered

generation-based practice advice. For instance, Louw and Renier (2021) concluded in their study of work engagement among Millennials and Generation Xers that “no mean differences exist between Generation X and Millennials as far as total engagement scores are concerned” (pg. 7), but still recommended in their Discussion section that companies invest engagement interventions for Millennials, noting that previous studies have found that Millennials tend to focus on short-term goals at the expense of long term goals. Cennamo and Gardner (2008) were unable to support any of their hypotheses regarding generational differences for six measured work values, but did find small differences in two of the work values that ran counter to their hypotheses. They pointed to these small, non-hypothesized differences in advocating for HR professionals and managers to gain a better understanding of generational groups. Broadly speaking, nearly all generations specific practice recommendations fit one of four themes: 1) managers must take active steps to better recognize and understand the needs and preferences of each generation cohort; 2) human resource systems must be tailored to each generational cohort’s needs/preferences 3) organizations should adopt generational trainings and socialization programs; and 4) managers must adjust their leadership style to motivate different generations.

Most studies (78%) called for future research efforts specifically aimed at identifying generational differences. Authors that did not observe consistent generational differences among cohorts in their studies often

called for future research efforts to search for differences among other generational cohorts (e.g., Marcus & Leiter, 2017; Sparks 2012), through different sampling and analytic methodologies (e.g., Carver et al., 2011 Smith et al., 2019), or with different populations of workers (e.g., Nelson et al., 2012; Louw & Renier, 2021). For example, Sujdak (2003) wrote, “although there appeared to be no significant differences, differences may be found with a larger sample with an equal distribution of Baby Boomers and Generation Xers” (p. 91). Despite the high frequency of exploratory research and calls for additional generations research, very few authors called for research that develops, modifies, elaborates on, or directly tests generations theory.

Overall, we found that authors often searched for generational differences among many variables of interest and did so in an exploratory manner absent a priori hypotheses. In general, authors tended to find relatively few differences within their data but frequently conveyed these findings as support for generational differences, made practical recommendations based on these findings, and emphasized the need for future research aimed at identifying further differences.

Discussion

Results from our qualitative analysis help to explain the continued use of generational characterizations in research and practice despite the relatively few and small differences observed in our meta-analysis. What we observed in the generations literature was not a program of research

building upon itself to advance, test, and refine theoretical explanations for differences among workers, but instead, a collection of largely exploratory studies searching for group differences among many variables, and attributing found differences to generational membership. That authors rarely formed or supported specific generational hypotheses was not surprising given the discussed limitations of generations theory. However, the result was that authors of generations studies could point to an observed group difference on any variable as clear support for generational effects, even when the observed difference was in direct contradiction to another generation study that also pointed to their findings as support for generational effects.

It is concerning how many authors provided actionable generations-specific advice to organizations and managers despite the exploratory nature of the research and inconsistency of results. There seemed to be an apparent default acceptance by many authors that important generational differences at work exist, and the main question was whether the research being conducted would or would not uncover these differences. This acceptance of the generational premise may account for the many studies that made generations-based recommendations despite few observed differences. Many studies, even among those that concluded that their own results did not support generational differences, pointed to findings from other exploratory generational studies to justify practice recommendations. The overall effect was that, regardless of empirical results, readers of most

generations studies were likely to come away from reading the article with the impression that generational differences at work are impactful and should be acted upon.

Understandably, most authors advocated for future generations-specific research efforts to address the limitations of their own studies and to identify additional differences among generational cohorts. These calls for future research are normal practice and not doing so would likely draw scrutiny from peer reviewers. However, given that research has thoroughly explored the methodological limitations of studying generations (Costanza & Finkelstein, 2015; Costanza, et al, 2017; Rudolph et al, 2019; Rudolph, et al 2020), answers to such calls are unlikely to provide additional clarity about generations and are likely to encourage further studies that search for and promote generational characterizations.

General Discussion

Broadly speaking, findings from our meta-analysis mirrored those of Costanza et al. (2012). Most of our estimates for generational differences were small (Cohen, 1988) and often statistically insignificant. The few studies that included samples with the Traditionals and younger generations (Gen X and Gen Y) did show moderate strength differences between these employees in satisfaction, engagement, and commitment. It is possible that it has been findings from these studies that have given some the impression that substantive generationally-based differences exist,

despite these observed differences being better explained by age, career stage, and any number of other meaningful individual differences.

Beyond the quantitative findings, we added a qualitative analysis of the language used to convey and interpret findings from those articles. It was somewhat surprising, in the face of the empirical findings both from the 2012 meta-analysis, which should have been informing studies since then, and in the discussion sections of specific studies, that authors largely continued to accept the premise of underlying generationally-based differences. Once they adopted this frame, the researchers spent a great deal of time and effort looking for differences. Then, even when they did not find substantive or meaningful generational differences or when their results were equivocal, many continued to emphasize their existence, importance, and actionability. It is this acceptance of the generational premise that may account for the perpetuation generational characterizations, and that has led to authors making practical recommendations based on generational differences despite finding little evidence supporting their conclusions.

This finding, in tandem with the conclusions of Costanza et al. (2020) about inappropriate inferences in generations research, suggests that while the empirical evidence is lacking, academic research may send a message to organizations and managers that generation differences exist, need to be dealt with, and should be studied further. Given the number and frequency of stories, profiles, recommendations, and consultant promotions advocating

for paying attention to generational differences, our conclusion is that organizations and managers are continuing to buy into generational characterizations and may well be using beliefs about generations to make decisions in the workplace, an outcome we find particularly questionable given the empirical evidence.

Implications for Theory

Scholars have noted the many problems with generations theory (Rudolph et al., 2012), not least of which is the unsupported notion that being alive and of a similar age at the same time means that individuals experience history *uniformly*. However, central to this theory is the idea that external sociocultural events and trends shape cohort-level *values*. In examining findings from academic literature, we found little support for the proposition that generations meaningfully differ in work values. The differences we did observe between older cohorts and younger cohorts on extrinsic/instrumental work values were largely driven by a single influential study (Twenge et al., 2010) and our TOST analysis provided a greater amount of evidence that generation cohorts, in fact, do not meaningfully differ in work values. These findings once again call into question the utility of generations theory.

Moderator analysis provided little evidence that generational effects in U.S. samples differed from those in non-US samples, suggesting that the small differences between cohorts that were observed in our meta-analysis were likely attributable to non-generational factors (e.g., age, tenure, life

stage). As discussed, the shared experience component of generations clearly implies that effects occur at a socio-cultural level. There is little reason to think that US-centric events and trends should have similar effects on individuals across the world who are embedded in a variety of sociocultural contexts, as to create cohort-level similarity. Thus, if generational effects were present in our study, we would expect those effects to be different in U.S. vs international samples. Across the forty-six estimated generational comparisons in which country was examined as a moderator, not a single estimate differed based on whether participants were sampled from US or international populations. These results strongly suggest that researchers who are finding cohort-level differences in their studies and pointing to them as evidence for generational effects are very likely misattributing these effects.

Results from our qualitative analysis offer theoretical insights into why researchers may continue to conduct and call for further studies that search for generational differences, discount mounting evidence against generations and generational differences, and make generations-based practice recommendations in the face of this disconfirming evidence. Authors of generations studies tended to search for generational differences among many measured variables in an exploratory manner, often finding few sporadic differences and far more similarities among cohorts. Nonetheless, most researchers pointed to these few post hoc differences as clear evidence for generational effects and made practice recommendations

based on them. This form of confirmation bias, or tendency to search for, gather, attend to, and recall information that confirms one's expectations while ignoring evidence that runs counter to one's expectations can be particularly difficult to disabuse (Oeberfest & Imhoff, 2023), and has almost certainly contributed to the continued use of generations by organizational decision-makers as well.

Recommendations for Researchers, Reviewers, and Practitioners

Considering our findings and those of many others who have failed to find support for generational differences and generational theory, we are comfortable arguing that there are few theoretical implications left to explore in these areas. Multiple frameworks have been used, multiple analyses run, and multiple alternate explanations have been identified that raise doubts about the theoretical and conceptual support for generations. No studies have provided anything approaching definitive evidence for generational differences and no theories have been proposed that could be tested to provide such evidence. We agree with Rudolph et al.'s (2021) call for "a moratorium on time-based operationalizations of generations as units for understanding complex dynamics in organizational behavior" (p. 125). Instead, researchers and theoreticians should turn their attention to other models and approaches that show more promise in terms of understanding differences among individuals in the workplace and how they change across their careers and lives (Rudolph et al., 2021).

We encourage researchers interested in studying generations to

transition from searching for differences attributable to generational membership to research focused on understanding the processes that give rise to the subjective construction of generations and the systems that support people's continued acceptance of and reliance on generations. The social constructionist perspective suggests that generational differences do not exist objectively, but instead are "willed into being" as individuals adopt and give meaning to these constructions (Rudolph et al., 2021). Even if actual differences do not exist, the perception that they do is likely to have real effects in workplaces. Taking a social constructivist approach to generations research means transitioning from research aimed at gathering evidence to reject the null hypothesis that generations exist, to research aimed at understanding why individuals may adopt generational identities and the consequences of doing so (e.g., self-fulfilling prophecies). For instance, research is needed to better understand the processes that lead individuals to accept and identify with generational labels, the situations in which generational identities are most salient and most influential, and what effects generational identities have on individuals' self-perception, perception of others, and work behaviors. Taking a social constructionist approach enables researchers to study generations as a meaningful construct with measurable effects while not relying on generational stereotypes (Rudolph et al., 2020; 2021).

The lifespan development approach (Baltes, 1987) also offers a viable alternate approach to generations research for those interested in understanding how historical and sociocultural factors shape individuals. According to the lifespan perspective, aging is a multidimensional and

multidirectional process that is accompanied by individual and contextual developments over time, which in turn influence a person's experiences and behaviors. Like traditional generations research, the lifespan approach assumes that historical and sociocultural events impact the behaviors and development of individuals (Rudolph & Zacher, 2017). However, the lifespan approach makes no assumption that individuals within a specific age range are more likely than others to be influenced by historical and sociocultural effects or that those of the same age are shaped in the same way as to create lasting cohorts (Rudolph & Zacher, 2017). Researchers taking a lifespan development approach might examine how contextual factors such as economic conditions or political events, often suggested to shape generations, combine with person factors (e.g., abilities, personality) and idiosyncratic factors (e.g., health problems, job loss) to modify developmental trajectories of individuals.

From a practical standpoint, our qualitative analyses, along with the work of Costanza et al. (2020) and Salvi et al. (2022), raise questions about why managers, organizations, and the population at large continue to focus on, emphasize, and claim the need to better understand a phenomenon that does not exist. Practitioners should be quite concerned with the number and breadth of studies that offer practice recommendations based on small or non-existent findings. Our meta-analytic and qualitative analysis findings support the arguments against generations. Therefore, the practical focus should be on helping managers develop alternative ways of approaching the

changing nature of workers that are more theoretically and empirically supported.

Considering our findings, we encourage journal editors, reviewers, and those serving on dissertation committees to pay attention for unsupported claims regarding generations, especially given that the preponderance of evidence fails to support the concept to begin with. Our qualitative analysis revealed that many studies provided generations-specific recommendations for practitioners and researchers despite null or partial findings. These studies often relied on overly broad theory and small number of previous efforts that purported to find generation cohort differences as justification for such recommendations. It is clear at this point that neither theory nor evidence supports generation-based differences at work and claims to the contrary should be treated with a great deal of skepticism. We also recommend that authors refrain from using generational labels to refer to birthyear cohorts, even in studies that are not aimed at identifying differences in these groups. Minimizing or eliminating generational labels can serve to lessen stereotypical expectations while refocusing the research toward more supportable explanations such as age, lifespan, or constructed identities.

For managers and organizations, our findings reinforce the conclusions of the National Academies of Sciences report that generational characterizations are not based in empirical evidence and, therefore, should not be used in workplaces. We recommend that practitioners continue to

rely on established techniques, job analyses, testing, selection, and assessment strategies that identify individual and collective characteristics that actually matter for workplace outcomes. In Table 5, we offer a summary of our recommendations for authors considering researching generations, for journal editors and reviewers evaluating generations research, and for practitioners managing workers of widely varying ages, and highlight the benefits of adopting these recommendations and risks associated with not doing so.

Limitations

There are several limitations of this study. First, although the current analysis represents the most comprehensive meta-analysis of the generations literature, our analysis still includes some generational comparisons dependent on a relatively low K . We were unable to include generation comparisons to the youngest generation cohort (dubbed Generation Z), for whom there has been little empirical research, but a great deal of discussion in the popular press (e.g., Kobylinski, 2021). Further, the idiosyncratic nature of the generations literature (i.e., studies with various outcomes and self-developed measures) means many investigations that explored generation differences on work-relevant outcomes were not included in our analysis. However, given the overly broad theory for why work outcomes of interest should differ based on generation cohort membership, we do not believe that even had we been able to include such efforts, the current meta-analysis would have resulted

in substantially different conclusions. It is also important to note limitations to the TOST procedure. Although some researchers have noted that meta-analysis provides a particularly good opportunity to reject small effects using equivalence testing (Lakens 2017), others have noted, among other limitations, that significance testing in meta-analysis may be particularly vulnerable to Type I error (see Polanin & Pigott, 2015, for a full discussion of significance testing in meta-analysis). Therefore, TOST results should be interpreted with appropriate caution.

Second, all studies included in our analysis used cross-sectional designs. The inability of cross-sectional research to parse age and period effects from generational effects has been well discussed (e.g., Costanza et al., 2017; Rudolph et al., 2020) and effects observed in our study should be interpreted with these limitations in mind. The goal of our meta-analysis, however, was not to uncover any “true effect” of generation cohort on work outcomes, but instead to synthesize the generations research to examine what has been conveyed to readers. A limited number of studies have employed alternate methodologies (i.e., hierarchical linear modeling, cross-temporal meta-analysis) to attempt to explore generation cohort differences (e.g., Kowske et al., 2010; Twenge et al., 2010). Results from these studies could not be included in our analysis because these analytic approaches produce effect sizes that do not parallel those from cross-sectional studies. However, given the small generation effects observed in these studies, it is unlikely that including them would have changed the results. Further, these

alternate approaches are no better equipped to disentangle linear dependency among age, period, and cohort (Rudolph et al., 2019).

Third, although we examined U.S.-based vs non-U.S.-based samples as a potential moderator, we were unable to investigate between-country variation in cohorts specifically. Recent evidence suggests that work value differences between younger and older workers may be more pronounced in countries with more individualistic cultures such as the U.S. (Peretz et al., 2021) and generations theory suggests that birth-year cohorts should only exist to the extent that individuals share common experiences. Thus, it is possible that aggregating international samples may have masked country-level moderation effects.

Conclusion

While the evidence against generationally-based differences is clear and continues to mount, we acknowledge that the academic literature is far from the only source perpetuating generational characterizations. Academics have little control over how media outlets report research findings or how popular press writers present anecdotes, marketing trends, and organizational practices. Nonetheless, it is imperative that the academic research be well-designed, properly executed, and clearly explained and that researchers are very cautious not to go beyond their findings in discussing their research.

We would like to say that beliefs about the existence of generational differences are slowing, and that managers and organizations have stopped

using them. Unfortunately, we are not terribly sanguine about this possibility. Instead, we recommend that researchers continue to look for better explanations of any differences that are found, investigate the origins and the effects of beliefs in generational characterizations, work to understand why academics and practitioners continue to advocate generational thinking, and develop theory and practices that help scientists and practitioners avoid researching, using, and propagating this concept.

Supporting Information

Meta-analytic data, syntax, and citations to all studies included in analyses can be accessed using the following link: https://osf.io/4k2fs/?view_only=779fd0663e5941b3b61e88ae8fc833b9

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Table 1

Results of Meta-Analyses of Generational Differences and Two One-Sided Test of Equivalence

Group Contrast	<i>k</i>	<i>N</i>							95% CI	80% CR	TOST <i>p</i>
Intrinsic/Cognitive Work Values											
Gen Y - Gen X	2	100	-.0	.1	-.0	.1	.1	.1	[-.18, .00]	[-.29, .11]	.064
	1	20	8	7	9	9	6				
w/o Rani & Samuel (2016)	2	941	-.1	.1	-.1	.1	.1	.1	[-.18, -.04]	[-.25, -.03]	.129
	0	7	0	3	1	5	0				
Gen Y - Boomers	1	892	-.1	.2	-.1	.2	.2	.2	[-.30, .01]	[-.48, .20]	.451
	4	5	3	4	4	8	5				
Gen X - Boomers	1	132	.0	.1	.0	.1	.1	.1	[-.04, .13]	[-.15, .24]	.005
	7	82	4	5	5	7	4				
Gen X - Traditionals	3	130	.0	.2	.0	.2	.2	.2	[-.71, .76]	[-.43, .48]	.215
		5	2	6	2	8	4				
Boomers - Traditionals	3	212	-.0	.0	-.0	.0	.0	.0	[-.03, .00]	[-.02, .02]	<.001
		2	1	1	2	1	0				
Extrinsic/Instrumental Work Values											
Gen Y - Gen X	2	976	-.0	.1	-.0	.1	.1	.1	[-.13, .03]	[-.21, .11]	.015
	0	6	4	4	5	6	2				
w/o Twenge et al. (2010)	1	483	.0	.1	.0	.1	.0	.0	[-.03, .14]	[-.05, .16]	.007
	9	4	5	4	6	7	8				
Gen Y - Boomers	1	872	.2	.1	.2	.1	.0	.0	[.20, .36]	[.17, .39]	.999
	3	1	4	1	8	3	8				
Gen X - Boomers	1	109	.2	.1	.3	.1	.1	.1	[.23, .43]	[.13, .53]	.999
	5	17	8	5	3	7	4				
w/o Twenge et al. (2010)	1	522	.1	.0	.1	.1	.0	.0	[.08, .20]	[.14, .14]	.314
	4	7	2	9	4	0	0				
Gen X - Traditionals	3	130	.2	.1	.2	.2	.1	.1	[-.22, .83]	[.03, .52]	.857
		5	4	7	8	0	3				
Boomers - Traditionals	3	212	.1	.0	.1	.0	.0	.0	[.01, .21]	[.11, .11]	.044
		2	0	4	1	4	0				
Prestige Work Values											
Gen Y - Gen X	1	364	.1	.2	.1	.3	.2	.2	[-.03, .38]	[-.19, .54]	.609
	1	4	5	6	8	0	7				
Gen Y - Boomers	1	260	.2	.3	.2	.4	.3	.3	[-.01, .61]	[-.25, .83]	.847
	0	3	5	6	9	2	9				
Gen X - Boomers	1	486	.1	.2	.1	.2	.2	.2	[-.04, .32]	[-.20, .48]	.445
	2	8	2	4	4	8	5				
Gen X - Traditionals	3	130	.0	.2	.0	.2	.2	.2	[-.70, .71]	[-.41, .42]	.173
		5	0	3	0	7	2				
Boomers - Traditionals	3	212	-.0	.0	-.1	.0	.0	.0	[-.21, .00]	[-.11, -.11]	.057
		2	9	4	1	4	0				
Social/Altruistic Work Values											
Gen Y - Gen X	1	102	-.0	.1	-.0	.2	.1	.1	[-.14, .07]	[-.30, .22]	.013
	9	03	3	9	4	2	9				
Gen Y - Boomers	1	903	-.1	.2	-.1	.3	.3	.3	[-.33, .07]	[-.55, .30]	.391
	3	6	1	8	3	3	2				
Gen X - Boomers	1	107	-.0	.2	-.0	.2	.2	.2	[-.18, .11]	[.34, .27]	.045
	3	82	3	1	4	4	3				
Gen X - Traditionals	3	130	.1	.3	.1	.3	.3	.3	[-.75, 1.21]	[.44, .77]	.537
		5	5	1	7	5	2				

Boomers - Traditionals	3	212	.0	.0	.0	.0	.0	[-.21, .23]	[.01, .01]	.003
		2	1	8	1	9	0			
Work-Life Balance										
Gen Y - Gen X	1	974	.0	.1	.0	.1	.1	[-.10, .16]	[-.19, .24]	.015
	0	1	2	6	3	8	6			
Gen Y - Boomers	9	841	-.1	.1	-.1	.1	.1	[-.26, .03]	[-.35, .12]	.280
		8	0	7	1	9	7			
w/o Widger et al. (2007)		364	.0	.0	.0	.0	.0	[-.02, .09]	[-.04, .04]	<.001
	8	0	3	6	4	7	0			
Gen X - Boomers	1	164	-.0	.1	-.1	.1	.1	[-.21, .00]	[-.30, .09]	.161
	1	49	9	4	0	5	4			
w/o Lub et al. (2012)	1	162	-.0	.1	-.1	.1	.1	[-.20, -.01]	[-.27, .06]	.138
	0	77	9	2	0	3	2			
Stress/Burnout										
Gen Y - Gen X	7	219	-.1	.2	-.1	.3	.2	[-.39, .17]	[-.50, .28]	.352
		6	0	8	1	0	7			
w/o Workman (2017)		176	.0	.2	.0	.2	.1	[-.23, .22]	[-.24, .23]	.044
	6	4	0	0	0	1	6			
Gen Y - Boomers	6	215	-.0	.2	-.0	.2	.2	[-.35, .25]	[-.41, .31]	.191
		6	5	6	5	8	5			
w/o Workman (2017)		174	.0	.0	.0	.0	.0	[-.01, .18]	[.09, .09]	.029
	5	6	8	7	9	8	0			
Gen X - Boomers	8	387	.0	.2	.0	.2	.2	[-.11, .29]	[-.21, .39]	.225
		3	8	2	9	3	1			
w/o Leiter et al. (2009)		342	.1	.1	.1	.1	.0	[.06, .26]	[.09, .22]	.553
	7	5	5	0	6	1	5			
Job Satisfaction										
Gen Y - Gen X	3	212	-.0	.1	-.0	.1	.1	[-.13, -.02]	[-.25, .10]	.002
	9	43	7	6	7	7	3			
w/o Dobrota (2016)	3	207	-.0	.1	-.0	.1	.1	[-.10, .00]	[-.19, .09]	<.001
	8	33	4	3	5	4	1			
Gen Y - Boomers	3	198	-.1	.2	-.1	.2	.2	[-.25, -.05]	[-.25, .18]	.504
	3	32	4	5	5	7	5			
Gen Y - Traditionals	4	715	.1	.3	.1	.3	.3	[-.49, .76]	[-.44, .68]	.436
		1	6	2	8	4				
Gen X - Boomers	4	356	-.0	.1	-.0	.1	.1	[-.15, -.04]	[-.29, .10]	.013
	4	36	9	6	9	7	5			
Gen X - Traditionals	6	309	-.1	.2	-.2	.2	.2	[-.52, .10]	[-.60, .19]	.674
		1	9	7	0	9	7			
Boomers - Traditionals	6	413	.2	.2	.2	.2	.2	[-.02, .48]	[-.53, .08]	.781
		5	1	2	2	3	1			
Turnover Intention										
Gen Y - Gen X	1	129	.1	.1	.1	.1	.1	[.09, .22]	[.02, .29]	.575
	9	90	4	3	6	4	0			
Gen Y - Boomers	1	260	.2	.2	.3	.2	.1	[.20, .43]	[.06, .57]	.999
	7	3	9	0	2	2	9			
Gen X - Boomers	2	210	.1	.1	.1	.1	.1	[.03, .19]	[.12, .34]	.148
	4	04	0	8	1	9	8			
Organizational Commitment										
Overall Commitment										
Gen Y - Gen X	3	170	-.0	.2	-.0	.3	.2	[-.16, .04]	[-.43, .31]	.045
	6	37	6	8	6	0	8			
Gen Y - Boomers	2	109	-.1	.3	-.2	.4	.3	[-.36, -.04]	[-.70, .30]	.748
	7	22	9	8	0	0	8			
Gen Y - Traditionals	3	584	-.7	.1	-.7	.1	.0	[-1.0, -.30]	[-.70, -.70]	.999
		0	4	0	4	0				
Gen X - Boomers	3	195	-.1	.2	-.1	.3	.2	[-.25, -.05]	[-.52, .22]	.544
	8	33	3	8	5	0	9			

Gen X - Traditionals	5	113	-.4	.2	-.4	.2	.1	[-.72, -.13]	[-.67, .16]	.994
Boomers - Traditionals	5	150	-.2	.2	-.2	.2	.2	[-.62, .07]	[-.61, .08]	.822
		7	6	7	6	7	2			
Affective Commitment										
Gen Y - Gen X	3	140	-.1	.3	-.1	.3	.3	[-.28, .00]	[-.62, .34]	.442
	3	53	3	5	4	8	7			
w/o Agrawal (2017)	3	138	-.0	.2	-.1	.2	.2	[-.19, -.01]	[-.39, .20]	.112
	2	93	9	3	0	5	2			
Gen Y - Boomers	2	100	-.2	.3	-.2	.4	.3	[-.42, -.09]	[-.75, .25]	.898
	5	05	3	6	5	0	8			
Gen X - Boomers	3	167	-.1	.1	-.1	.2	.1	[-.19, -.04]	[-.36, .12]	.191
	2	13	1	9	2	1	8			
Gen X - Traditionals	4	110	-.5	.2	-.6	.2	.1	[-1.0, -.25]	[-.90, .35]	.999
		7	8	1	3	3	7			
Boomers - Traditionals	4	143	-.3	.2	-.4	.2	.2	[-.89, .01]	[-.78, -.04]	.970
		4	8	5	1	7	2			
Normative Commitment										
Gen Y - Gen X	1	396	-.1	.4	-.1	.5	.5	[-.38, .16]	[-.79, .57]	.373
	8	0	0	9	1	4	1			
w/o Agrawal (2017)	1	380	-.0	.3	-.0	.3	.3	[-.19, .16]	[-.43, .40]	.053
	7	0	1	1	2	4	1			
Gen Y - Boomers	1	202	-.0	.4	-.0	.5	.4	[-.37, .32]	[-.68, .63]	.211
	1	0	2	7	3	1	8			
Gen X - Boomers	1	383	-.0	.3	-.0	.4	.3	[-.27, .18]	[-.54, .46]	.149
	5	9	4	6	4	0	7			
Continuance Commitment										
Gen Y - Gen X	1	454	-.0	.4	-.0	.4	.4	[-.31, .13]	[-.65, .47]	.276
	8	3	8	0	9	5	2			
Gen Y - Boomers	1	257	-.0	.5	-.1	.6	.5	[-.52, .31]	[-.90, .70]	.398
	1	5	9	5	0	1	9			
Gen X - Boomers	1	427	-.1	.3	-.1	.4	.3	[-.38, .07]	[-.66, .36]	.511
	5	5	4	6	5	0	8			
Work Engagement										
Overall Engagement										
Gen Y - Gen X	2	163	-.0	.1	-.0	.2	.1	[-.15, .03]	[-.31, .19]	.020
	1	03	6	9	6	0	9			
Gen Y - Boomers	1	478	-.3	.3	-.3	.3	.3	[-.58, -.17]	[-.70, .08]	.992
	6	9	6	5	7	7	4			
Gen Y - Traditionals	3	475	-.7	.1	-.7	.2	.0	[-1.38, -.28]	[-.79, -.79]	.999
			6	9	9	0	0			
Gen X - Boomers	1	540	-.2	.1	-.2	.1	.1	[-1.26, -.09]	[-.66, -.66]	.992
	5	4	6	8	7	8	5			
Gen X - Traditionals	3	121	-.6	.2	-.6	.2	.0	[-.72, -.13]	[-.67, .16]	.999
		4	3	2	6	3	0			
Boomers - Traditionals	3	164	-.3	.1	-.3	.1	.0	[-.84, .09]	[-.37, -.37]	.979
		4	5	8	7	9	0			
Dedication										
Gen Y - Gen X	9	551	-.0	.1	-.0	.1	.1	[-.20, .03]	[-.25, .08]	.078
		8	8	4	8	5	2			
Gen Y - Boomers	9	307	-.2	.3	-.3	.3	.2	[-.58, -.07]	[-.72, .09]	.942
		0	9	0	2	2	9			
Gen X - Boomers	8	355	-.2	.0	-.2	.0	.0	[-.33, -.18]	[-.26, -.26]	.999
		6	4	8	6	9	0			
Absorption										
Gen Y - Gen X	8	257	-.1	.1	-.1	.2	.1	[-.34, .02]	[-.39, .08]	.557
		8	4	9	6	1	7			
w/o Hilongwane &	7	235	-.1	.1	-.2	.1	.0	[-.35, .00]	[-.33, .00]	.748

Ledimo (2015)		3	8	4	0	6	9	-.05]	-.06]	
Gen Y - Boomers	9	307	-.2	.2	-.3	.2	.2	[-.51,	[-.62,	.959
		0	6	4	0	7	3	-.08]	.03]	
Gen X - Boomers	8	355	-.1	.0	-.2	.0	.0	[-.28,	[-.20,	.954
		6	8	8	0	9	0	-.13]	-.20]	
Vigor										
Gen Y - Gen X	9	551	-.0	.1	-.0	.1	.1	[-.19, .03]	[-.24,	.066
		8	7	3	8	4	1		.07]	
Gen Y - Boomers	9	307	-.2	.3	-.2	.3	.3	[-.56, .04]	[-.71,	.911
		0	7	0	9	3	0		.12]	
Gen X - Boomers	8	355	-.2	.1	-.2	.1	.1	[-.37,	[-.38,	.958
		6	3	3	5	4	0	-.13]	-.11]	

Note: Gen Y = Millennials; Gen X = Generation X; Boomers = Baby Boomers; K = number of studies contributing to meta-analysis; N = total sample size; \bar{d} = mean observed Cohen's d ; s_d = observed standard deviation of d ; \bar{d}_{true} = mean true-score Cohen's d between latent groups; $s_{d_{true}}$ = observed standard deviation of corrected values (d_{true}); s_{res} = residual standard deviation of d ; CI = confidence interval around \bar{d} ; CR = credibility interval around \bar{d} . Effect sizes corrected using artifact distributions; TOST p = p values from two-one sided test of equivalence. TOST p values of .05 or lower indicates reasonable certainty the true-score Cohen's d between latent groups is between -.15 and .15, representing a practically negligible effect (Wiernik et al., 2017).

Table 2

Average strength of meta-analytic effects for generational comparisons across all outcomes.

Generational Comparison	<i>N of</i>	Average strength of	<i>SD</i>
Gen Y- Gen X	16	.09	.05
Gen Y - Boomers	16	.21	.11
Gen Y - Traditionals	3	.53	.36
Gen X - Boomers	16	.15	.09
Gen X - Traditionals	7	.32	.27
Boomers - Traditionals	8	.19	.15

Note. Gen Y = Millennials; Gen X = Generation X; Boomers = Baby Boomers; *N of* = number of true-score Cohen's *d*'s meta-analytically estimated for the generational comparison; Average strength of *d* = the average strength of true-score Cohen's *d* for the generational comparison; *SD* = standard deviation of the true-score Cohen's *d* estimates for a generational comparison.

Table 3

Qualitative results from content coding.

Codes	Found Empirical Support for Generational Differences		Offered Generations-Based Practice Recommendations		Advocated for Future Generations Research	
	Number of Articles	% of Articles Coded	Number of Articles	% of Articles Coded	Number of Articles	% of Articles Coded
Clear Support	44	32.12%	-	-	-	-
Partial/Conflicting Support	61	44.53%	-	-	-	-
No Support	32	23.35%	-	-	-	-
Yes	-	-	95	69.34%	107	78.10%
No	-	-	42	30.66%	30	21.90%
Total	137	100%	137	100%	137	100%

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Table 4

Example quotes from thematic analysis.

Category	Theme	Quotes
Justification for Null/Conflicting Findings	Measurement Error	<p>“[lack of differences between generations] may be due to the nature of the generation variable. By categorizing participants into their respective generational categories, we lose some of the sensitivity of the variable. Cuspers, people born at the cusp of the generation, may share traits and workplace preferences with members of adjacent generations. Thus, generational differences may not emerge” (De Stefano, 2012, p. 53)</p> <p>“The finding that Baby Boomer and Generation X nurses did not significantly differ in their overall job satisfaction scores is inconsistent with previous research studies... The conflicting findings could be attributed to differences in instruments used to measure nurse job satisfaction.” (Sparks, 2012, p. 456).</p>
	Sampling Error	<p>“Although, there appeared to be no significant differences, differences may be found with a larger sample with an equal distribution of Baby Boomers and Generation Xers” (Sujdak, 2003, p. 91)</p> <p>“These findings [that generations did not differ in extrinsic values] contradict the typical narrative and a variety of research that indicates extrinsic values should be held most important by millennials, followed by Gen X, then the baby boomers...This study was unique, however, as it focused on a public-sector sample and included all three generational cohorts in the analysis. (Smith et al., 2019, p. 185)</p>
	Environmental/Contextual Confounds	<p>“High unemployment, scarce job opportunities, and a quickly changing economic landscape might be factors that influence the lack of delineation between the generational cohorts” (Phelps, 2012, p. 98)</p> <p>“Lack of differences is suggestive to the current economic downturn and may be reflective of the current time period” (Engelman, 2009, p. 70)</p>
Future Generations Research	Need for qualitative research	<p>“Additional qualitative studies could be conducted to determine from a qualitative standpoint which variables affect nurses’ organizational commitment and how those variables affect organizational commitment” (Jones, 2014, p. 92)</p> <p>“Qualitative studies should be conducted with each generational group of nursing faculty to harvest the essence of the needs and experiences of these groups” (Carver et al., 2011, p. 146)</p>
	Need for	<p>“Additional longitudinal or time lag research is needed, however, to confirm</p>

	Longitudinal	<p>whether this is a generational difference or the result of the career stage that Baby Boomers, Gen Xers, and Millennials are in" (Murphy, 2011, p. 100)</p> <p>"Indeed, it is possible that Baby Boomer and/or Gen X participants might have shown results similar to Gen Y had we measured them years ago when they were the at the age or stage of life as our current Gen Y respondents. Longitudinal panel designs provide the best methodology for addressing such confounds" (Moore et al., 2015, p. 360)</p>
	Need for expanded sampling	<p>"Researchers may want to evaluate if there are any significant differences between the next generational cohort entering the workforce" (King, 2017, p. 87)</p> <p>"Future studies should be conducted on a larger sample of hospitality employees, preferably a national sample including several large chains" (Lu & Gursoy, 2016, p. 229)</p>
Generation specific practice recommendations	Implement generational trainings/socialization programs	<p>"In order to encourage interaction across the generational cohorts human resource professionals and administrators will need to find ways to train employees on the value of each generation" (Abercrombie, 2014, p. 76-77)</p> <p>"Practitioners should consider the link of generational training and socialization programs on employees' satisfaction" (Eaton, 2009, p. 84)</p>
	Tailor human resource systems to generations	<p>"Customised engagement strategies tailored towards different generational cohorts might be more beneficial" (Hoole & Bonnema, 2015, p. 1)</p> <p>"Findings suggest that employers should develop a customized incentive structure for employees from each generation" (Lu & Gursoy, 2016, p. 228)</p>
	Adjust leadership styles to generational needs	<p>"Managers may need to adapt their leadership styles to empower members of this generation in order to ensure that Millennials are retained, attracted, and motivated within the organization" (Sayegh, 2018, p. 120)</p> <p>"Management styles should take into account differences in values and attitudes among new nurses of different generations" (Keepnews, et al., 2010, p. 161)</p>
	Develop an understanding of generational needs/preferences	<p>"Understanding differences between generations at work is a useful first step in meeting diverse employee needs" (Cennamo & Gardner, 2008, p. 904)</p> <p>"Understanding generational differences, more precisely from the individual perspective of employees will lead to more accurate ways of addressing the needs of the different generations" (Janon, et al., 2019, p. 81-82)</p>

Table 5

Recommendations for Researchers, Reviewers, and Practitioners.

Recommendations For Researchers		
Recommendation	Benefit	Risks If Not Adopted
Do not treat the generations premise as theory. Generations “theory” is not falsifiable nor was it meant to be (see Rudolph et al., 2021 for a detailed debunking of the generational “theory” myth).	Without the prior that generational effects are based in scientific theory, researchers can avoid searching for and discussing the existence of generational differences.	Authors may misattribute null and mixed effects to measurement, sampling, or other sources of error, call for further generations research, and offer misleading practice recommendations.
Adopt alternate approaches to studying the effects of generations such as the social constructionist approach or lifespan development perspective (see Rudolph & Zacher (2017) and Salvi et al. (2022) for more in depth discussion about these approaches).	Taking a social constructionist or development lifespan perspective allows researchers to explore observed effects without relying generational stereotypes about values, attitudes, and behaviors.	Continued reliance on generational “theory” is likely to reinforce the misconception that findings are based on testable hypotheses.
Carefully review Discussion and Conclusion sections for language that may lead readers to draw inappropriate inferences about the existence and impact of generational differences (see Costanza et al., 2020).	Encouraging researchers to take a more critical view may help break the generations research cycle and focus new work on supported theories and testable hypotheses.	Non-critical review of Discussion sections may lead to the perpetuation of poor research practices and continued emphasis on non-existent effects.
Recommendations for Reviewers		
Recommendation	Benefit	Risks If Not Adopted
Request that authors avoid and remove generational labels from manuscripts when referring to groups of individuals.	Minimizing or eliminating generational labels can serve to lessen stereotypical expectations while refocus the research on more supportable explanations.	Continued use of generation labels perpetuates stereotypes.

Empirical research that claims to show generation-based differences should be treated with high levels of skepticism as no current analytic method is capable of isolating the effects of age, period and birth year cohort (see Costanza et al., 2017; Rudolph et al., 2020).	May prevent the publication of studies purporting to show generational differences that are actually attributable to age or period.	The continued publication of misleading research.
Recommendations for Practitioners		
Recommendation	Benefit	Risks if Not Adopted
Identify the meaningful individual differences (e.g., life stage, personality, experiences) in those you work with that may actually influence their attitudes, motivations, values, and behaviors.	Enables tailoring of practices and policies to individual needs and preferences without relying on stereotypes and broad generalizations.	Differential treatment based on generational stereotypes is ineffective and under some circumstances, illegal.
Regularly scan the environment to consider changes to workers preferences and needs.	Acknowledges that the needs and preferences of workers change over time and with changing circumstance without relying on stereotypes to determine these changes.	Workers are likely to perceive treatment based on generational characterizations as unfair or as lazy herding.