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Journal of Vocational Behavior 139 (2022) 103789

Contents lists available at ScienceDirect

Journal of Vocational Behavior

journal homepage: www.elsevier.com/locate/jvb

Adapting careers to the COVID crisis: The impact of the pandemic on employees' career orientations☆

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ARTICLE INFO

Keywords:
Career shocks
Career orientations
COVID-19
Careers

ABSTRACT

This paper draws on event system theory and the literatures on career orientations and career shocks to examine the impact of the COVID-19 pandemic on employees' career orientations. Factor analyses in three samples allow us to group seven career orientations into two dimensions: needs-based career orientations (those related to security, lifestyle, and health) and talent- and value-based career orientations (related to job content). We use a three-wave survey of Chinese employees to examine how these two broad orientations evolved in two time windows—one representing high, the other low event strength. We find that the two types of career orientations evolved in different ways during the pandemic: employees' needs-based career orientations were more salient during the COVID crisis than their talent- and value-based career orientations, and the salience of needs-based career orientations did not decrease as event strength abated. Employees' personal exposure to the crisis was positively related to the salience of their needs-based career orientations, but not to the salience of talent- and value-based career orientations. We also show that the salience of needs-based career orientations differed across employee groups: it was weaker among more experienced and successful employees (those higher in the managerial hierarchy and with steeper past pay increases).

1. Introduction

The COVID pandemic has caused "life-altering employment shifts" across the globe (Autin et al., 2020, p. 487), including unexpected job loss, the blurring of the work-home interface, and increased health risks and anxiety at work. It has also instilled in employees a globally universal emphasis on personal reflection, a need to reevaluate their careers and "to align the time at work with their values" (McKinsey, 2020). After its onset, employees reported deepening personal relationships, embracing a health-first mindset, and reevaluating the income and professional achievement they needed (McKinsey, 2020; Wisnievska, 2020). These accounts suggest that

☆ Research Reported in this paper was partially funded by the Spanish Ministry of Economy and Competitiveness (MCIU), State Research Agency (AEI) and European Regional Development Fund (ERDF) Grant No. PGC2018-098767-B-C22.

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https://doi.org/10.1016/j.jvb.2022.103789
Received 2 November 2021; Received in revised form 14 September 2022; Accepted 16 September 2022
Available online 20 September 2022
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the pandemic has had a significant impact on employees' career-related values, interests, and preferences: their career orientations (Abessolo et al., 2021; Bravo et al., 2017; Schein, 1990[1]).

Yet our academic understanding of this impact is limited. Curiously, neither the literature on the effect of macroeconomic events on careers nor that on career orientations examined whether macroeconomic events might influence career orientations. Research in the careers domain had a strong focus on the individual and organizational antecedents of career outcomes. Only a few empirical papers explored how careers are affected by macroeconomic events: economic recessions, terrorist events (Malik et al., 2014), earthquakes (Wordsworth & Nilakant, 2021), and a global public health crisis (Qian & Fuller, 2020). This stream of papers revealed that macroeconomic events affected careers in important ways. First, they influenced the actions taken by individuals: broke down their conventional career strategies (Simosi et al., 2015), led to extensive post-shock deliberation (Wordsworth & Nilakant, 2021), and reduced their likelihood of initiating career transitions (Inkson, 1995). Second, they altered career outcomes: decreased job seekers' chances of finding a job (Qian & Fuller, 2020; Sironi, 2018), and led new hires to jobs with lower income (Sironi, 2018), to consulting and entrepreneurship careers instead of investment banking (Oyer, 2008), and to small, privately-held employers (Schoar & Zuo, 2017). Bianchi's (2013) work revealed that economic recessions increased individuals' job satisfaction. To the best of our knowledge, besides her work there has been no other quantitative analysis that addressed the relationship between macroeconomic conditions and work- or career-related attitudes, values, or preferences.

In the literature stream on career orientations the empirical research focused mostly on the outcomes of career orientations, with only a minority examining their antecedents (Hirschi & Koen, 2021). Moreover, most of the antecedents examined were either demographic (education, gender, age), dispositional (proactivity or big-five personality), or self-efficacy related (self-efficacy, core self-evaluations, or self-esteem), rather than contextual factors. Yet – as Young et al. (2002) stated – the study of careers is virtually meaningless without reference to contextual factors. This is because careers are strongly embedded in organizational contexts as well as in national economic and institutional environments (Mayrhofer et al., 2007). Key career constructs such as experience or position, and even career orientations, would be extremely hard to interpret without the social context in which they occur (Gunz et al., 2011).

One of the reasons why the antecedents of career orientations received limited scholarly attention is that researchers assumed that career orientations were relatively stable. Schein (1990) argued that career orientations were built on job experiences and feedback to employees on their competencies, motives, and values. Orientations developed after several years of experience and stabilized as individuals matured; any change was based on longer job experiences and systematic feedback, rather than temporary or external constraints. More recently, Abessolo et al. (2021) defined career orientations as relatively stable career preferences regarding particular career-related opportunities, circumstances, and career types (cf. Gerber et al., 2009). But Hirschi and Koen (2021) noted that the assumption of stability was challenged by more recent studies. While there has been no quantitative empirical research on these topics, conceptual work (Bravo et al., 2017; Feldman & Bolino, 1996) and qualitative evidence (Rodrigues et al., 2013) revealed that employees' career orientations might be affected by discrete events both at work and in the family, such as being laid off or having children. Whether macroeconomic events had a similar impact on career orientations was never explored.

The relationship between macroeconomic events and career orientations has also remained unexplored in the research studying events and specifically career shocks, the subset of "disruptive and extraordinary events" that affect careers (Akkermans et al., 2018, p. 4; Akkermans et al., 2020, p. 1). Event system theory (EST) emphasized the important role played by events in triggering organizational action and changes in organizational characteristics (Morgeson et al., 2015). It focused on the characteristics that made events stronger or more salient, and therefore attracted more attention and resources from stakeholders (Morgeson et al., 2015). Although EST primarily addressed organizational responses and behaviors in the wake of events, it may be considered a "generic or domain-free theory" (Akkermans et al., 2018, p. 6) that also provides an elaborate theoretical framework for studying the individual responses given to career-related events (Akkermans et al., 2018, p. 6). Indeed, several papers used EST to study individual-level outcomes that included creativity (Chen et al., 2021), helping behaviors (Shoss et al., 2021) or employees' transition to entrepreneurship (Seibert et al., 2021). Yet the relationship between macroeconomic events and individuals' career orientations has remained outside the focus of this literature stream.

The pandemic provides us an opportunity to contribute to the above literature streams. Drawing on EST and the literatures on career orientations (Hirschi & Koen, 2021) and career shocks (Akkermans et al., 2018, 2020, 2021a), we examine the impact of the COVID pandemic on employees' career orientations in China during two different time windows: between November 2019 and April 2020, when event strength was very high, and between May and November 2020, when event strength considerably decreased. Through factor analyses in three samples we group seven facets of career orientations into two dimensions. *Needs-based career orientations (NCO)* include those related to job security, the reconciliation between work and family life ("lifestyle"), and health. *Talent- and value-based career orientations (TVCO)* include those related to the job content: creative or entrepreneurial, managerial, technical or functional, and "service to a cause" (contributing to the welfare of society). We show that not all facets of career orientations evolved in the same way during the pandemic: NCO were more salient, and their salience did not diminish even as event strength decreased. We also show that individuals reacted to the pandemic in different ways: their exposure to the event increased the salience of their NCO, while it had no relationship with their TVCO. Further, the salience of NCO differed across employee groups: it was weaker among more experienced and successful employees (those higher in the managerial hierarchy and with steeper past pay increases).

[1] In his seminal work, Schein used the term "career anchors," not career orientations (Schein, 1990). Rodrigues et al. (2013), however, argued that the term "orientations" fits the nature of contemporary careers better than the metaphor of the anchor, which may suggest that the needs, values, and abilities developed in the initial years of one's career determine the rest of it. Most of the later work used the term "career orientations" (Abessolo et al., 2021; Bravo et al., 2017; Hirschi & Koen, 2021), which we also adopt.

These findings contribute to the literature on career orientations (Hirschi & Koen, 2021) by focusing on the rarely researched antecedents of career orientations. They also inform the debate in the career orientations literature regarding how stable career orientations are and whether they may be affected by disruptive external events (Feldman & Bolino, 1996; Rodrigues et al., 2013; Schein, 1990). By showing that individuals' work experience and objective career success influence the relationship between their personal exposure to the pandemic and their career orientations, the analyses answer Morgeson et al.' (2015) call to theorize how individual characteristics and events jointly affect outcomes, and the similar call by Akkermans et al. (2020) to consider the dynamic interplay between contextual and individual factors in analyzing career shocks.

Finally, our paper adds to conceptual work (Akkermans et al., 2020; Autin et al., 2020; Cho, 2020; Spurk & Straub, 2020) and to empirical papers (Andel et al., 2021; Lin et al., 2021; Trougakos et al., 2020) on the career- and work-related outcomes of the pandemic. Our results reveal that the pandemic blends concerns about security, work-life balance, and health, and makes these career orientations more salient for employees than those related to the job content. These findings suggest that the pandemic affects careers differently from recessions: its outcomes include not only those typically generated by recessions such as job and income loss or financial anxiety, but also those related to health issues (health anxiety, lifestyle changes) and social distancing measures (feelings of isolation, burnout). They imply that macroeconomic events other than economic recessions should receive more attention in future research.

2. Theory and hypotheses

Career orientations reflect individuals' career-related self-concept: self-perceived values, preferences, interests, experiences, skills, and abilities (Abessolo et al., 2021; Bravo et al., 2017). They provide individuals with a particular career direction, and drive and give coherence to career goals and career decisions (Bravo et al., 2017; Hirschi & Koen, 2021; Schein, 1990). The study of career orientations has taken a central position in careers research in the past few decades (Hirschi & Koen, 2021).

Schein's (1990) career orientations construct had eight dimensions. Bravo et al. (2017), who revalidated Schein's original construct and whose scale we use, identified six facets of career orientations: managerial (importance given to having managerial responsibilities), technical/functional (importance given to developing specialized skills and applying them to complex problems), creative/entrepreneurial (importance given to creating new products, services, or work processes), service to a cause (importance given to contributing positively to society through work), lifestyle (importance given to the integration of personal, family, and career concerns) and security (importance given to employment stability and financial security). Schein (1990) proposed that the facets centered around three poles, an idea later reinforced by conceptual (Feldman & Bolino, 1996) and empirical work (Coetzee et al., 2010). Two of these poles describe the desired content of one's work and are related to personal development and self-fulfillment (cf. Gesthuizen et al., 2019). Specifically, managerial, technical/functional, and entrepreneurial/creative orientations are grounded in a person's work talents, reflecting the type of work individuals do (talent-based orientations), while service to a cause is grounded in a person's attitudes and values (value-based career orientations). The third pole, security and lifestyle orientations are grounded in an individual's motives and needs. They are connected not to what one does or how one works, but to work's context or general circumstances (cf. Gesthuizen et al., 2019; Ros et al., 1999). Qualitative data in our pilot studies, which address employees' prevailing concerns related to the COVID crisis, suggested a seventh dimension: health, or the importance of staying healthy and working at a workplace with a good health climate (Zweber et al., 2016). In accord with the results of the pilot studies described in Appendix A, we categorized health as a needs-based orientation.

Recent work suggested that career orientations might be less stable than Schein (1990) originally claimed. They may be reinforced or modified by temporary, external events (Bravo et al., 2017; Feldman & Bolino, 1996; Hirschi & Koen, 2021; Rodrigues et al., 2013). Conceptual work (Akkermans et al., 2018; Lee & Mitchell, 1994; Morgeson et al., 2015) and empirical work (Seibert et al., 2013) on the aftermath of career shocks argued that such shocks interfere with individuals' current routines, generate new information about their job and career, and trigger an interpretive process or career-related deliberation, as individuals try to adapt to the changed circumstances. During this interpretive process, individuals reach an agreement about what is happening, integrate the career shock into their system of beliefs, and decide on how to proceed (Lee & Mitchell, 1994; Morgeson et al., 2015; Seibert et al., 2013). Their ability to realign their career orientation with the changed context is a critical determinant of how successfully they can deal with the shock.

The influence of events on career orientations may vary. “Strong” events (Morgeson et al., 2015, p. 516) are the most likely to trigger career-related deliberation, while events whose strength is below a certain threshold will not trigger any such analysis (Lee & Mitchell, 1994; Morgeson et al., 2015; Seibert et al., 2013). EST (Morgeson et al., 2015) asserts that the strength of the event is determined by three factors: its novelty (the degree to which the event is new or different from past events); disruptiveness (the extent to which it causes changes in usual activities); and criticality (its importance or priority to decision makers). We consider the COVID crisis a strong event that likely affects employees' career orientations.

We propose that not all the dimensions of individuals' career orientations will evolve in the same way during the pandemic. Some may not be affected by the new insights generated by the changed macroeconomic context. Others, however, may become misaligned with the changed environment, forcing individuals to reexamine and modify them in order to adapt (Lee & Mitchell, 1994; Morgeson et al., 2015). Specifically, we expect NCO to be more salient than TVCO during the pandemic, for two reasons. First, a shock generates information relevant to a person's job (Lee & Mitchell, 1994). In our assessment, the COVID crisis generated more information relevant to NCO, that is, to orientations related to the work-life interface, job security, and health and wellbeing. At the same time, it generated hardly any information relevant to TVCO (e.g., managerial, technical or entrepreneurial orientations). Specifically, since the outbreak of the pandemic, workplaces took the following measures that raised the salience of needs-based orientations: Work-from-home policies blurred the boundary between work and home, made parenting and caregiving more difficult, and directed attention to the

work-family interface (Autin et al., 2020). The rapidly expanded usage of videoconferencing increased perceived stress and invaded privacy (Kniffin et al., 2021). Distancing from others, wearing protective gear, and sanitizing were constant reminders of the serious health risk of the pandemic (Autin et al., 2020). As some employers reduced work hours, cut pay, and laid off employees, workers were reminded of the instability of their jobs (Autin et al., 2020). Reports in the media accentuated these impacts: the top two trending search topics on the internet around the world were health-related information on the coronavirus, and terms related to the economy such as unemployment or stock markets (Probella, 2020).

Second, NCO might become more salient during the pandemic than TVCO, because they were increasingly jeopardized as companies started to lay off employees, as telework disrupted family life, or as employees got infected at the workplace (Autin et al., 2020). The absence, scarcity, or decline of these working conditions, in turn, made them more important to workers (Maslow, 1954). In sum, we expect that.

Hypothesis 1. Needs-based career orientations will be more salient during the pandemic than talent- and value-based career orientations.

We not only expect that the salience of NCO will be higher than that of TVCO, but also that it will change during the pandemic.

EST argues that events like the pandemic are dynamic, becoming more or less novel, disruptive, and critical over time (Morgeson et al., 2015). Event characteristics determine individual responses to the event (Morgeson et al., 2015). Since stronger (more novel, critical and disruptive) events are more likely to capture individuals' attention, cause significant and deliberate thought processing and more strongly affect career decisions and outcomes (Akkermans et al., 2018; Morgeson et al., 2015), we expect that they will have a stronger effect on career orientations, too. At the same time, individuals will not devote resources or effort to interpreting and tackling less novel, critical or disruptive happenings (Morgeson et al., 2015). Such events will likely have a smaller impact on their career orientations.

Individual responses to the event are affected not only by the strength of an event, but also by its development trend (Morgeson et al., 2015). An event that is getting stronger will be more likely to influence career-related decisions and outcomes. If event strength decreases over time, the event will be less likely to do so (Morgeson et al., 2015).

In our setting, event strength is stronger during the first time window that we look at (November 2019 to April 2020), when the incidence of new cases and deaths is high and employees are confined to working from home, and weaker during the second time window (May to November 2020), when new cases and deaths decrease radically (CDC, 2020; WHO, 2022) and employees return to offices. Accordingly, we expect NCO to lose from their salience in the second observation window:

Hypothesis 2. Needs-based career orientations will be more salient at T2 (when event strength is high) than at T3 (when event strength is lower).

Events such as the COVID crisis do not affect individuals in the same way: the novelty, disruptiveness, and criticality that determine event strength are partly up to individuals' perception and subjective judgment (Lee & Mitchell, 1994; Morgeson et al., 2015; Seibert et al., 2013). Individuals regard events as more disruptive the more they interfere with ongoing routines and change ordinary or usual activities, and as more critical if these events are more important in their daily lives (Morgeson et al., 2015). We propose that employees with the biggest personal exposure to the crisis—those who contract COVID or have close acquaintances who do so, those who are at a high health or professional risk or have close acquaintances who are—likely experience the most disruption to their usual work and home routines and therefore view the pandemic as the most disruptive. Since the pandemic requires greater unusual attention and action from these individuals, it makes them the most likely to view it as more critical, too. Simply living in a place with high numbers of COVID cases and deaths may lead to restrictions and interfere with daily routines, which likely leads to more perceived disruption and criticality. The greater perceived disruption and criticality, in turn, requires greater adjustment and adaptation from individuals, and may lead to greater changes in their career orientation. Accordingly, we expect that personal and locational exposure will have a significant impact on individuals' NCO.[2]

Hypothesis 3. Individuals' personal (H3a) and locational (H3b) exposures to the pandemic are positively related to the salience of their needs-based career orientations.

Individuals with the same degree of exposure to a crisis may still differ significantly in how much they will engage in career deliberation and adjustment since the impact of a career shock is determined by the interplay between contextual and individual factors (Akkermans et al., 2018; Morgeson et al., 2015; Seibert et al., 2013). Given the important role of individual differences, Akkermans et al. (2020, 2021b) called for researchers to examine individual factors, for example age or career stage, when exploring the impact of the pandemic on work outcomes.

Building on Schein's (1990) seminal work on career orientations and the subsequent research along the same lines (Feldman & Bolino, 1996; Kraimer et al., 2019), we propose that individuals' length of work experience and the content of this experience are important factors in how employees react to the COVID crisis. Schein (1990) contended that career orientations develop through work experience, specifically through a series of encounters with job experiences in a variety of work contexts and organizations, and

[2] We do not expect a significant relationship between personal and locational exposure and TVCO, because the changes introduced by the pandemic (e.g., work-from-home measures, social distancing and sanitizing policies, business closures and layoffs) that make the various dimensions of NCO (health, security and lifestyle) both more salient and also more jeopardized in the eyes of employees do not affect the actual content of employees' jobs.

through the cues or feedback that these job experiences provide individuals on their competencies, motives and values. Career orientations gradually stabilize with work experience, as individuals are exposed to a greater variety of work contexts. Individuals with more stable career orientations, in turn, are less likely to change these orientations upon being exposed to new work contexts (Feldman & Bolino, 1996; Schein, 1990) or being impacted by an external event.[3] Accordingly, we propose that individuals with more years of work experience should have more stable career orientations and be less likely to experience changes in these orientations once exposed to the pandemic (Feldman & Bolino, 1996; Kraimer et al., 2019; Morgeson et al., 2015; Schein, 1990).

Schein (1990) argued that career orientations form through the cues: feedback, testing and counselling, that employees receive from a variety of job assignments. Individuals have many "ambitions, hopes, fears, and illusions" (Schein, 1990, p. 18), but little good information about their abilities and talents as they embark on their professional career. They obtain this information through feedback. If such feedback is meaningful, career orientations form more quickly. And if the feedback reinforces their existing career orientations, they are more likely to develop stable career orientations that are less likely to be changed by external events. On the other hand, a person's self-image will change if (s)he receives feedback that will "make it impossible to maintain" a certain career orientation (Schein, 1990, p. 18). Individuals who have been more successful in their jobs—those who reached a higher managerial level or received larger pay increases before the crisis (Heslin, 2005)—are more likely to have been reinforced in their career orientations by the feedback that they received on these orientations through promotions and pay increases, and they will be less likely to change their NCO. In sum, we propose that.

Hypothesis 4. Upon exposure to the COVID pandemic, the salience of needs-based career orientations will be lower for individuals with more work experience (H4a), at a higher managerial level (H4b), and with larger past pay increases (H4c).

3. Method

3.1. Sample and data

We surveyed two cohorts of part-time MBA students at a Chinese university, who started their studies in September 2018 and September 2019, respectively. All were working full time when we initially contacted them to survey them about several career-related issues. Their average age was 33.2 years in 2020 and the average respondent had 10.4 years of professional experience. 49 % were male. The respondents worked in a variety of industries (most of them in financial services and manufacturing) and in a wide variety of job functions (most in sales and marketing, general management, and finance and accounting). The majority held junior and mid-managerial roles.

Online surveys took place at three different times. We collected information on respondents' demographic background, career history, and personality at Time 1 (T1): in October 2018 (2018 cohort) and October 2019 (2019 cohort). Out of the 427 professionals we sent surveys to, 406 returned valid answers, a 95.1 % response rate at T1. We contacted these 406 professionals again in April 2020 (Time 2, T2), to collect information on their career orientations and exposure to the pandemic. Between November 2019 and late April 2020 event strength was high in China: 84,373 new cases and 4633 deaths were reported (WHO, 2022). China was the first country that was heavily hit by COVID, and the novel and unexpected nature of this crisis contributed to event strength (Morgeson et al., 2015). At T2 309 individuals returned valid answers, a 76.1 % response rate. All of them experienced the lockdown and all worked from home during the pandemic. Although none of them belonged to high-risk occupations (e.g., health care, social care, or food delivery), we assume that they were still significantly affected by three of the four major impacts of COVID-19 on workers: mental health issues due to working in isolation or to the threat of job loss, the obscured boundary between work and home, and the threat of unemployment (Autin et al., 2020).

We surveyed the same employees again in six months' time, in November 2020 (Time 3, T3). Compared to our first 6-month observation window (between November 2019 and April 2020), we consider our second 6-month observation window (between May 2020 and November 2020) to be of lower event strength, for the following reasons: During this event window, the pandemic was largely controlled in China, with only 7520 new cases and 103 deaths reported (WHO, 2022), which is merely 9 % of the new cases and 2 % of the deaths reported during the first observation window. While employees worked from home for most of the first event window due to the lockdown mandated by the Chinese government in January 2020, in the second observation window everyday life resembled that before the pandemic. The severity of the pandemic may also be gauged with the number of COVID-related searches on China's main search engine, Baidu. Both the search index (the daily search frequency of the keyword "COVID") and the media index (the media coverage frequency of the keyword "COVID") were much higher during the first event window than in the second one. The range of the search index was 550,000 to 900,000 daily searches in the first event window, and 120,000 to 550,000 daily searches in the second. The range of the media coverage index was 350 to 650 million mentions of the COVID keyword in all online media accessible by Baidu during the first window, and 70 million to 300 million mentions in the second.

Out of the 309 T2 respondents, 202 filled in the survey at T3, a 65.4 % response rate. We used this matched sample (202

[3] This argument is consistent with the stream of research that maintains that individuals' susceptibility to attitudinal change varies as they age (or progress through career stages). A subset of these arguments, the "impressionable years" or "formative years" hypothesis, asserts that young adulthood is a particularly impressionable period of life during which individuals explore, develop and solidify their identity, values, and attitudes (Bianchi, 2014; Giuliano & Spilimbergo, 2014). Individuals then become gradually more persistent and less responsive as they age (Krosnick & Alwin, 1989).

observations at T1, T2, and T3) for the analyses. We complemented survey responses with archival data on various indicators of the pandemic, obtained from the Chinese government's CDC website, at T2 and T3 (CDC, 2020). These data are at the level of geographical regions that include a city and the surrounding areas under its jurisdiction.

3.2. Measures

3.2.1. Time 1 measures

Sex was a binary variable where 1 stood for male employees. *Age* was measured in years. Kniffin et al. (2021) proposed that the Big Five personality traits predicted many work-related attitudes and behaviors relevant to COVID-19, such as coping or perceived well-being. For that reason, we included the five traits as controls. We used the Big Five Inventory (McCrae & Costa, 1987) to measure *openness* ($\alpha = 0.89$), *conscientiousness* ($\alpha = 0.84$), *extraversion* ($\alpha = 0.92$), *agreeableness* ($\alpha = 0.88$), and *neuroticism* ($\alpha = 0.90$), with ten items for each trait. *Total annual pay* was the employee's pretax compensation, measured in Chinese yuan.

3.2.2. Time 2 measures

3.2.2.1. Career orientation. We measured seven dimensions of *career orientations*, building on work by Bravo et al. (2017) and Zweber et al. (2016). To select and validate our items, we conducted two pilot studies (described in Appendix A) between T1 and T2, in two sample populations: 141 undergraduate students in their senior year, and 1931 full-time employees. In accord with the results of pilot study 2, described in Appendix A, we used a shortened, 18-item version of the original 29-item scale of Bravo et al. (2017) to measure six orientations: managerial (e.g., having a position with a great deal of managerial responsibility); technical/functional (e.g., work that allows me to learn something new in my area of specialization); entrepreneurial/creative (e.g., developing, creating, and launching new products or services); service to a cause (e.g., having a job that helps society in some way), lifestyle (e.g., my career providing me with good work-life balance) and security (e.g., working at an organization that offers long-term job security). The Cronbach alphas of the six dimensions were above the accepted threshold: for managerial orientation $\alpha = 0.76$; for technical/functional orientation $\alpha = 0.82$; for entrepreneurial/creative orientation $\alpha = 0.76$; for service to a cause orientation $\alpha = 0.83$; for lifestyle orientation $\alpha = 0.74$; and for security orientation $\alpha = 0.73$. In accord with the results of pilot studies 1 and 2, we added a seventh orientation: health, based on the health climate scale of Zweber et al. (2016), which comprises 4 items (e.g., "My organization is committed to employee health and well-being". $\alpha = 0.77$). Just as in pilot studies 1 and 2, we asked respondents to indicate the extent to which they considered each item important with respect to work. Responses were on a 1-to-5 scale (1 = not at all important; 5 = very important). Given the results of exploratory and confirmatory factor analyses in pilot study 2, described in Appendix A, we integrated the security, lifestyle, and health orientations to generate the variable *NCO*; and we integrated managerial, technical/functional, entrepreneurial/creative, and service orientations to generate *TVCO*.

3.2.2.2. Exposure to the pandemic. We operationalized individuals' exposure to the pandemic with two variables: personal exposure and exposure as a function of locale. To measure *locational exposure*, we asked participants the name of their city of residence at T2, and collected the following information (updated daily) for these cities as of April 30, 2020, when T2 data collection closed: current cases of COVID-19, total past cases, and total past deaths (CDC, 2020). CDC is the only source of such data in China. Following the established approach to combine these variables into a one-dimensional index, we extracted common components, using principal component analysis, from these three variables (Custodio et al., 2013; Sava, 2016). Using a single factor rather than the three variables individually, we increase the power of prediction by avoiding the problems arising from multicollinearity and minimizing measurement error (Custodio et al., 2013). Table 1 shows the results of the principal component analysis. We obtained only one component with an eigenvalue greater than one (2.49). All three variables had positive loadings. The index was standardized (has a mean of 0 and a standard deviation of 1; Sava, 2016).

To create the three variables that constitute the index for *personal exposure*, we asked participants three sets of questions about their exposure to the pandemic. (1) "Has anyone you know (family members, friends, colleagues, etc.) contracted the COVID-19 virus?" If yes, "How many?" (In the matched sample [$N = 202$], all respondents who answered affirmatively to this question knew one person who had the virus. Even in the broader sample [$N = 309$] there was only one respondent with two acquaintances affected.) "How close are they to you?" "How serious was their case?" We coded the responses with a value that ranges from 0 to 6, in the following way: 0 = no one was affected, 1 = affected person was asymptomatic, 2 = affected person had slight symptoms, 3 = affected person had

Table 1
Index of locational exposure to the pandemic at T2: principal component analysis.

	Current cases	Total cases	Total fatal cases
Loadings	0.50	0.61	0.62
Scores	0.20	0.24	0.25
Proportion explained	83.12 %		
Eigenvalue	2.49		

Note. The index is calculated by applying the scores to its standardized components. Locational exposure =0.20*current cases +0.24* total past accumulated cases +0.25* total accumulated deaths.

moderate symptoms, 4 = affected person had serious symptoms, 5 = affected person had very serious symptoms in intensive care, 6 = affected person passed away. Since all the affected individuals were friends and colleagues rather than close family members, we did not reflect closeness in our coding. (2) "Do you have family members, friends or colleagues in the high professional risk group (nurses, social workers, etc.)? How many and how close are they to you?" The variable ranges between 0 and 3: 0 = no one in the high professional risk group; 1 = some distant relationships in the high professional risk group; 2 = some close relationships or many distant relationships in the high professional risk group; 3 = many close relationships in the high professional risk group. (3) "Do you have family members, friends or colleagues in the high health risk group? How many and how close are they to you?" The variable ranges between 0 and 3: 0 = no one in the high health risk group; 1 = some distant relationships in the high health risk group; 2 = some close relationships or many distant relationships in the high health risk group; 3 = many close relationships in the high health risk group. We did not ask respondents whether they had contracted COVID-19, because this information was available from the part-time MBA program, to which students had to report their health status every day to be able to go on campus. (There were no cases reported among our respondents.) We used principal component analysis, shown in Table 2, to combine the three variables into a one-dimensional index. We obtained only one component with an eigenvalue greater than one (eigenvalue of 1.29). All three variables had positive loadings. The index was standardized (Sava, 2016).

3.2.2.3. Moderators. *Work experience* was measured in years. *Managerial level* stood for the respondent's hierarchical position at T2 and was coded in the following way: 1 = nonmanagerial employee, 2 = junior manager, 3 = middle manager, 4 = senior manager. *Past pay increases* was the increase between T1 and T2. To construct this variable, we collected information on total annual pay at both T1 and T2, and divided the difference by the number of years between the two dates (1.5 years for the 2018 cohort and 0.5 years for the 2019 one).

3.2.2.4. Control variables. We collected information on the respondent's number of children, since employees with children may react differently to the economic and health impact of COVID (Akkermans et al., 2020). As managerial level may be a function of *firm size*, we used the logarithm of the number of employees at the respondent's current employer to control for it. To control for the fact that some employees may have also been affected economically by the pandemic, we asked whether they had had a pay cut or lost their job during the pandemic. The variable *pay and job loss* ranges between 0 and 100, where 0 stands for no pay cut, 1 to 99 stands for the percentage of the cut, and 100 stands for job loss. This variable was standardized. We controlled for participants' past career orientation to account for the fact that employees with different intensities of orientations may have seen different changes in these orientations during the pandemic. Unfortunately, we did not collect information on career orientations at T1. For this reason, *past TVCO* and *past NCO* were generated by deducting self-reported changes in career orientations from the respondent's career orientation scores at T2. To measure change in career orientations, respondents were asked how much each of the career orientations items had changed in importance since the time before the pandemic (November 2019). Responses ranged from −2 to 2 (−2 = the importance has largely decreased, −1 = the importance has decreased to some extent; 0 = no change in the importance, 1 = the importance has increased to some extent, and 2 = the importance has largely increased).

3.2.3. Time 3 measures

3.2.3.1. Career orientations. The seven career orientations were measured in the same way as at T2. They all showed good scale reliability: for managerial orientation $\alpha = 0.73$; for technical/functional orientation $\alpha = 0.85$; for entrepreneurial/creative orientation $\alpha = 0.72$; for service orientation $\alpha = 0.83$; for lifestyle orientation $\alpha = 0.75$; for security orientation $\alpha = 0.72$; and for health orientation $\alpha = 0.76$. More broadly, for *NCO* $\alpha = 0.80$, and for *TVCO* $\alpha = 0.84$.

3.2.3.2. Exposure to the pandemic. To measure *locational exposure,* we collected the current number of cases of COVID-19 as of November 15, 2020 (the day when the T3 survey closed), and the increase in total past cases and total deaths between April 30 and November 15, 2020 (when the T2 and T3 surveys closed) from the Chinese CDC website. We used principal component analysis, shown in Table 3, to generate the one-dimensional index measure. *Personal exposure* was collected and calculated in the same way as at T2. Table 4 shows the results of the principal component analysis used to generate the one-dimensional index from the three variables.

3.2.3.3. Moderator and control variables. Past career orientations is career orientations at T2. The rest of the variables (work experience, managerial level, past pay increases, number of children, pay and job loss during the pandemic) were measured in the same way as at T2.

4. Results

Table 5 shows the means, standard deviations, and correlations of the variables collected at T1, T2, and T3. Hypothesis 1 states that needs-based career orientations are more salient during the pandemic than talent- and value-based career orientations. Table 6 includes a series of *t*-tests that compare the salience of *NCO* with that of *TVCO* at T1, T2, and T3. The results reveal that before the pandemic *TVCO* were more salient than *NCO* (T1: M *NCO* = 3.15, M *TVCO* = 3.23, $t = -2.45$, $p < .01$), but during the pandemic *NCO* became more salient than *TVCO* (T2: M *NCO* = 3.79 M *TVCO* = 3.70, $t = 2.62$, $p < .01$), and it remained so even as the pandemic abated (T3: M *NCO* = 3.88 M *TVCO* = 3.73, $t = 3.86$, $p < .001$). These results support Hypothesis 1. Hypothesis 2 states that needs-based career

Table 2
Index of personal exposure at T2: principal component analysis.

	Relatives and friends affected	Relatives and friends at high professional risk	Relatives and friends at high health risk
Loadings	0.58	0.63	0.52
Scores	0.46	0.50	0.41
Proportion explained	41.9 %		
Eigenvalue	1.26		

Note. The index is calculated by applying the scores to its standardized components. Personal exposure =0.46*Relatives and friends affected +0.50*Relatives and friends at high professional risk +0.25*Relatives and friends at high health risk.

Table 3
Index of locational exposure to the pandemic at T3: principal component analysis.

	Current cases	Increase in total cases from T2 to T3	Increase in total fatal cases from T2 to T3
Loadings	0.65	0.65	0.41
Scores	0.29	0.29	0.18
Proportion explained	75.02 %		
Eigenvalue	2.25		

Note. The index is calculated by applying the scores to its standardized components. Locational exposure = 0.29*current cases +0.29* total past accumulated cases +0.18* total accumulated fatal cases.

Table 4
Index of personal exposure at T3: principal component analysis.

	Relatives and friends affected	Relatives and friends at high professional risk	Relatives and friends at high health risk
Loadings	0.60	0.62	0.50
Scores	0.47	0.48	0.39
Proportion explained	42.9 %		
Eigenvalue	1.29		

Note. The index is calculated by applying the scores to its standardized components. Personal exposure = 0.47*Relatives and friends affected +0.48 * Relatives and friends at high professional risk +0.39 * Relatives and friends at high health risk.

orientations will become less salient as the COVID pandemic subsides. Instead, and counter to event systems theory, the salience of *NCO* even slightly increased as event strength decreased (*M NCO at T2 = 3.79;* M *NCO* at T3 = 3.88, $t = 1.64$, $p < .010$). Hypothesis 2 is not supported.

Tables 7 and 8 show OLS regression models that test hypotheses 3a, 3b, 4a, 4b, and 4c in two different time windows, to see whether the hypothesized relationships hold under different event strengths.[4] Table 7 contains analyses with outcomes measured at T2 (high event strength), and Table 8 includes models with outcomes measured at T3 (reduced event strength).

4.1. Results at T2

Hypothesis 3 states that individuals' personal (H3a) and locational (H3b) exposures to the pandemic are positively related to the salience of their needs-based career orientations. *Personal exposure* is positively related to *NCO* ($\beta = 0.09$, $p < .05$ in M3), but *locational exposure* does not have a statistically significant relationship with *NCO* in any of the models; thus, while H3a is supported, H3b is not.

Hypothesis 4 proposes that exposure to the pandemic lowers the salience of *NCO* for individuals with more work experience (H4a), at a higher managerial level (H4b), and with larger past pay increases (H4c). In Model 4 of Table 7 the interaction term between *work experience* and *personal exposure* is negative and significant ($\beta = -0.11$, $p < .05$), in accord with Hypothesis 4a. Fig. 1, which plots the interaction, shows that among employees with short *work experience* (one SD below the mean), there is a strong positive relationship between exposure to the pandemic and the salience of *NCO* (single slope = 0.23, $p < .01$). For those with long work experience (one SD above the mean), being exposed to the pandemic is not related to the salience of *NCO* (single slope = 0.01, n.s.; difference between slopes; −0.23, $p < .05$). In Model 5, the interaction term between *personal exposure* and *managerial level* is significant and negative ($\beta = -0.11$, $p < .05$), in accord with Hypothesis 4b. Fig. 2, which plots the moderation effect, shows that *NCO* are more salient for employees at lower hierarchical levels and with high levels of exposure to the pandemic. For employees at managerial levels one SD below

[4] We ran OLS regressions because we have one observation per individual in both time periods. Although the respondents are from twenty different city regions, some of these regions have only one or two respondents in the survey, so we cannot run nested (e.g., GEE) models.

Table 5
Means, standard deviations, and correlations.

		Mean	SD	1 – T1	2 – T1	3 – T1	4 – T1	5 – T1	6 – T1	7 – T1	8 – T1	9 – T1	10 – T3	11 – T3	12 – T3	13 – T3	14 – T3	15 – T3	16 – T3	17 – T3	18 – T3
1	Work experience-T1	10.36	4.04	–	0.17	−0.04	0.10	0.05	0.06	0.10	0.02	0.03	0.28	−0.08	−0.07	−0.21	0.02	0.40	−0.03	0.08	0.06
2	Sex-T1	0.49	0.50	0.17	–	0.12	0.11	0.11	−0.03	0.00	−0.05	−0.01	−0.17	0.07	0.00	−0.02	−0.20	0.00	0.19	0.01	0.01
3	Openness-T1	4.02	0.58	−0.04	0.12	–	0.60	0.63	0.68	0.59	−0.33	−0.23	0.00	−0.01	0.16	0.02	−0.04	−0.10	−0.04	−0.12	0.07
4	Conscientiousness-T1	4.19	0.45	0.10	0.11	0.60	–	0.34	0.63	0.46	−0.17	−0.11	0.16	−0.08	0.29	0.07	−0.09	−0.31	−0.26	0.06	−0.04
5	Extraversion-T1	3.49	0.69	0.05	0.11	0.63	0.34	–	0.54	0.50	−0.22	−0.14	0.07	0.10	0.20	−0.06	−0.09	−0.06	−0.11	−0.14	−0.03
6	Agreeableness-T1	4.09	0.53	0.06	−0.03	0.68	0.63	0.54	–	0.63	−0.25	−0.14	0.23	−0.07	0.21	0.02	0.04	−0.18	−0.22	0.05	0.07
7	Neuroticism-T1	3.65	0.71	0.10	0.00	0.59	0.46	0.50	0.63	–	−0.10	−0.04	0.03	−0.22	0.18	−0.03	0.08	−0.16	−0.21	−0.02	0.00
8	NCO-T1	3.15	0.73	0.02	−0.05	−0.33	−0.17	−0.22	−0.25	−0.10	–	0.83	0.05	−0.27	0.00	−0.07	0.07	−0.03	−0.12	0.03	0.10
9	TVCO -T1	3.23	0.74	0.03	−0.01	−0.23	−0.11	−0.14	−0.14	−0.04	0.83	–	0.06	−0.26	0.03	−0.10	0.02	−0.02	−0.15	0.09	0.18
10	Number of children-T2	0.61/0.61	0.58/0.63	0.46	0.41	0.07	0.12	0.15	−0.01	0.12	0.07	0.08	–	−0.01	0.03	−0.07	0.02	0.03	−0.10	0.14	0.16
11	Pay and job loss -T2	0.00/0.00	1.00/1.00	0.00	0.13	0.05	−0.05	−0.11	−0.08	−0.04	0.12	0.14	0.04	–	−0.08	0.03	−0.01	0.01	0.15	−0.04	−0.02
12	Firm size-T2	7.48/7.42	2.44/2.52	−0.03	0.05	0.17	0.29	0.25	0.17	0.18	−0.01	0.03	−0.03	0.01	–	0.09	−0.13	−0.28	−0.20	−0.11	−0.04
13	Locational exposure-T2	0.00/0.00	1.00/1.00	−0.22	0.01	0.06	0.05	−0.03	0.01	−0.02	−0.07	−0.11	0.05	0.27	0.13	–	−0.03	−0.19	0.07	0.02	−0.04
14	Personal exposure-T2	0.00/0.00	1.00/1.00	0.02	−0.25	−0.06	−0.10	−0.08	0.02	0.08	0.11	0.04	−0.07	−0.15	−0.12	−0.15	–	−0.03	−0.03	0.19	0.07
15	Managerial level-T2	2.19/2.24	0.88/0.88	0.59	0.14	−0.07	−0.13	−0.07	−0.08	−0.03	0.02	−0.01	0.22	0.10	−0.26	−0.21	0.07	–	0.28	−0.14	0.07
16	Past pay increases-T2	0.17/0.19	0.66/0.52	0.03	0.05	−0.15	−0.22	−0.24	−0.14	−0.13	0.01	−0.03	0.08	0.09	−0.07	−0.05	0.00	0.22	–	0.03	0.21
17	NCO -T2	3.79/3.88	0.70/0.60	0.12	−0.06	−0.07	0.06	−0.15	−0.03	0.07	0.50	0.45	0.10	0.06	0.03	−0.08	0.16	0.03	0.04	–	0.62
18	TVCO -T2	3.70/3.73	0.71/0.66	0.08	0.02	0.04	0.04	−0.09	−0.01	0.04	0.45	0.54	−0.01	0.06	−0.01	−0.09	0.06	0.05	0.08	0.75	–

Notes. $N = 202$. Correlations greater than $|0.14|$ are significant at $p < .05$; greater than $|0.18|$ are significant at $p < .01$; greater than $|0.25|$ are significant at $p < .001$, two-tailed.
Variables 10 to 18 are also measured at T3; their means and standard deviations are shown after the / in the columns "Mean" and "SD." Correlations below the diagonal are correlations of variables measured at T1 and T2. Correlations above the diagonal are correlations between variables measured at T1 and T3.

Table 6
T-tests comparing NCO and TVCO at T1, T2, and T3; t-tests comparing NCO at T2 and T3.

Comparisons of the salience of NCO (NCO) and talent-and-value based career orientations (TVCO) at T1, T2, and T3				
Variable	N	Mean	SD	t-value
T1				
NCO	202	3.15	0.73	
TVCO	202	3.23	0.74	
Difference between NCO and TVCO	202	−0.07	0.43	−2.45**
T2				
NCO	202	3.79	0.70	
TVCO	202	3.70	0.71	
Difference between NCO and TVCO	202	0.09	0.50	2.62**
T3				
NCO	202	3.88	0.60	
TVCO	202	3.73	0.66	
Difference between NCO and TVCO	202	0.15	0.55	3.86***

Comparison of NCO at T2 and T3				
Variable	N	Mean	SD	t-value
NCO at T2	202	3.79	0.05	
NCO at T3	202	3.88	0.04	
Difference between NCO at T2 and T3	202	0.09	0.06	1.64+

+ $p < .10$.
* $p < .05$.
** $p < .01$.
*** $p < .001$, two tailed.

the mean, there is a positive relationship between exposure to the pandemic and *NCO* (simple slope = 0.20, $p < .01$). For those at higher managerial levels, exposure to the pandemic is not related to the salience of *NCO* (simple slope = −0.02, n.s.; difference between slopes = −0.21, $p < .05$). Similarly, in Model 6 the interaction term between *personal exposure* and *past pay increases* has a significant negative relationship with *NCO* ($\beta = -0.15$, $p < .05$), in accord with Hypothesis 4c. Fig. 3, which plots the moderation effect, shows that for those with high past pay increases, there is no relationship between exposure to the pandemic and the salience of *NCO* (simple slope = −0.07, n.s.). For those with lower past pay increases, *NCO* becomes more salient when they are exposed to the pandemic (simple slope = 0.23, $p < .01$; difference in slopes: −0.30, $p < .05$). While the main analyses include those who responded to the survey at both T2 and T3 ($N = 202$), ementary analyses, shown in Table A6 of Appendix A, reveal that the results above also hold in the larger sample that includes, as well, those with answers only at T2 ($N = 309$). Implicit in our arguments is that individuals' exposure to the pandemic does not have a significant relationship with TVCO. Models 8 and 9 of Tables 7 and A6 show that neither *personal exposure* nor *locational exposure* is related to *TVCO*.

4.2. Results at T3

Table 8 repeats the analyses reported in Table 7 but uses data from T3, after the crisis weakened in China. Almost all of the results at T2 also hold at T3: *personal exposure* is significantly related to the salience of *NCO* (M3 $\beta = 0.09$, $p < .05$), while *locational exposure* is not. Neither *personal* nor *locational exposure* is related to *TVCO*. Just as in Table 7, the interaction term between *personal exposure* and *managerial level* is significant and negative (M5 $\beta = -0.10$, $p < .05$), in accord with Hypothesis 4b. Fig. 4 shows that for individuals at higher managerial levels, being exposed to the pandemic is not related to the salience of *NCO* (simple slope = −0.03, n.s.). For those at lower managerial levels, being exposed to the pandemic is positively related to the salience of *NCO* (simple slope = 0.18, $p < .01$; difference in slopes = −0.21, $p < .05$). Just as in Table 7, the interaction term between *personal exposure* and *past pay increases* is negative and significant (M6 $\beta = -0.25$, $p < .001$), supporting Hypothesis 4c. Fig. 5 shows that there is a negative relationship between *personal exposure* to the pandemic and *NCO* for those with larger *past pay increases* (simple slope = −0.19, $p < .05$), and a positive relationship for those with lower *past pay increases* (simple slope = 0.31, $p < .001$; difference in slopes −0.50, $p < .001$). While the interaction term between *work experience* and *personal exposure* has the expected sign, it is not statistically significant (M4 $\beta = -0.02$, n.s.). Therefore Hypothesis 4a is not supported at T3.

5. Discussion

We found support for most of our hypotheses: First, we showed that NCO not only were distinct from TVCO in the factor analysis, but also behaved differently during the pandemic: NCO were more salient than talent- and value-based ones in both time windows that

Table 7
OLS regressions predicting NCO and TVCO at T2.

	DV = NCO at T2						DV = TVCO at T2		
	M1	M2	M3	M4	M5	M6	M7	M8	M9
NCO at T1	0.51 (0.06)***	0.51 (0.06)***	0.51 (0.06)***	0.50 (0.06)***	0.53 (0.06)***	0.51 (0.06)***			
TVCO at T1							0.59 (0.06)***	0.60 (0.06)***	0.59 (0.06)***
Work experience	0.02(0.01)	0.02(0.01)	0.02(0.01)	−0.00 (0.05)	0.03 (0.01)+	0.01(0.01)	0.02 (0.01)+	0.03.01)*	0.02.(01)*
Sex	−0.09 (0.09)	−0.09 (0.09)	−0.05 (0.09)	−0.06 (0.10)	0.03(0.09)	−0.01 (0.01)	0.06(0.09)	0.07(0.09)	0.08(0.09)
Openness	0.12(0.13)	0.12(0.13)	0.13(0.12)	0.14(0.13)	0.09(0.12)	0.09(0.12)	0.38 (0.13)**	0.37 (0.12)**	0.38 (0.12)**
Conscientiousness	0.24 (0.14)+	0.25 (0.14)+	0.28 (0.14)+	0.33 (0.14)*	0.28 (0.14)*	0.27 (0.14)+	0.15(0.14)	0.16(0.14)	0.17(0.14)
Extraversion	−0.18 (0.09)*	−0.18 (0.09)*	−0.17 (0.09)+	−0.17 (0.09)+	−0.15 (0.09)+	−0.12 (0.09)	−0.14 (0.09)+	−0.13 (0.09)	−0.14 (0.09)
Agreeableness	−0.04 (0.13)	−0.05 (0.13)	−0.06 (0.13)	−0.08 (0.13)	−0.06 (0.13)	−0.06 (0.13)	−0.14 (0.13)	−0.15 (0.13)	−0.15 (0.13)
Neuroticism	0.09(0.08)	0.09(0.08)	0.06(0.08)	0.08(0.08)	0.06(0.08)	0.05(0.08)	−0.02 (0.08)	−0.01 (0.08)	−0.03 (0.08)
Number of children	0.06(0.08)	0.05(0.09)	0.05(0.08)	0.08(0.08)	0.02(0.08)	0.04(0.09)	−0.15 (0.08)+	−0.17 (0.08)*	−0.16 (0.08)+
Pay and job loss	0.01(0.04)	0.02(0.04)	0.00(0.04)	0.02(0.04)	0.03(0.04)	0.01(0.04)	0.02(0.04)	0.03(0.04)	0.01(0.04)
Firm size	0.01(0.02)	0.01(0.02)	0.01(0.02)	0.01(0.02)	0.01(0.02)	0.01(0.02)	−0.01 (0.02)	−0.01 (0.02)	−0.00 (0.02)
Locational exposure		0.02(0.05)		0.04(0.05)	0.09 (0.05)+	0.03(0.05)		0.06(0.05)	
Personal exposure			0.09 (0.05)*	0.12 (0.05)*	0.09 (0.05)+	0.08 (0.05)+			0.05(0.05)
Personal exposure × work experience				−0.11 (0.05)*					
Managerial level					−0.07 (0.05)				
Personal exposure × managerial level					−0.11 (0.04)*				
Past pay increases						0.03(0.04)			
Personal exposure × past pay increases						−0.15 (0.07)*			
(constant)	0.87 (0.52)+	0.84(0.52)	0.80(0.52)	0.71(0.52)	0.65(0.52)	0.87(0.53)	0.82 (0.48)+	0.73(0.48)	0.76(0.48)
R^2	0.33***	0.33***	0.34***	0.35***	0.39***	0.36***	0.38***	0.38***	0.38***

Notes. N = 202. Standard errors are reported in the parentheses.
+ $p < .10$.
* $p < .05$.
** $p < .01$.
*** $p < .001$, two tailed.

we looked at. And in both phases employees' personal exposure was related to their level of needs-based career orientations, but not to talent- and value-based ones, implying that the crisis directed attention to health and wellbeing, job and financial security, and the work-life interface, but not to issues related to work content (for example, to the managerial or entrepreneurial aspect of jobs). These findings suggest that work-related attitudes during a macroeconomic event respond to the most important messages, concerns, or themes conveyed by the event—in this case health, job security, and work-life balance. These conclusions resonate with those reached by Bianchi (2013, 2014, 2016) and Giuliano and Spilimbergo (2014), that certain types of attitudes such as job satisfaction or individualism form as a response to the prevailing themes or messages communicated by a macroeconomic event.

We showed that the same macroeconomic event had divergent effects on different individuals. Personal exposure to the crisis determined employees' reaction to it, but NCO were less salient for employees with greater objective career success—at a higher managerial level and with a steeper past pay increase. These relationships held under different event strengths and for differently specified samples (both the 309 respondents at T2 and the 202 who responded at both T2 and T3). Overall, these results call attention to the important role that individual contingencies play in the relationship between macroeconomic events and career orientations.

Some of our results contradicted our expectations. First, our analyses in three different samples showed that career orientations fell into two groups: needs-based, and talent- and value-based career orientations. This result differs from the three-pole typology (needs-, talent-, and value-based career orientations) conceptualized in previous papers (Feldman & Bolino, 1996; Schein, 1990), and it also differs from previous studies that found four-factor (Nordvik, 1996), nine-factor (Danziger et al., 2008; Petroni, 2000) and eleven-factor solutions (Igbaria et al., 1991) of the career orientations construct. One reason for the differences may be that while all of these studies relied on Schein's 41-item Career Orientations Inventory, we are the first to factor analyze the more up-to-date, 33-item

Table 8
OLS regressions predicting NCO and TVCO at T3.

	DV = NCO at T3						DV = TVCO at T3		
	M1	M2	M3	M4	M5	M6	M7	M8	M9
NCO T2	0.21 (0.06)***	0.21 (0.06)***	0.19 (0.06)**	0.21 (0.06)***	0.19 (0.06)**	0.18 (0.06)**			
TVCO T2							0.38 (0.06)***	0.38 (0.06)***	0.37 (0.06)***
Work experience	−0.00 (0.01)	−0.00 (0.01)	−0.00 (0.01)	−0.09 (0.05)+	−0.00 (0.01)	−0.00 (0.01)	0.01(0.01)	0.01(0.01)	0.01(0.01)
Sex	0.08(0.09)	0.08(0.09)	0.11(0.09)	0.14(0.09)	0.11(0.09)	0.10(0.09)	0.04(0.09)	0.04(0.09)	0.05(0.09)
Openness	−0.26 (0.12)*	−0.26 (0.12)*	−0.26 (0.12)*	−0.28 (0.12)*	−0.19 (0.12)+	−0.30 (0.11)**	0.20(0.12)	0.20(0.12)	0.20(0.12)
Conscientiousness	0.16(0.13)	0.15(0.13)	0.19(0.13)	0.21(0.13)	0.12(0.14)	0.22 (0.13)+	−0.33 (0.14)*	−0.34 (0.14)*	−0.33 (0.14)*
Extraversion	−0.08 (0.08)	−0.08 (0.08)	−0.07 (0.08)	−0.05 (0.08)	−0.06 (0.08)	−0.01 (0.08)	−0.09 (0.09)	−0.09 (0.09)	−0.08 (0.09)
Agreeableness	0.26 (0.13)*	0.26 (0.13)*	0.23 (0.13)+	0.21(0.13)	0.19(0.13)	0.18(0.12)	0.23 (0.13)+	0.23 (0.13)+	0.22(0.14)
Neuroticism	−0.01 (0.08)	−0.01 (0.08)	−0.03 (0.08)	−0.01 (0.08)	−0.03 (0.08)	−0.05 (0.08)	−0.09 (0.09)	−0.09 (0.09)	−0.09 (0.09)
Number of children	0.05(0.05)	0.05(0.05)	0.06(0.05)	0.08(0.05)	0.07(0.05)	0.05(0.05)	0.07(0.06)	0.07(0.06)	0.07(0.06)
Pay and job loss	0.01(0.04)	0.01(0.04)	0.01(0.04)	−0.00 (0.04)	−0.01 (0.04)	−0.02 (0.04)	0.01(0.05)	0.01(0.05)	0.01(0.05)
Firm size	−0.03 (0.02)+	−0.03 (0.02)+	−0.03 (0.02)+	−0.03 (0.02)+	−0.04 (0.02)*	−0.02 (0.02)	0.00(0.02)	0.00(0.02)	0.00(0.02)
Locational exposure		0.02(0.04)		0.01(0.04)	0.00(0.04)	0.02(0.04)		0.01(0.05)	
Personal exposure			0.09 (0.05)*	0.09 (0.05)+	0.07(0.05)	0.06(0.05)			0.03(0.05)
Personal exposure × work experience				−0.02 (0.06)					
Managerial level					−0.08 (0.05)+				
Personal exposure × managerial level					−0.10 (0.05)*				
Past pay increases						0.02(0.04)			
Personal exposure × past pay increases						−0.25 (0.07)***			
_cons	2.89 (0.46)***	2.89 (0.46)***	2.90 (0.45)***	2.72 (0.46)***	3.15 (0.45)***	3.04 (0.46)***	2.41 (0.48)***	2.41 (0.48)***	2.40 (0.48)***
R^2	0.15***	0.15***	0.17***	0.19***	0.21***	0.23***	0.22***	0.22***	0.22***

Notes. N = 202. Standard errors in parentheses.
+ $p < .10$.
* $p < .05$.
** $p < .01$.
*** $p < .001$, two tailed.

Career Orientations Scale developed by Bravo et al. (2017). While the finding that TVCO were clustered together was somewhat unexpected, it is consistent with the results of factor analyses by Coetzee and Schreuder (2009) and Coetzee et al. (2010). Both showed a strong association between certain talent- and value-based career orientations, which—the authors concluded—indicated the presence of common career motives that underlay both orientations.

Second, we did not find any relationship between the prevalence of COVID in the local environment and the salience of NCO. There are two reasons for this result: we constructed the measure of *locational exposure* from archival, official data on total cases and deaths, in an effort to reduce single-source bias. Yet individuals' perception of the seriousness of the pandemic in their location may be very different from these official statistics. This result may also be a function of proximity: macroeconomic events that affect the individual's close personal environment have a greater impact on career orientations than events with a more distant locus such as the city or the region, an issue that should be explored in future research.

Counter to expectations, NCO did not lose salience for employees as the pandemic abated in China. It is possible that the severity of the crisis in some other countries influenced employees' perception. In addition, it is possible that macroeconomic events have a longer-term effect on employee attitudes and behaviors than the six-month observation window in our study. Specifically, two studies proposed that economic recessions leave a lasting imprint on individuals and shape behaviors, attitudes, and beliefs even for several decades after they end: Bianchi (2013) showed that a recessionary environment at the outset of employees' career determined job satisfaction decades later, and Schoar and Zuo (2017) found that CEOs' management styles differed depending on whether they started their career in recessionary or in boom periods. These findings reinforce the call by Akkermans et al. (2020) for research to capture both the short- and the longer-term effects of career shocks.

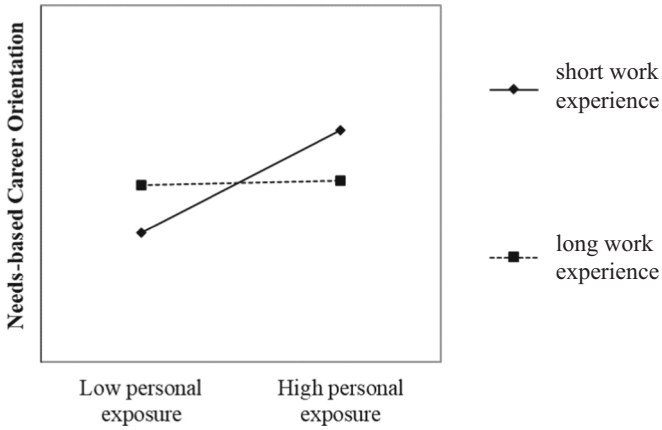

Fig. 1. The plotted interaction between personal exposure and work experience, T2.
Simple slope tests:
When work experience is long, +1 SD, the slope = 0.01, not sig;
When work experience is short, −1 SD, the slope = 0.23, $p < .01$;
The slope difference between long and short = −0.23, $p < .05$.

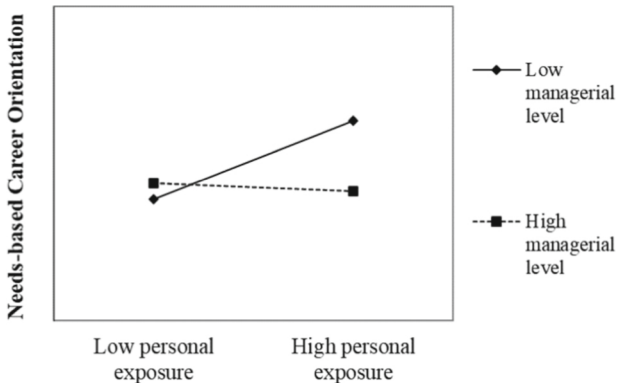

Fig. 2. The plotted interaction between personal exposure and managerial level, T2.
Simple slope tests:
When managerial level is high, +1 SD, the slope = −0.02, not sig;
When managerial level is low, −1 SD, the slope = 0.20, $p < .01$;
The slope difference between high and low = −0.21, $p < .05$.

5.1. Contributions to the literature on career orientations

In their review of the literature on career orientations, Hirschi and Koen (2021) noted that there was scant research on the antecedents of career orientations, partly because researchers often viewed them as the starting point of the career self-management process and because they assumed that career orientations were relatively stable. We found a significant relationship between individuals' exposure to the pandemic and their NCO, but no relationship to TVCO. These findings contribute to the debate in the career orientations literature regarding how stable career orientations are (Feldman & Bolino, 1996; Hirschi & Koen, 2021; Schein, 1990). While Schein (1990) suggested that it was impossible for career orientations to change as a result of external events, qualitative evidence by Rodrigues et al. (2013) revealed that orientations were adaptable to people's work and life circumstances. Our quantitative analysis corroborated their claim and showed that these external events may not only be work and life events, but macroeconomic ones, too.

Since there has been no agreement in this literature stream on whether career orientations may change over time, no research has shed light on the particularities of this process either. Our results advance the conceptual papers (Feldman & Bolino, 1996; Hirschi & Koen, 2021; Schein, 1990) and the qualitative work (Rodrigues et al., 2013) on the stability of career orientations by showing that external events shape not all, but only certain facets of career orientations. They urge future research to move away from debating whether career orientations change at all to examining how they change and why certain facets of career orientations may be more adaptable to external events than others.

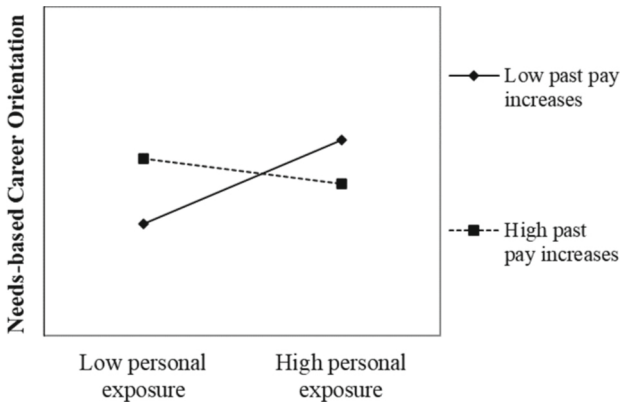

Fig. 3. The plotted interaction between personal exposure and pay increase, T2.
Simple slope tests:
When past pay increases is high, +1 SD, the slope = −0.07, not sig;
When past pay increases is low, −1 SD, the slope = 0.23, $p < .01$;
The slope difference between high and low = −0.30, $p < .05$.

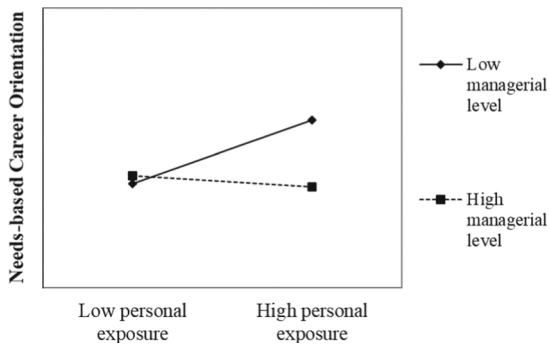

Fig. 4. The plotted interaction between personal exposure and managerial level, T3.
Simple slope tests:
When managerial level is high, +1 SD, the slope = −0.03, not sig;
When managerial level is low, −1 SD, the slope = 0.18, $p < .01$;
The slope difference between high and low = −0.21, $p < .05$.

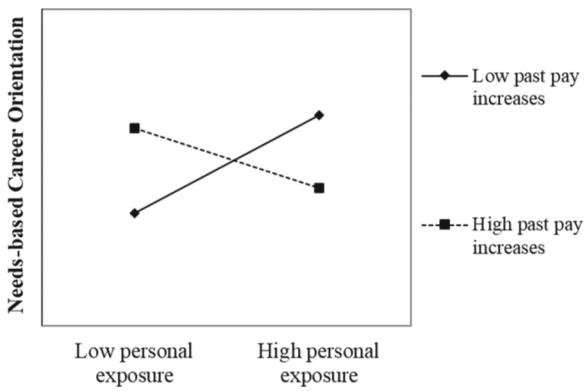

Fig. 5. The plotted interaction between personal exposure and past pay increases, T3.
Simple slope tests:
When past pay increases is high, +1 SD, the slope = −0.19, $p < .05$;
When past pay increases is low, −1 SD, the slope = 0.31, $p < .001$;
The slope difference between high and low = −0.50, $p < .001$.

5.2. Contributions to the literatures on career shocks

We showed that the same macroeconomic event had divergent effects on different individuals: NCO were less salient for employees with greater objective career success during both event windows, and for those with longer work experience at T2. These results advance empirical analyses of how macroeconomic events affect attitudes, beliefs, and values; the bulk of these analyses have not addressed the individual contingencies that would influence that process (Bianchi, 2013, 2014, 2016; Giuliano & Spilimbergo, 2014). Similarly, they extend empirical work on the consequences of career shocks—work most of which has not considered individual attributes either (Akkermans et al., 2020, 2021b; for an exception, see Wordsworth & Nilakant, 2021.) And our findings support the claim by Morgeson et al. (2015) and Akkermans et al. (2018) that researchers studying the impact of events should account for individual characteristics and theorize how those characteristics and events jointly determine outcomes. Future research should continue this line of research by examining what attributes determine individuals' reaction to events. For example, it should test whether a range of dispositional characteristics (such as the Big Five) and individuals' regulatory focus and goal orientation influence how they deal with career shocks (Akkermans et al., 2021a, b).

Second, our results contribute to the literature on career shocks by investigating the impact of event strength on career orientations. In their seminal paper on career shocks, Akkermans et al. (2018) characterized the exploration of shock attributes (such as shock quantity, intensity, frequency, predictability or duration) as one of the most important directions that career shocks research should take, and proposed that future papers should explore questions such as: Do more, more intense and longer career shocks have a stronger impact than less intense and shorter ones? While the propositions of EST are intuitive (that is, more intense shocks should elicit stronger reactions from individuals than less intense ones), they were not supported by our data. Rather, our results revealed that the salience of NCO changed little as event strength decreased, implying that the relationship between shock strength and individual reactions may be more complex and less linear than the theory predicted. Overall, our findings invite future research on the linear and possibly non-linear relationships between shock attributes and their outcomes.

5.3. Practical implications

Congruence between employees' career orientations and their work environment leads to beneficial outcomes both for individuals (e.g., career success, career satisfaction; see Igbaria et al., 1999; Jiang & Klein, 1999) and employers (e.g., work effectiveness, job satisfaction, organizational commitment, and retention; see Cerdin & Le Pargneux, 2009; Feldman & Bolino, 1996; Schein, 1990). Organizations may therefore increase their ability to attract, motivate, and retain talent by understanding employee career orientations and introducing work practices (e.g., working conditions, career development) that cater to these orientations (Cerdin & Le Pargneux, 2009; Feldman & Bolino, 1996). We find that during the pandemic NCO were more salient for employees than TVCO. These results suggest that employers need to modify existing practices to motivate and retain their workforce, providing a healthier work environment, better work-life interface, or more job security.

There are several companies that successfully moved in the above direction. Examples include Cleveland Clinic, which started to support its employees (healthcare providers) with a rapid response team if they reached their emotional limit during stressful days at work, an initiative that increased employee engagement and wellbeing (Stone, 2018). The customer relationship management company Sprinklr implemented a mindfulness and meditation app that enabled employees to get a few minutes of meditation, and hired a mindfulness instructor offering employees sessions with stretching, breath work and a guided meditation (Adams, 2020). Large retailers such as Costco and Mercadona put plexiglass in checkouts and introduced curbside pickup to keep workers safe during the pandemic (Kalloch & Ton, 2020). They also experimented with new ways of working: switched from group huddles to different modes of communication and created smaller work groups in distribution centers (Kalloch & Ton, 2020).

Most companies respond to macroeconomic crises by cutting jobs, pay or wellbeing programs and by outsourcing activities (ILO, 2013). Our results, however, help explain why employers that maintain their investment into employee-friendly work practices, protect jobs, or raise pay during crises obtain higher productivity, greater job satisfaction, and lower quit rates from their workforce. Crises like the pandemic increase employees' sensitivity to issues of security, health, and work-life balance, and practices that address those increased needs meet favorable employee responses. For example, Costco employees responded with increased loyalty and motivation as the retailer raised pay in 2009 as the recession deepened and relied on natural attrition to handle the reduction in force instead of laying off employees (Allison, 2009).

Among our respondents, health, security, and lifestyle orientations became especially salient for employees at lower managerial levels, with lower past career success, and (at T2) with shorter work experience, suggesting that interventions in response to crises should either be directed at every employee, or to those at a lower hierarchical level with less past career success. They certainly should not only be given to managerial and executive employees or other privileged groups, for whom needs-based career orientations are less salient.

5.4. Limitations

A limitation of our study is that we did not capture respondents' career orientations before the pandemic. This forced us to calculate two control variables, *NCO* and *TVCO* at T1, by subtracting the perceived change in career orientations between T1 and T2 (reported at T2) from career orientations measured at T2. Nevertheless, there is reason to believe that information on actual *NCO* and *TVCO* levels collected at T1 might not change the main conclusions from the paper. In the case of *NCO* and *TVCO* at T2, we have data both on actual *NCO* and *TVCO*, and also on the calculated values of these variables (Calculated = Actual T3 variables - perceived change between T3

and T2). When we substituted the actual measure in Table 8 for the perceived one and ran additional analyses, all results held, except for the interaction term between *managerial level* and *personal exposure*, which went from $\beta = -0.10$ to $\beta = -0.06$ and lost its statistical significance.

A second limitation of our study relates to our archival data. To measure locational exposure, we used data reported by the Chinese government, the only source of official data available on COVID cases and deaths in China. (Data by the World Health Organization, which also displays Chinese COVID statistics on its website, is derived from Chinese government data.) We are aware of reports that question the accuracy of this data (Romaniuk, 2020). We acknowledge that a potential reason why we found no statistically significant relationship between locational exposure and NCO may be due to the potential inaccuracy of this data.

We claimed – partly based on Chinese government data – that our first observation window (between November and April 2020) was different from our second observation window (between May and November 2020) because it saw significantly more deaths and new COVID cases than the second window. We do not think, however, that potentially inaccurate archival data might undermine the validity of our claim, for the following reasons: The threat of underreporting the real number of COVID cases and deaths was much bigger during our first event window (from November 2019 to April 2020) when China was the first country to have been heavily hit by the pandemic and the other countries were still relatively unharmed. It was smaller during our second time window when most other countries had higher reported cases and deaths than China. That is, the real contrast between our first and second time windows may be even bigger than what is revealed by our archival data. Moreover, the difference between the two observation windows is supported by data from other sources as well: Search frequency and media coverage frequency statistics for the keyword "COVID" on the Baidu index, the dominant Chinese web search engine, show that both indexes were considerably higher during our first event window than during the second one.

A final limitation is that we sampled early and mid-career professionals working toward an MBA. Although our respondents are from a wide range of industries, job functions, and managerial levels, they likely have achieved greater objective career success and hold jobs with better working conditions than the average Chinese employee. Therefore, we consider it a conservative sample and estimate that the moderating impact of managerial level or objective career success on the relationship between *personal exposure* and the salience of *NCO* might be even stronger in different samples. Akkermans et al. (2021b) note that shocks may differ across employee populations and some shocks may be specific to certain occupational groups. Future research could benefit from investigating more diverse employee samples.

6. Conclusion

Our findings underscore the importance of studying how macroeconomic events affect careers and career orientations. They demonstrate that the effect of the pandemic differs from that of other macroeconomic events and invite more research on its impact on other career-related outcomes. They also invite future research to continue exploring the important role that individual attributes play in the relationship between macroeconomic events and career orientations.

Declaration of competing interest

We have no conflicts of interest.

Data availability

Data will be made available on request.

Appendix A. Validation of NCO and TVCO

Pilot study 1

Pilot study 1 sampled undergraduate students in business in years 3 and 4 at a Chinese university. Responses were collected in April 2020, when the COVID-19 crisis still heavily affected daily life in China: all schools were closed, students were studying online, and many professionals were working from home. Our respondents had all started to look for internships and jobs, and some already had secured jobs at the time of the survey. Out of the 145 participants who were invited to take the survey, 141 responded with valid answers. The average age was 20.3 years. 69.8% of the respondents were female.

We used the 29-item scale by Bravo et al. (2017) to assess respondents' career orientations. We asked respondents to indicate the extent to which they considered important each of the items with respect to work. Responses were collected on a 1-to-5 scale where 1 stood for "not at all important" and 5 stood for "very important."

The scale included six dimensions: entrepreneurial/creative orientation (5 items, $\alpha = 0.86$); security orientation (5 items, $\alpha = 0.81$); service-to-a-cause orientation (4 items, α=.93); lifestyle orientation (5 items, $\alpha = 0.79$); managerial orientation (5 items, $\alpha = 0.87$); technical/functional orientation (5 items, $\alpha = 0.91$). Table A1 shows the means and standard deviations of the six career orientation dimensions. Lifestyle and security have the highest importance to our sample, while entrepreneurial/creative receives the lowest score.

Table A2 shows the factor loadings of the 29 items of the career orientation measure. This information served as the basis of selecting three items per dimension for the survey in pilot study 2.

Table A1
Dimension-level means and standard deviations of career orientations in pilot study 1.

Career orientation	Mean	S.D.
Creative/entrepreneurial	3.06	0.84
Security	3.93	0.74
Service to a cause	3.52	0.88
Lifestyle	4.13	0.58
Managerial	3.42	0.76
Technical/functional	3.57	0.82

N = 141.

Table A2
Survey items measuring career orientations with factor loadings (pilot study 1).

Items	Factor loading	Dimension
1. developing innovative new procedures, products, or services	**0.73**	Creative/entrepreneurial
2. working on the development of a new product, service, or work process	**0.84**	$\alpha = 0.86$
3. building or creating something that is entirely new	0.68	
4. developing, creating, and launching new products or services	**0.81**	
5. having skills and abilities required to be a successful entrepreneur	0.45	
6. employment security	0.65	Security
7. my employer providing job security to me	**0.78**	$\alpha = 0.81$
8. my employer providing job security to all its employees	**0.79**	
9. working at an organization that offers long-term job security	**0.78**	
10. financial security	0.51	
11. having a job that helps society in some way	**0.84**	Service to a cause
12. contributing positively to society through work	**0.92**	$\alpha = 0.93$
13. having a job that is compatible with my desire to improve the world	0.82	
14. making a real contribution to the welfare of society	**0.92**	
15. having a job that provides "family-friendly" benefits so that I can balance my work and home life	0.58	Lifestyle
16. balancing my work and personal needs	0.59	$\alpha = 0.79$
17. my employer allowing employees the time they need to be with their families	**0.68**	
18. my career providing me with good work-life balance	**0.73**	
19. working for an organization that values family/personal life	**0.68**	
20. having a position with a great deal of managerial responsibility	0.69	Managerial
21. having the skills and abilities to eventually rise to a high managerial level	**0.75**	$\alpha = 0.87$
22. managing an entire organizational division or profit center someday	0.67	
23. becoming an effective general manager	**0.83**	
24. rising to a high managerial level	**0.79**	
25. becoming more proficient in my technical/functional specialty	**0.86**	Technical/functional
26. having a job that challenges my technical or specialized skills and abilities	0.75	$\alpha = 0.91$
27. having a job in which I can fully utilize my technical/functional expertise	0.77	
28. advancing in a way that allows me to continue to use my specialized technical skills	**0.82**	
29. work that allows me to learn something new in my area of specialization	**0.85**	

Note. N = 141. The 3 items with the highest factor loadings in each dimension are in bold and were used for pilot study 2.
The items in bold letters are the items that constitute the Career Orientations scale in the main study.

Considering the critical role that context plays in individuals' career orientations, we also asked respondents to report, in free text format, any other career orientation items that they considered very important but were not mentioned among the 29 items, to ensure that our career orientations measure has face validity and reflects career orientations considerations in a manner appropriate for the context of the pandemic. Among the 111 answers we received, 109 mentioned issues related to health and organizational health climate. For example, "from this crisis I realize health is the most important thing"; "my future employer should provide resources to support our health, like having a gym area in the office"; "the company could organize some exercise time for everyone to stretch themselves"; "I like the snack time after lunch that is offered in many companies." Therefore, we included health orientation as the seventh career orientation in our next pilot study (Zweber, Henning, & Magley, 2016).

Pilot study 2

We recruited 2000 respondents from the Chinese online platform wjx.com, a marketplace for completion of virtual tasks similar to MTurk and Prolific. Participants had to be employed full time and be between the ages of 18 and 60, which is the standard working age in China. We filtered out 69 participants who failed an attention check and obtained 1931 valid responses. Participants were on average 24 years old and 53% were female. As in pilot study 1, we also asked respondents to indicate the extent to which they consider the items important with respect to work.

Step 1: the seven dimensions

In an effort to make the questionnaire shorter to facilitate survey participation, from Pilot study 1 we selected three items with the highest factor loadings for each of the six dimensions of the 29-item career orientation scale developed by Bravo et al. (2017). The 18 items that we retained have factor loadings that exceed the "very good" threshold (Tabachnick & Fidell, 2019). In accord with the qualitative results of pilot study 1, we added four items to measure health career orientation (Zweber et al., 2016).

We conducted exploratory factor analyses on the 22 items. The results are shown in Table A3. After varimax rotation, the 22 items yielded seven factors with eigenvalues greater than 1.0, explaining 69.22% of the cumulative variance. Each of the items clearly corresponded to seven dimensions, and none cross-loaded with more than one factor. The seven dimensions accurately corresponded to the seven career orientation dimensions proposed. The Cronbach alphas of the seven dimensions were all well above the accepted threshold: for creative/entrepreneurial orientation $\alpha = 0.93$; for security orientation $\alpha = 0.90$; for service orientation $\alpha = 0.93$; for lifestyle orientation $\alpha = 0.90$; for managerial orientation $\alpha = 0.87$; for technical/functional orientation $\alpha = 0.93$; for health orientation (4 items) $\alpha = 0.92$.

Step 2: the two-factors

We conducted exploratory factor analyses on the seven dimensions. Results are shown in Table A4. After varimax rotation, the seven items yielded two factors with eigenvalues greater than 1.0, explaining 51.42% of the cumulative variance. The seven items clearly corresponded to two factors with factor loadings between .53 and .72, and no item cross-loaded on more than one factor with a load of .50 or higher. Factor 1 includes security, lifestyle, and health orientations. We label these orientations "needs-based." Factor 2 includes creative/entrepreneurial, service, managerial, and technical/functional orientations. We label them "talent- and value-based" orientations (cf. Gesthuizen et al., 2019; Ros et al., 1999). The Cronbach alpha of the needs-based career orientation items is .93; it is .95 for talent-and value-based career orientations.

We then conducted confirmatory factor analyses that indicated a good model fit of the two second-order factors with seven first-order factors based on 22 scale items: $\chi2$ (201) = 1182.35, SRMR = 0.04, RMSEA = 0.05, CFI = 0.97, TLI = 0.97. Furthermore, as appears in Fig. A1 below, all items loaded significantly on the corresponding construct, with all item loadings above 0.70 ($p < 0.001$).

The discriminant validity of the two career orientation dimensions is supported if its sub-orientations are correlated more strongly with the orientations under the same dimension than otherwise. As shown in Table A5, security, lifestyle and health are correlated with each other more strongly than with the other four orientations; and managerial, technical/functional, creative/entrepreneurial, and service-to-a-cause orientations are correlated with each other more strongly than with the other three orientations. These results support the discriminant validity of the needs-based career orientation and talent-and value-based career orientation constructs.

Table A3
Exploratory factor analysis results of the seven-dimension career orientation scale from pilot study 2.

Career orientation scale items	Dimension[a]						
	1	2	3	4	5	6	7
1. developing innovative new procedures, products, or services	0.69						
2. working on the development of a new product, service, or work process	0.73						
3. developing, creating, and launching new products or services	0.76						
4. my employer providing job security to me		0.73					
5. my employer providing job security to all its employees		0.80					
6. working at an organization that offers long-term job security		0.79					
7. having a job that helps society in some way			0.72				
8. contributing positively to society through work			0.79				
9. making a real contribution to the welfare of society			0.74				
10. my employer allowing employees the time they need to be with their families				0.64			
11. my career providing me with good work-life balance				0.73			
12. working for an organization that values family/personal life				0.73			
13. having the skills and abilities to eventually rise to a high managerial level					0.54		
14. becoming an effective general manager					0.64		
15. rising to a high managerial level					0.55		
16. becoming more proficient in my technical/functional specialty						0.75	
17. advancing in a way that allows me to continue to use my specialized technical skills						0.78	
18. work that allows me to learn something new in my area of specialization						0.73	
19. Healthy behaviors are the norm whenever members of my workgroup socialize at work or elsewhere (e.g., eating healthy foods, walking together during breaks).							0.69
20. My supervisor encourages healthy behaviors in my workgroup.							0.74
21. My organization is committed to employee health and well-being.							0.72
22. My organization provides me with opportunities and resources to be healthy.							0.65
Eigenvalue for each factor	2.29	2.13	2.46	1.90	1.22	2.60	2.62
Total variance explained	69.22%						

Notes. N = 1931.

[a] Dimension1 = entrepreneurial/creative orientation; Dimension2 = security orientation; Dimension3 = service-to-a-cause orientation; Dimension4 = lifestyle orientation; Dimension5 = managerial orientation; Dimension6 = technical/functional orientation; Dimension7 = health orientation.

Table A4
Exploratory factor analysis results of the two-factor career orientation scale from pilot study 2.

	Factor[a]	
Career orientation dimensions	1	2
1. Creative/entrepreneurial		0.72
2. Security	0.53	
3. Service to a cause		0.68
4. Lifestyle	0.67	
5. Managerial		0.69
6. Technical/functional		0.71
7. Health	0.61	
Eigenvalue for each factor	2.28	1.32
Total variance explained	51.42%	

Notes. N = 1931.
[a] Factor 1 = Needs-based career orientation; Factor 2 = Talent- and value-based career orientation.

Table A5
Means, standard deviations, and correlations among the seven dimensions of career orientations (pilot study 2).

	M	SD	1	2	3	4	5	6
1. Security	3.94	0.79	-					
2. Lifestyle	4.10	0.74	0.46	-				
3. Health	4.13	0.75	0.42	0.64	-			
4. Managerial	4.00	0.77	0.24	0.32	0.30	-		
5. Technical/functional	4.06	0.78	0.26	0.34	0.33	0.64	-	
6. Creative/entrepreneurial	3.85	0.83	0.21	0.29	0.31	0.53	0.56	-
7. Service to a cause	3.91	0.84	0.25	0.33	0.34	0.51	0.54	0.64

Note. N = 1931.

Table A6
Supplementary analyses: OLS regressions predicting NCO and TCO at T2 (N = 309).

	DV = NCO at T2						DV = TVCO at T2		
	M1	M2	M3	M4	M5	M6	M7	M8	M9
NCO at T1	0.44 (0.05)***	0.44 (0.05)***	0.43 (0.05)***	0.43 (0.05)***	0.45 (0.05)***	0.44 (0.05)***			
TVCO at T1							0.47 (0.05)***	0.47 (0.05)***	0.47 (0.05)***
Work experience	0.02 (0.01)+	0.02 (0.01)+	0.02 (0.01)+	−0.01 (0.04)	0.02 (0.01)*	0.02 (0.01)*	0.02 (0.01)+	0.02 (0.01)+	0.02 (0.01)+
Sex	−0.14 (0.08)+	−0.14 (0.08)+	−0.11 (0.08)	−0.12 (0.08)	−0.09 (0.08)	−0.09 (0.08)	−0.06 (0.08)	−0.06 (0.08)	−0.04 (0.08)
Openness	0.25 (0.09)**	0.25 (0.09)**	0.25 (0.09)**	0.23 (0.09)*	0.27 (0.09)**	0.25 (0.09)**	0.31 (0.09)***	0.31 (0.09)***	0.31 (0.09)***
Conscientiousness	0.04(0.10)	0.04(0.10)	0.05(0.10)	0.09(0.10)	0.05(0.10)	0.05(0.10)	0.12(0.10)	0.12(0.10)	0.13(0.10)
Extraversion	−0.13 (0.06)+	−0.13 (0.06)+	−0.11 (0.06)+	−0.13 (0.06)*	−0.11 (0.06)+	−0.1 (0.06)	−0.04 (0.07)	−0.04 (0.07)	−0.04 (0.07)
Agreeableness	0.01(0.10)	0.01(0.10)	−0.01 (0.10)	0.00(0.10)	0.00(0.10)	−0.02 (0.10)	−0.06 (0.10)	−0.06 (0.10)	−0.06 (0.10)
Neuroticism	−0.01 (0.07)	−0.01 (0.07)	−0.02 (0.07)	−0.01 (0.07)	−0.03 (0.07)	−0.02 (0.07)	−0.06 (0.07)	−0.06 (0.07)	−0.07 (0.07)
Number of children	0.02(0.06)	0.02(0.06)	0(0.06)	0.07(0.06)	0.00(0.06)	0.00(0.06)	−0.07 (0.06)	−0.07 (0.06)	−0.08 (0.06)
Pay and job loss	−0.02 (0.04)	−0.02 (0.04)	−0.03 (0.04)	−0.02 (0.04)	−0.04 (0.04)	−0.03 (0.04)	−0.03 (0.04)	−0.03 (0.04)	−0.03 (0.04)
Firm size	0.00(0.02)	0.00(0.02)	0.00(0.02)	0.00(0.02)	0.00(0.02)	0.00(0.02)	−0.02 (0.02)	−0.02 (0.02)	−0.02 (0.02)
Locational exposure		−0.01 (0.04)		0.01(0.04)	0.01(0.04)	0.01(0.04)		0.01(0.04)	
Personal exposure			0.09 (0.04)*	0.11 (0.04)**	0.11 (0.04)**	0.09 (0.04)*			0.04(0.04)
Personal exposure × work experience				−0.08 (0.05)+					
Managerial level					−0.04 (0.04)				
Personal exposure × managerial level					−0.09 (0.04)*				

(*continued on next page*)

Table A6 (*continued*)

	DV = NCO at T2						DV = TVCO at T2		
	M1	M2	M3	M4	M5	M6	M7	M8	M9
Past pay increases						0.02(0.04)			
Personal exposure × past pay increases						−0.11 (0.05)*			
(constant)	1.53 (0.41)***	1.52 (0.41)***	1.59 (0.40)***	1.62 (0.41)***	1.43 (0.41)***	1.61 (0.41)***	1.16 (0.40)**	1.17 (0.40)**	1.18 (0.40)**
R^2	0.23***	0.23***	0.24***	0.24***	0.26***	0.26***	0.26***	0.26***	0.26***

Notes. N = 309. Standard errors are reported in the parentheses.
+ $p < .10$.
* $p < .05$.
** $p < .01$.
*** $p < .001$, two tailed.

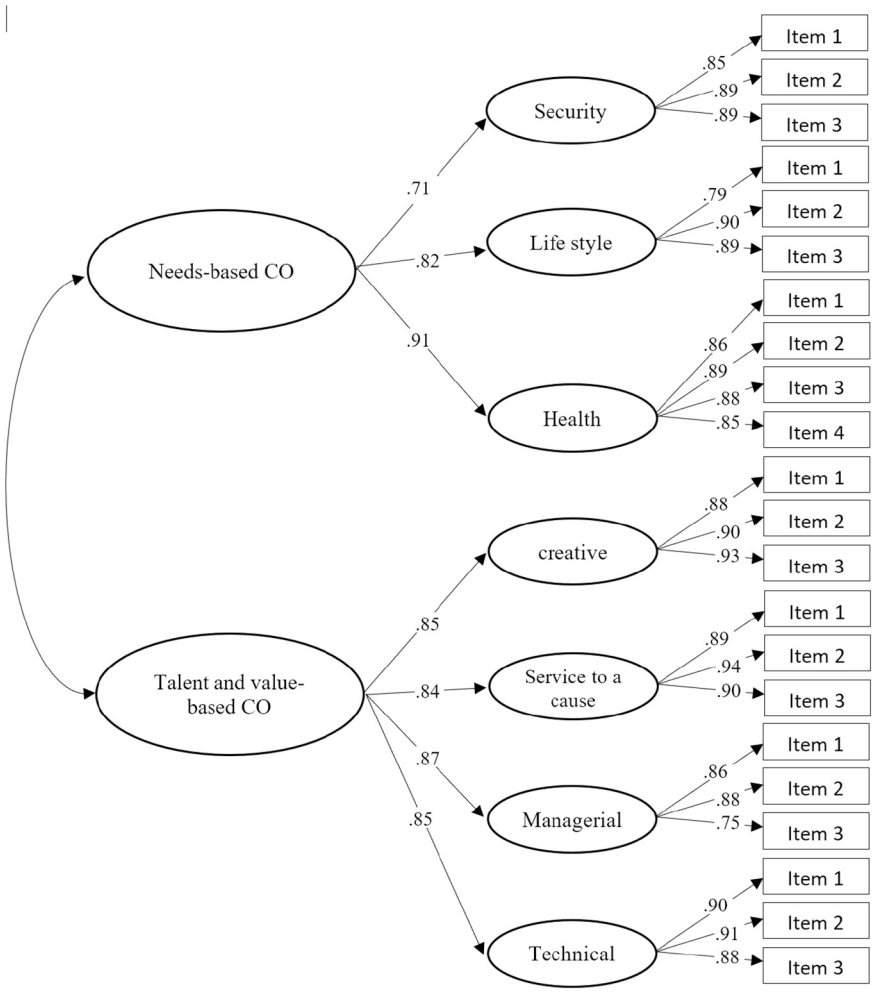

Fig. A1. Confirmatory factor analysis results of the two second-order factors with seven first-order factors based on 22 scale items for pilot study 2. Note: Standardized parameter estimates are presented and all are significant at p<0.001 level, two tailed.

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