Take it ECCI:

Development and Initial Validation of the Existential Career Concerns Inventory (ECCI)

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Master Thesis

International Joint Master of Research in Work and Organizational Psychology (IJMRWOP)

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Submitted: July 1st, 2024

Word Count Abstract: 244

Word Count: 9,944

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Abstract

Initial applications of existentialism in I-O psychology aim to explain how work helps or hinders people reach a fulfilling life (see Fleuren et al., 2024). Rodríguez Conde (2021) was the first to create and validate a measurement instrument to assess existential concerns rooted in work (i.e., thoughts about meaning, death, identity, isolation, and freedom regarding one's work). This study aims to improve and extend this instrument to focus on careers instead of work and adds a theory-based sixth existential concern regarding responsibility, creating the Existential Career Concerns Inventory (ECCI). An expert panel ($n = 10$) rated the initial scale, and we administered the refined version as a survey to a sample of 190 adults working at least 20 hours weekly, additionally assessing meaningful work, personality traits, burnout, and existential anxiety (EA). We analyzed item performance, conducted exploratory and confirmatory factor analyses, and structural equation modeling. Findings reveal initial support for the presence of existential career concerns in workers, and for the internal consistency and discriminant validity of our instrument. Moreover, existential career concerns related negatively to meaningful work, supporting criterion validity, and to negative emotionality. Results also indicate that some existential career concerns relate positively to burnout and EA, however, conclusions are preliminary due to potential issues with multicollinearity and sample size. Requiring further scale validation, this study paves the way for further research on existential career concerns as a source of burnout and EA, as well as meaningless work predicting their onset.

Keywords: existential concerns, existential psychology, scale validation, career counseling, burnout, meaningful work

Take it ECCI: Development and Initial Validation of the Existential Career Concerns Inventory (ECCI)

„Schaffen und schaffend sich schaffen und nichts anderes sein als das, zu dem man sich geschaffen hat" (Sartre, 1943, in Sartre, 2023)

"What do you want to be when you grow up?" – a question we tend to ask children from early on, expecting them to have ideas about their future occupation. Indeed, spending around one-third of our lives working, this question seems so relevant, some consider career decisions major life events (Cohen, 2003). Still, many wonder whether they chose correctly, with 49% of U.S. adults feeling uncertain about their career (American Psychological Association, 2020). Such feelings of uncertainty may, for instance, stem from concerns about not having made career choices freely, unconstrained by external influences, and according to one's identity, as proposed by Fleuren et al. (2024). These concerns qualify as existential concerns: cognitions people have regarding meaning, death, identity, isolation, and freedom in their lives (Koole et al., 2006), and in this case, seem to be rooted in one's career. Given that work is a fundamental part of our lives, the concerns are proposed to inherently affect not only satisfaction with our career but also with life in general (Fleuren et al., 2024). This underlines that work is not only a means to the end of earning money but may play a crucial role in leading a fulfilling life for many.

Humans have long been pondering on the question of what brings meaning and fulfillment to life. Existentialists like Sartre or Camus proposed meaning to be entirely subjective. Psychology adopted this viewpoint predominantly in psychotherapy (e.g., logotherapy; Frankl, 1958), also attempting to measure existential concerns or existential anxiety (EA), a strong manifestation of existential concerns (Van Bruggen et al., 2015; Van Bruggen et al., 2017). Additionally, career counsellors (e.g., Cohen, 2003; Maglio et al., 2005) and I-O psychologists (Fleuren et al., 2024; Rodríguez Conde, 2021) have suggested applying existentialist thinking to the life domain of work. Yet, no suitable, validated instrument to assess the extent to which people have existential career concerns is available. A notable exception is the scale by Rodríguez Conde (2021), offering a basis for tapping into existential concerns rooted in work. However, in this conceptualization, the existential concerns are narrowly connected to work as a current job, while we propose that working in general, including career considerations of the past, present and future should be the frame: As a fundamental part of life, careers as the holistic employment history are less temporary and more likely to be a source of existential concerns than a certain job or work tasks. Additionally, the authors have noted important areas for improvement: establishing validity in

a different sample, integrating expert opinions in the scale development, and including different constructs to establish criterion validity. Furthermore, the instrument is based on the Big Five existential concerns (i.e., concerns regarding meaning, death, isolation, identity, and freedom; Koole et al., 2006), neglecting concerns about individuals' responsibility. Responsibility concerns (e.g., carrying the responsibility for decisions for oneself without knowing what is right) are central to existentialist thought (e.g., Frankl, 1958), and arguably conceptually different cognitions than freedom concerns (i.e., freedom to make unconstrained career decisions). However, they have previously been described within one dimension (i.e., whether a person is unconstrained in making decisions, and therefore also alone responsible for their decisions; Koole et al., 2006), hindering the initial instrument from differentiating between the two cognitions.

Building on the initial scale by Rodríguez Conde (2021), the present paper presents a measurement instrument to capture existential concerns people may have regarding their career. Concretely, in the first stage of this study, we took a critical look at the items formulated by Rodríguez Conde (2021), created new items focusing on careers and aimed to overcome existing wording difficulties. Still based on the Big Five existential concerns (Koole et al., 2006), we added responsibility concerns as a sixth dimension. The second stage included an expert panel involving 10 experts within the fields of social or work and organizational psychology, or occupational health. They reviewed generated items, based on which the items were updated slightly. Finally, the third stage involved collecting responses from 190 individuals from the general working population to test the quality of the measurement instrument. We conducted factor analyses and structural equation modeling to test for construct, criterion, and discriminant validity, relating existential career concerns to meaningful work, personality traits, EA, and burnout.

The present paper makes four contributions to the understanding of how careers can contribute to a fulfilling life. First, the development of the scale aids a better understanding of how people relate to careers at an existential level, capturing the thoughts they may have regarding their career. Second, applying existential concerns to careers instead of work, the scale extends the previous instrument, broadening the scope of applicability from a specific work experience to the holistic career. Third, the paper extends the conceptualization of general existential concerns (e.g., Koole et al., 2006) by adding and theoretically elaborating on a sixth concern of responsibility. Fourth, relating existential career concerns to burnout, meaningful work, EA, and personality allows us to better understand the antecedents and consequences of existential career concerns.

Theoretical Background

Existentialism and Its Applications in Psychology

Existentialism is a philosophical movement regarding individual human experiences and meaning in life (Pervin, 1960), and as such has been applied to psychology early on, firstly in psychotherapy (e.g., Frankl, 1958; May, 1961), later for example in experimental existential psychology (XXP; Greenberg et al., 2004). A central idea of existentialism is that humans search meaning in life (Frankl, 1958). Here, *existence precedes essence* (Sartre, 1946), meaning nothing inherently possesses a meaning (an essence), but each individual assigns meaning to everything. Therefore, humans may face tensions between striving for meaning or purpose in life (i.e., existential fulfillment; Loonstra et al., 2009), while being confronted with randomness, restrictions or demands of reality – an experience referred to as existential concerns (Fleuren et al., 2024). XXP has put forward the Big Five existential concerns (Koole et al., 2006), entailing next to existential meaning concerns (i.e., wanting to experience meaningfulness but being confronted with randomness), also concerns regarding death (i.e., wanting to live but death is inevitable), identity (i.e., wanting to know who and live as one really is but being uncertain as to how), isolation (i.e., wanting to connect with others but knowing that they will never fully understand oneself), and freedom (i.e., wanting to act upon one's free will but being constrained by others and one's own responsibility towards oneself). Based on this and similar conceptualizations, measurement instruments to assess existential concerns or EA have been developed (Van Bruggen et al., 2017).

Existentialism in I-O Psychology

Work is often a central and necessary part of life, yet I-O psychology has applied existentialism surprisingly little (Fleuren et al., 2024). Work can be experienced as meaningful, if it aligns with an individual's needs, values, and aspirations (Fleuren et al., 2024) – even though, following existential thinking, it does not possess any meaning in itself. In fact, work has been described as a source of fulfillment in life in secular societies alternatively to religion (e.g., Riethof & Bob, 2019). Consequently, if people do not experience their work as fulfilling and as expected, they may find themselves confronted with tensions similar to the existential concerns described above (e.g., wanting to choose work based on their free will but being constrained in the choice by their environment). Following this notion, the most pertinent example for the application of existential thinking in I-O psychology is Rodríguez Conde's (2021) scale to measure existential concerns rooted in work. The scale is based on the Big Five existential concerns (Koole et al., 2006),

encompassing meaning (i.e., whether work adds to experienced existential meaning), death (i.e., whether it is beneficial to spend time at work while one's lifetime is limited), identity (i.e., whether one is able to be oneself at work), freedom (i.e., whether work-related choices have been made freely), and isolation (i.e., whether one is being judged by others for their work and thus feels isolated) concerns rooted in work. These concerns are considered as related to each other (Rodríguez Conde, 2021).

From Work to Careers

While a framing of work as the source of existential concerns is relevant, they might pertain to more than just the current work an individual is engaged in and arguably span one's career as experienced and anticipated. A career can be seen as a sequence of "employment-related experiences" (Baruch & Bozionelos, 2011, p.67), and consequently, is a process that people construct with every employment-related decision they make. Being dissatisfied with a work situation might be a temporary state in one's career, for example due to bad working conditions. However, we argue that existential concerns arise when the underlying issue is more fundamental, spanning past and anticipated future career experiences. Similarly, Cohen (2003) introduced the term *vocational dissatisfaction*, stemming from the inability to choose a vocation that provides meaning and enables authenticity, an existential perspective he found useful for application in career counseling (note however, that a career can even span several vocations). Other authors applied existential thinking to career counseling as well, seeing work as a means to reach fulfillment and one's full potential or authentic existence (Bloland & Walker, 1981; Homan, 1986). As major life events (Cohen, 2003), career decisions would raise the individual's awareness of existential topics (Yalom, 1980). In line with this thinking, Maglio et al. (2005) described careers as "one of the obvious places" (p.79) where humans must integrate their ideals and aspirations with limitations presented by their existence, meaning they are predestined to arouse existential concerns. Reporting qualitative data from three studies, the authors showcase the presence of existential themes (including death, isolation, freedom, responsibility, meaning) in workers undergoing career transitions and encourage to explore those in counseling (Maglio et al., 2005). Overall, these perspectives highlight the relevance and practical applicability of examining careers holistically as a source of existential concerns. Nevertheless, previous research is predominantly qualitative and lacks a tool to quantitatively assess whether and which existential career concerns individuals have.

The present paper extends existential concerns rooted in work – cognitions people have that stem from frustrations in current work experiences (Rodríguez Conde, 2021) – to existential career concerns, arising from people's past career experiences and future career

anticipations. As such, they are the thoughts occurring when a career does not aid or even hinders existential fulfillment. Such thoughts can occupy people's minds and if not resolved, may become pervasive, potentially leading to anxiety and occupational health problems, such as burnout (Pines, 2000; Rodríguez Conde, 2021). However, as work life and general life influence each other (e.g., Hakanen & Schaufeli, 2012), these problems could also spill over to the general life domain. Following Koole et al.'s (2006) Big Five existential concerns and based on the conceptualization of existential concerns rooted in work by Rodríguez Conde (2021), we define five existential career concerns. Furthermore, addressing conceptual unclarity in the existential concerns literature, we add a sixth existential career concern (responsibility).

Meaning

Existential career concerns regarding meaning are thoughts focusing on whether one's career contributes to an overall fulfilling life. This implies that one's career can enhance but also limit the extent to which an individual perceives their life as meaningful, and, hence fulfilling. In line with existentialism, the definition of *meaningful* is subjective and the individual decides what they consider to be meaningful. The notion that work, and hence careers, should be meaningful has been subject in various strands of literature, such as those on *calling* (e.g., Dik & Duffy, 2012; Dik et al., 2015) or *meaningful work* (e.g., Both-Nwabuwe et al., 2017). A recent meta-analysis (Allan et al., 2019) finds a negative relationship between meaningful work and life meaning, indicating that as proposed above, (not) perceiving meaning in work can spill over to the general life domain. Moreover, there seems to be evidence that people question the meaning of their work, for example in academia (Knights & Clarke, 2014) and public services (Belanger et al., 2024).

Death

Existential career concerns regarding death are thoughts about whether the benefits of spending time in one's career are worth it, given that lifetime is limited. Being (made) aware of death as inevitable might make people re-assess their priorities and find that their work is less important and meaningful to them than other activities. As noted by Rodríguez Conde (2021), such thoughts are strongly related to meaning concerns; people may miss feelings of meaningfulness through work while time passes. This reasoning is based on studies looking at the general life domain, finding relationships between meaning in life and death anxiety (Lyke, 2013). The idea that working might be (experienced as) a waste of time has been discussed in the literature on *bullshit jobs* (Graeber, 2018) and by the non-work movement

(e.g., Alliger & McEachern, 2023). Hence, it is likely that people develop existential career concerns regarding death.

Identity

Existentialism assumes that we define who we are through the decisions we make (Satre, 1943). Hence, our career decisions influence our identity, while our identity in turn also determines our career decisions (Miscenko & Day, 2016). Existential career concerns regarding identity are thoughts about the extent to which the career hinders the development of one's identity. These thoughts can stem from an inability to be authentic at work but also from work that does not align with who we understand ourselves to be. It assumes that normally, people strive to have a work-related identity that is in line with other identities in their life (Dutton et al., 2010). However, people often find their identities threatened at work, for instance due to their gender, sexual orientation or ethnicity (Emerson & Murphy, 2014; Gusmano, 2008; Hall et al., 2015). Therefore, it can be assumed that existential career concerns regarding one's identity are present among the workforce.

Isolation

Existential career concerns regarding isolation stem from the realization that in one's career, others can never fully relate to them. As a result, others might judge or disapprove of us, in turn hindering us from connecting with them. Notably, existential isolation is different from being physically isolated at work (interpersonal isolation; Pinel et al., 2017). A somewhat placative example is that of *dirty work* – work seen as physically, socially, or morally tainted (Ashforth & Kreiner, 1999). These workers are often stigmatized (e.g., Rabelo & Mahalingam, 2019), even if they stop working in their "dirty" job (Bergman & Chalkley, 2007). However, they may perceive their jobs as meaningful and satisfying, for example, because the job provides them with autonomy, or a sense of pride in being able to deal with a challenging job (Deery et al., 2019). Therefore, they are confronted with the reality that others cannot relate to their experiences and disapprove of them for their work. Generally, people vary in the extent to which they feel existential isolation (Helm et al., 2019). However, as relatedness to others is a fundamental human need (Deci & Ryan, 2009), and work a fundamental part of most people's lives, we assume that not only in dirty work, but generally, people may develop existential career concerns regarding isolation. Such concerns might also relate to other concerns, for instance about freedom, as people might let themselves be restricted by others in their career choices to feel accepted (Fleuren et al., 2024).

Freedom

Existential career concerns regarding freedom are cognitions about whether one's career choices are and were made freely, unconstrained by others, and out of internal rather than external drivers (e.g., Frankl, 1958). Arguably, such concerns exist because career choices are determined not only by personal interests or abilities, but also by external factors, such as physical impairments, socio-economic status, culture or socialization (Akosah-Twumasi et al., 2018; Laughland-Booÿ et al., 2015; Yalom, 1980). For example, especially women are often constrained in their career choices by traditional gender roles, family obligations, and the layout of jobs and organizational cultures (Broadbridge, 2010). Realizing that decisions were and are not made freely might then leave the individual wondering if where they stand in their career is what they wanted and authentic, potentially influencing their life satisfaction (Fleuren et al., 2024).

Responsibility

Existential career concerns regarding responsibility are about being responsible for making career decisions without knowing what is right, and therefore being responsible if a wrong career decision or no decision at all is made. Heidegger suggested that individuals want to make career decisions that provide them with an opportunity to reach their potential as human beings (Heidegger as cited in Cohen, 2003). This responsibility to oneself can be burdensome if we "become aware of the seemingly limitless career alternatives" (Cohen, 2003, p. 198), and of our responsibility to choose, especially in case we fail to choose or choose wrong. It has been observed by career counselors such as Cohen (2003) that this burden can be so high, individuals rather avoid a decision in so-called career paralysis (McInnes, 2016), or let others decide for them. The latter option relates to freedom concerns, with the individual denying that there is freedom to choose. Therefore, previous authors (e.g., Koole et al., 2006), view freedom and responsibility concerns as the same existential problem (i.e., both relate to choices, being free or not in choosing, and then being responsible to choose right). However, we argue that while freedom concerns arise when individuals experience too little freedom, in that they feel constrained in their decision-making (e.g., Frankl, 1958; Koole et al., 2006), individuals may also perceive too much freedom, experiencing too many options (e.g., Koole et al., 2006; Yalom, 1980). Here, individuals might then feel a responsibility to themselves for making the right decision without necessarily knowing what is right, potentially leading to doubting or procrastinating one's decisions (Frankl, 1958; Glas, 2003, as described in Van Bruggen et al., 2015). Hence, both freedom and responsibility concerns are conceptually different and should be captured as two

distinct latent variables (Fleuren et al., 2018), wherefore we propose responsibility as an additional, sixth existential career concern.

In conclusion, we propose that people may develop six different existential career concerns, those regarding meaning, death, identity, isolation, freedom, and responsibility. Measuring them adequately enables us to research which cognitions people have regarding their work, how they are influenced, and how they contribute to leading a fulfilling life. See Figure 1 for an overview of all six concerns.

place Figure 1 about here

Criterion and Discriminant Validity of Existential Career Concerns

To establish criterion and discriminant validity of the ECCI, we examine the relationship between existential career concerns and four other constructs (see Figure 1). Similar to Rodríguez Conde (2021), we employ meaningful work and burnout supporting criterion validity. We add EA to further establish criterion validity, and the Big Five personality traits to establish discriminant validity.

Meaningful Work

To be perceived as meaningful, work needs to contribute to one's fulfillment by fitting to one as a person, for instance by fulfilling needs and matching values (Both-Nwabuwe et al., 2017). Conversely, work is perceived as meaningless when it does not contribute to such fulfillment or even hampers it. As such, the meaningful work literature touches upon existentialism, but not exhaustively (see Fleuren et al., 2024). Instead, to assess meaningful work, it rather investigates whether work can be generally considered meaningful (e.g., contributing to a greater good, Steger et al., 2012), while from an existentialist viewpoint, each individual can decide what they consider as meaningful work (Fleuren et al., 2024). Assessing existential career concerns then deals with whether there is a tension between striving for existential fulfillment while being confronted with the reality of their current meaningless career situation. Hence, we propose that both constructs are distinct, with meaningful work, or rather meaningless work, predicting the occurrence of existential career concerns. While it seems straightforward that meaningless work as part of one's career would cause existential career concerns regarding meaning, other existential career concerns might also arise, such as thinking whether one was free in their decision for such seemingly meaningless work (see also Rodríguez Conde, 2021). Supported by the finding that existential concerns rooted in work relate negatively to meaningful work (Rodríguez Conde, 2021), we

similarly expect a negative relationship between existential career concerns and meaningful work.

Existential Anxiety

Existential anxiety is a strong fear arising from general threats to a person's existence that results from recurrent existential concerns (Glas, 2003). Such existential concerns may encompass different domains, with Van Bruggen et al. (2017) concretely listing concerns regarding death, meaning(lessness), social isolation, identity, and guilt. These domains of concerns largely correspond to the ones applied in our scale, with the dimension of freedom lacking, and guilt ("the experience of not being able to fulfill one's own expectations about life", Van Bruggen et al., 2017, p.1693) corresponding to our dimension of responsibility. Responding to a lack of validated and comprehensive tools to measure existential concerns, these authors developed the Existential Concerns Questionnaire (ECQ; Van Bruggen et al., 2017), aiming to assess EA, not existential concerns as the name suggests. The difference becomes clear looking at the item wording: While in the ECQ (assessing EA), items often start with "I worry about…" or "It frightens me" (Van Bruggen et al., 2017, p.1697), the ECCI (assessing existential career concerns) exclusively asks about thoughts (e.g., "I have thoughts about…", "I wonder…"). Second, the ECQ focuses on EA regarding one's life, as opposed to the ECCI assessing concerns regarding just the career aspect. Although a career is a major part of people's lives and may therefore lead individuals to question their general existential fulfillment, there are also other sources leading people to experience general existential concerns and EA. The ECQ does not specify such sources. Consequently, due to the theoretical relationship between existential concerns and EA, as well as the differences between the conceptualizations of the ECQ and the ECCI, it is expected that EA and existential career concerns will be highly positively correlated but not equal.

Burnout

Burnout is understood as a negative "work-related state of exhaustion" (Schaufeli et al., 2020, p.4) and can arise in response to prolonged stress exposure (Schaufeli & Buunk, 2003). It exhibits itself in individuals being extremely tired, less able to regulate their emotional and cognitive processes, and distancing themselves mentally from their work (Schaufeli et al., 2020). Burnout commonly tends to be associated with high work demands and uttered as strain and exhaustion. However, burnout researchers (e.g., Leiter & Maslach, 2016) emphasized that a lack of perceived meaning of work, the resulting loss of significance, and experiences of frustration are also crucial aspects (Rodríguez Conde, 2021). While people can endure exhausting working conditions when they act voluntarily and according to their

values (Längle, 2003), they may lose interest and initiative otherwise, resulting in experiencing work as meaningless leading to burnout (Riethof & Bob, 2019). Supporting research finds that indeed, meaningfulness or existential fulfillment are negatively related to burnout, for example in doctors (Karazman, 1994), firefighters (Krok, 2016), teachers, and principals (Loonstra et al., 2009; Tomic & Tomic, 2008). In line with Rodríguez Conde (2021), we therefore argue that also existential career concerns – questioning the value of one's career to reach fulfillment – relate to burnout. Following their finding that existential concerns rooted in work and burnout are positively related, we also expect a positive relationship between the six existential career concerns and burnout.

Personality

Lastly, this paper investigates personality as a construct to establish discriminant validity, expecting only modest relationships between personality and the six existential career concerns. Specifically, we will measure the Big Five personality traits conscientiousness, agreeableness, neuroticism, openness to experience, and extraversion (Costa & McCrea, 1992). These traits are widely used to describe people's personality and have been thoroughly investigated. We propose that regardless of personality, anyone can have existential career concerns and hence, we do not expect relationships to reflect any general tendencies. With this, we follow recommendations of previous research to study how existential concerns rooted in work relate to personality (Rodríguez Conde, 2021).

Methods

Scale Development and Expert Validation Study

The development and validation of the Existential Career Concerns Inventory (ECCI) was based on recommendations by Hinkin (1995) and DeVellis (2003), starting with item development. We based the items development on the previously developed and validated scale about existential concerns rooted in work (Rodríguez Conde, 2021). The existing items were adapted such that instead of referring to a current job or work task, they referred to careers or one's general work. Moreover, we changed the wording to clearly refer to cognitions instead of feelings (e.g., substituting "I worry" with "I think about"). As such, the formulations became more neutral without a negative connotation, capturing whether respondents exhibit such thoughts, not whether they evaluate them negatively. Next to updating the previous scale, new items were created deductively and theory-based, aiming for six items per dimension (Hinkin, 1995). As the dimension of responsibility concerns was not part of the previous scale, items for this dimension were added entirely deductively. One item for each dimension was reverse-scored to minimize response-set bias.

The resulting scale with 36 items was submitted to a native English speaker and a panel of experts working in the field for review. As the items were all based on theory and developed with content experts, this expert panel was not required to judge the items' contents, but their ease of understanding (DeVellis, 2003), thereby increasing reliability. Experts quantitatively assessed the items' clarity with the item "Please rate the clarity of each of the following items" on a 5-point Likert scale ranging from 1 (*extremely unclear*) to 5 (*extremely clear*). There was an open text field for concerns or suggestions. The expert panel survey was sent via a Qualtrics link. Data collection was terminated after two weeks, resulting in 14 responses. Four responses had to be removed because they were incomplete, resulting in a final sample size of 10. All participants were employed by a university, with a mean tenure of 11.44 years ($SD = 11.76$), and working in the field of work and organizational (60%), social (30%), or occupational health psychology (10%). To evaluate the item formulations, descriptive statistics were computed using IBM SPSS Version 29. Items that reached a mean score of below 3 (indicating that on average, they were insufficiently clear), or had a high standard deviation suggesting high variance in clarity perceptions were re-evaluated by the authors considering the qualitative comments provided. Consequently, we adjusted the wording of 15 items. For all expert survey results and changes in item wording, see Table 1.

Place Table 1 about here

Main Study Design and Sample

The main validation study was cross-sectional, quantitative, and administered via a Qualtrics survey. We convenience sampled participants from our network, with the inclusion criteria to be at least 18 years old and working minimally on average 20 hours per week, ensuring the valid measurement of work-related constructs (i.e., meaningful work and burnout). In total, 263 participants responded. Of those, we excluded participants who did not provide consent, meet the inclusion criteria, respond to any of the scale items, or entered bogus replies when asked to describe their main work tasks, leaving a final sample size of $n = 190$. We created a sub-sample excluding all participants who failed at least one attention check, leaving $n = 139$ respondents. We conducted all analyses in both, the full sample and the sub-sample. Yielding similar results, we primarily report the results of the sample with the larger sample size. For sample characteristics, see Table 2.

Place Table 2 about here

Procedure

The data collection took place between April 21 and May 21, 2024. Participants accessed the survey via an anonymous link or a QR code shared via social media, email, or in person. First, they were informed about the purpose of the study, explaining that we research thoughts regarding the role of work in people's lives. Participants provided informed consent before starting the survey. Upon completion of the survey, they were debriefed and thanked, explaining that the survey serves to validate a scale about existential career concerns. This study was approved by the Ethics Review Committee Psychology and Neuroscience of the Faculty of Psychology and Neuroscience at Maastricht University with number OZL_278_34_02_2024.

Measures

Existential Career Concerns

We assessed existential career concerns with the developed Existential Career Concerns Inventory (ECCI; see Table 1) consisting of six items for each of the six existential career concerns: Meaning (e.g., "I wonder if my career contributes to a fulfilling life."), Death (e.g., "I never think about wasting my lifetime working."; reverse-scored), Identity (e.g., "I ask myself if I can express my true self through my career."), Isolation (e.g., "I think about not feeling connected to others because of my career."), Freedom (e.g., "I think about being stuck in a career path that I did not choose myself."), and Responsibility (e.g., "I never think about the extent to which I have been making the right choices in my career."; reverse-scored). The resulting 36 items were rated on a 5-point Likert scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). Note that the full scale is edited for later publication purposes in this thesis.

Burnout

To measure burnout, the Burnout Assessment Tool (BAT; Schaufeli et al., 2020) was employed, assessing burnout as comprised of four core symptoms – exhaustion, mental distance, cognitive impairment, and emotional impairment. It consists of 23 items and is scored on a 5-point Likert scale ranging from 1 (*never*) to 5 (*always*). Example items for each symptom are "At work, I feel mentally exhausted.", "I feel indifferent about my job", "At work, I struggle to think clearly", and "At work I may overreact unintentionally".

Meaningful Work

Based on a review by Both-Nwabuwe et al. (2017), we followed the recommendation to use the Work And Meaning Inventory (WAMI; Steger et al., 2012) to measure meaningful work. It captures meaningful work as a multidimensional experience with the three subscales

positive meaning, meaning-making through work, and greater good motivations. It consists of ten items assessed on a 5-point Likert scale ranging from 1 (*absolutely untrue*) to 5 (*absolutely true*), and we averaged ratings to a total score. Example items are "I have found a meaningful career", "I have discovered work that has a satisfying purpose", and "My work helps me better understand myself".

Existential Anxiety

EA was assessed using the Existential Concern Questionnaire (ECQ; Van Bruggen et al., 2017). The scale was developed and validated in two independent samples and assesses EA as a unidimensional construct. The ECQ consists of 22 items assessed on a 5-point Likert scale ranging from 1 (*never*) to 5 (*always*). Example items are "It frightens me when I realize how many choices life offers" and "I try to push away the thought that life ends".

Personality

To assess personality, we used the extra short version of the Big Five Inventory (BFI-2-XS; Soto & John, 2017). The BFI-2-XS consists of 15 items, with each of the big five personality dimensions (extraversion, agreeableness, conscientiousness, negative emotionality, open-mindedness) being assessed by three items, rated on a 5-point Likert scale ranging from 1 (*disagree strongly*) to 5 (*agree strongly*). Example items are "I am someone who is compassionate, has a soft heart" and "I am someone who is full of energy" (reverse coded).

Demographic Variables

To assess the representativeness of the sample, we measured participants' age, gender, education, job status, industry, working hours, position tenure, nationality, level of English proficiency, employment type, and position level. To ensure data quality, three attention checks (e.g., "This item checks your attention. Please select 'sometimes'") were included, as well as an open text field to indicate primary job tasks.

Analyses

We analyzed data in four steps. First, survey results were examined preliminarily, checking for missing values, frequencies, means (DeVellis, 2003), standard deviations, variances (DeVellis, 2003; Stumpf et al., 1983), and the distributions in terms of skewness and kurtosis (Van Den Broeck et al., 2010). For this, the negatively phrased items were reverse scored (DeVellis, 2003), and corresponding analyses conducted with IBM SPSS Version 29. Second, examining the factor structure required an exploratory (EFA) and a confirmatory factor analysis (CFA) using Mplus7 (Muthén & Muthén, 2012). We employed the MLR estimator for a robust analysis. Expecting the six existential career concerns to relate to each

other, an oblique rotation (PROMAX) was applied allowing for correlations between the factors. Factor loadings, cross-loadings of the items, and the overall model fit were examined. CFAs were conducted with different factor structures, considering Modification Indices (MIs; Hinkin, 1998). The models were evaluated based on the goodness-of-fit indices as recommended by Hu and Bentler (1999), specifically taking into account the χ^2-value (should be non-significant but at least lower for the specified model than for competing models; Hinkin, 1998); the Comparative Fit Index (CFI), the Tucker Lewis Index (TLI; should both be higher than .90, preferably higher than .95); the Root Mean Square Error of Approximation (RMSEA; should be lower than .08); and the Standardized Root Mean Square Residual (SRMR; should be lower than .08). Third, internal consistency of the ECCI was evaluated computing Cronbach's alpha, assessing how well the items measure their respective existential concern. Alpha values between .70 and .80 qualify as acceptable, those between .80 and .90 qualify as good (Nunnally & Bernstein, 1994). We considered whether the removal of certain items would improve Cronbach's alpha. Fourth, the discriminant and criterion validities were assessed. To establish discriminant validity, the Fornell-Larcker criterion was applied (Fornell & Larcker, 1981). We computed the Average Variance Extracted (AVE) of each ECCI sub-dimension and the correlations of each sub-dimension with the other latent variables based on a CFA including all latent variables, to examine whether the variance in the items is better explained by their respective factor than by the other constructs. Moreover, we employed structural equation modeling (SEM) to test the expected relationships in Mplus7. CFAs were performed on each construct to validate its factor structure. Then, we tested the predictions modeling each latent factor's relationship with the existential career concerns separately, evaluating criterion validities. As a threshold for statistical significance, we used the alpha value of .05 in all analyses.

Results

Step 1: Preliminary Item Examination

Overall, the preliminary examination of the items provided satisfactory results. For the ECCI item characteristics per sub-dimension, see Table 3. All item means were close to the scale center of 3, ranging from 1.99 – 3.61, and all standard deviations were above the acceptable value of 0.50 (Stumpf et al., 1983), ranging from 1.04 – 1.42. Moreover, considering the frequencies of responses, high (5) and low (1) ratings were given for all items and the medians ranged from 2 – 4. All these findings can be classified as desirable, indicating that the items were not worded too strongly and could discriminate between participants high or low on each construct (DeVellis, 2003; Stumpf et al., 1983). Kurtosis

values were smaller than -1 for items in each sub-dimension, indicating a non-normal distribution. Skewness values were in the acceptable range between -1 and 1 for all sub-dimensions except for freedom (0.02 – 1.14), indicating that participants seemed to be little concerned about the freedom of their career choices. The percentages of missing values for each item ranged between 0% and 16.84%. In the sub-sample, similar values were observed, however, there was only one missing value (i.e., 0.72%).

Place Table 3 about here

Step 2: Exploratory and Confirmatory Factor Analyses

Based on kurtosis values of the ECCI items exceeding -1, and the histograms of many items showing meaningful deviations from normality (e.g., bimodal distributions), the MLR estimator for a robust analysis was applied for the EFA. An initial examination of the factor structure including all items resulted in a suboptimal loading pattern for the 6-factor solution ($\chi^2(429) = 632.60$, $p < .001$, RMSEA = 0.05). Consequently, each sub-dimension was examined with an EFA individually. Looking at the 1-factor solutions, only the isolation, freedom, and responsibility sub-dimensions showed a good fit, while the meaning, death, and identity sub-dimensions showed poor fit (see Table 4). They best fitted the 2-factor solution (all χ^2 n.s., all RMSEA ≤ 0.08). In the 1-factor solution, for all sub-dimensions except the isolation one, the reverse-formulated items had the lowest factor loadings of the respective items per scale (0.28 – 0.58). For consistency reasons, we excluded all reverse-formulated items. In the following EFA with all remaining 30 items in the 6-factor solution ($\chi^2(270) = 362.30$, $p < .001$, RMSEA = 0.04), it emerged that all factors were defined by four instead of five items of their respective sub-dimension considering loadings < 0.40, and that freedom and responsibility items loaded predominantly on the same factor. As having more items is not necessarily a benefit for scale validity and reliability (DeVellis, 2003), we removed the item with the poorest factor loading of the individual again, based on the 1-factor solution EFA in each subscale (factor loadings 0.28 – 0.67). In the following EFA with the remaining 24 items, this yielded a problematic factor structure in the 6-factor solution ($\chi^2(147) = 213.14$, $p < 0.01$, RMSEA = 0.05), with two identity items loading on other factors (with loadings $\leq$ 0.40). Consequently, we checked item contents for the identity subscale. Based on this, we decided to exclude a different item from the identity scale because the item's wording differed from the others, asking participants whether they think their career *hinders* them from being themselves. Thus, this item was worded more prohibitively than the other items (i.e., if the

career requires one to be different, allows to be oneself, enables to express oneself, or fits to the person). Moreover, freedom and responsibility items still loaded predominantly on the same factor, so we performed an EFA with all 12 items of the responsibility and freedom scales. Based on this, we conceptualized the freedom and responsibility scales as one factor consisting of the four highest loading items (0.69 – 0.75) of the 1-factor solution. These four items contained two items of each sub-dimension and conceptually fit well together, as they all assessed the extent to which career choices have been made freely and in the right way, without specifically asking about others' influencing decisions or oneself fulfilling a responsibility. This also corresponds to the initial conceptualization of the Big Five existential concerns (Koole et al., 2006) that views freedom and responsibility concerns as the same existential problem (i.e., both relate to choices, being free or not in choosing, and then being responsible to choose right).

Place Table 4 about here

The final EFA with 20 items showed a satisfactory loading pattern for the 5-factor solution ($\chi^2(100) = 135.82$, $p = .01$), with a predominantly clear factor structure: All items loaded on their respective factor with factor loadings above 0.40 except for two items, which had a factor loading of ≥ 0.36 and did not cross-load higher on any other factor. Moreover, one item of the new freedom/responsibility sub-dimension had a cross-loading of .45 on the identity factor, and a loading of .43 on the own factor. Factor solutions with more than five factors could not be computed by Mplus7 due to convergence issues, and the model comparison between the models with a 4- and a 5-factor solution was significant ($\chi^2(16) = 63.55$, $p < .001$), indicating that the 5-factor solution fitted the data best. The RMSEA fit index (.04) was satisfactory, indicating good model fit.

Entering this structure into a CFA supported the satisfactory model fit (Table 5). Modification indices suggested a residual covariance between several items, with a considerably high MI index of 61.76 for two items of the death scale. As it is recommended not to make model revisions solely based on modification indices (e.g., MacCallum et al., 1992), we decided to implement only the modification with the highest index, because a correlation between both suggested items would be theoretically meaningful (both question the general benefit of working given that time is limited, while the other two items assess whether a) the career so far *was* a good use of time and b) whether one wasted too much time on a career) and further improved the model fit indices significantly. This model fit was also

superior to the original 6-factor structure, the 5-factor structure assuming freedom and responsibility are not distinct dimensions, and 1-factor models including all items. For a complete overview of all final ECCI items and corresponding factor loadings, see Appendix. As predicted, all existential career concerns were strongly correlated with each other. Only isolation concerns moderately correlated with meaning and death concerns (Table 6).

Place Table 5 about here

Place Table 6 about here

Conducting those steps with the sub-sample yielded similar, although not the same results. Here, EFAs of each sub-dimension revealed different worst-fitting items for the death, freedom, and responsibility dimensions. However, excluding the same items from the analysis as done above still yielded a satisfactory overall outcome for the 5-factor model ($\chi^2(100) = 121.24$, $p = .07$, RMSEA = .04). Notably, the fit was worse for one item of the death, and two items of the freedom-responsibility factors, all loading on the identity factor. However, conducting the CFA in the sub-sample with the excluded items yielded satisfactory model fit results ($\chi^2(160) = 284.31$, $p < .001$, RMSEA = 0.08, CFI = 0.91, TLI = 0.89, SRMR = 0.08) that could also be improved by applying the modification as above ($\chi^2(159) = 235.28$, $p < .001$, RMSEA = 0.06, CFI = 0.94, TLI = 0.93, SRMR = 0.06). Observed correlations between the latent factors were similar but higher, except for the relationship between identity and isolation ($r = .59$, $p < .001$), which was lower, and between isolation and freedom/responsibility, which remained the same ($r = .72$, $p < .001$).

Step 3: Internal Consistency

Looking at each sub-dimension of the new ECCI version consisting of five sub-dimensions and 20 items, all alphas except for the one of the meaning dimension were above .80 ($\alpha = .81 - .85$; Table 6) and therefore good. The alpha of the meaning scale was still satisfactory with $\alpha_{meaning} = .75$. As all alphas were satisfactory, we did not remove any items to improve the value. Similar results were found in the sub-sample ($\alpha_{meaning} = .77$; other $\alpha = .83 - .86$).

Step 4: Discriminant and Criterion Validities

To establish discriminant validity, we followed the Fornell-Larcker criterion. Comparing the square root of the AVE of each existential career concern with the correlation

between the concern and the other constructs (i.e., meaningful work, EA, burnout, and personality traits; see Table 7), we see that the square root of each AVE is higher. This indicates more variance of the items of each existential career concern explained by the respective factor than by the other constructs. From this, we can conclude that there is discriminant validity between the ECCI sub-dimensions and the other constructs. Results also show that there is less discrimination between the identity dimensions and meaning, death, and freedom/responsibility concerns, as well as between death and freedom/responsibility concerns, which can be attributed to the fact that as proposed above, the existential career concerns relate to each other. The AVE values could not be computed for the sub-sample due to the low sample size.

Place Table 7 about here

To test the relationships between the existential career concerns and the other constructs, four SEMs were constructed including the respective latent factors, again using the MLR estimator and employing the 20-item version of the ECCI with modification. For the fit indices of all SEMs, see Table 8, and for bivariate Pearson correlations, see Table 6.

Place Table 8 about here

As expected, meaningful work related negatively to all five existential concerns (β = -0.32 – -0.59, all p < .001). Also, the bivariate correlations between the variables were negative and significant (rs = -.22 – -.48, all p < .001). For EA, different than expected, only the relationships between death concerns (β = 0.54, p = .003) and between isolation concerns (β = 0.30, p = .02) and EA were significant and positive, while the relationships between EA and other existential career concerns remained non-significant. The bivariate correlations between EA and all existential career concerns are positive and significant (rs = .45 – .56, all p < .001). Regarding burnout, results are also different than expected: Considering burnout as a second-order construct, burnout was only significantly related to death concerns (β = 0.66, p = .001), while the other relationships were not significant. Considering the poor model fit indices of this model, we also tested a model with burnout as composed of its four sub-dimensions. Results revealed similar patterns with an improved model fit: Death concerns were significantly, positively related to exhaustion (β = 0.84, p < .001) and mental distance (β = 0.63, p < .001), and the freedom/responsibility sub-dimension significantly, positively related to emotional impairment (β = 0.61, p = 0.047). All other relationships were non-significant.

The bivariate correlations for the second-order construct (rs = .37 – .57, all p < .001) and the separate burnout dimensions (rs = .19 – .89, all p < .05) and existential career concerns were significant and positive. Regarding personality traits, only negative emotionality was significantly and positively related to all existential career concerns in the SEM (β = 0.33 – 0.53, all p < .05), which could also be observed in the bivariate correlations (rs = .29 – .37, all p < .001). Due to low Cronbach's alpha values of the other personality traits (.38 – .62), and an overall poor model fit of a CFA with the five personality latent factors (χ^2(80) = 154.75, p < .001, RMSEA = 0.08, CFI = 0.82, TLI = 0.77, SRMR = 0.09), the interpretability of the relationships with the other personality traits is limited.

Results for the sub-sample are again similar. For model fit indices, see Table 8. The relationships from the SEM between meaningful work and all existential career concerns were negative and significant (β = -0.28 – -0.61, all p < 0.01), just as the bivariate correlations (rs = -.23 – -.50, all p < .01). For EA, only the relationship with death concerns was significant (β = 0.60, p = .001), while the other relationships remained non-significant. All bivariate correlations were positive and significant (rs = .45 – .58, all p < .001). For burnout, only the relationship with death concerns was significant (β = 0.63, p = 0.001), while all other relationships were not significant. All bivariate correlations were positive and significant (rs = .39 – .57, all p < .001). Considering the burnout dimensions, the model fit was also improved, and similar relationships were found between death concerns and exhaustion (β = 0.79, p < .001), and mental distance (β = 0.59, p < .001). However, all other relationships remained non-significant. All bivariate correlations were positive and significant (rs = .18 - .91, all p < .05), except for the correlation between cognitive impairment and isolation concerns (r = .17, p = .05). The relationships between existential career concerns and personality traits could not be modeled with SEM, due to the low sample size. The bivariate correlations were mostly similar to the ones in the whole sample, with negative emotionality relating positively to all existential career concerns (rs = .30 – .41, all p < .001).

Discussion

The present study aimed to create and validate a measurement instrument to assess existential career concerns, the ECCI. Based on theory, we formulated items and adjusted them according to expert ratings. In the main study, we computed their characteristics, the resulting factor structure, and relationships with other constructs to establish a reliable and valid instrument. Results revealed that although initial item characteristics were satisfying, the factor structure as proposed by an EFA did not fit the intended model and the developed scale therefore altered. Alterations to the scale were tested and further modified by applying a CFA,

resulting in a 20- (as opposed to initial 36-) item scale with five sub-dimensions (as opposed to initial six), combining the sub-dimensions of responsibility and freedom. Resulting internal consistencies as indicated by Cronbach's alpha values were good, as well as the resulting discriminant validity with the other constructs burnout, meaningful work, EA, and the Big Five personality traits, as tested with the Fornell-Larcker criterion. Other than expected, discriminant validity could not be established based on the relationships between existential career concerns and personality traits as neither the SEM nor the bivariate correlations yielded results as expected. This due to the poor performing measurement instrument to assess the personality traits. Criterion validity could be partially established: Based on the SEM, there was a negative relationship between meaningful work and existential career concerns, but – other than expected – only few significant relationships between the concerns and the other variables. However, the bivariate correlations between existential career concerns and the other constructs were significant and as expected. Overall, the results of this initial validation study seem promising but require further discussion.

Theoretical Implications

Extending previous findings of Rodríguez Conde (2021), we showed that people seem to vary on the extent to which they experience existential career concerns, underlining the relevance of taking an existential perspective in I-O psychology, as proposed by Fleuren et al. (2024). Although we proposed six existential career concerns, adding the additional dimensions of responsibility, this theory-based idea could not be supported by the data. Instead, results support the original conceptualization of the Big Five existential concerns (Koole et al., 2006). Although we would still argue that existential concerns regarding freedom and regarding responsibility are conceptually different, it seems difficult to represent those differences in items. We observed that wording items on responsibility concerns was more complex, also indicated by them being longer than items from the other dimensions. Moreover, without being familiar with the literature, it might be difficult for lay people to know what is meant by the *responsibility to make the right decisions* – a concept present in two of the initial six items and underlying all items of the dimension. Given the feedback that some participants perceived all items as similar and difficult to reply to, we propose not to neglect the idea of freedom and responsibility concerns being distinct, but to test it again with a different pool of items.

Notably, many of the tested relationships with other constructs were not found as expected when tested with the SEMs, although the bivariate correlations showed significant relationships as expected. A reason might be multicollinearity, a problem often threatening

interpretations of SEMs (Marsh et al., 2004). Multicollinearity arises when several predictors of a dependent variable are highly related to each other. This can be assumed about the existential career concerns based on the theoretical reasoning from above. Moreover, the finding that there is little discrimination between some of the ECCI sub-dimensions based on a comparison of the AVE and correlations (Fornell-Larcker criterion) can hint at collinearity, because the variance in items can also be explained by another latent factor. Rodríguez Conde (2021) explained similar findings proposing that multicollinearity between the existential concerns arises because the cognitions are interconnected and influence each other. We therefore also advise caution when interpreting the results of the SEMs in the following.

Looking at meaningful work, results are as expected. In line with Rodríguez Conde (2021) establishing a negative relationship between existential concerns rooted in work and meaningful work, we find a negative, medium-sized relationship between meaningful work and existential career concerns. Having established discriminant validity between both constructs using the Fornell-Larcker criterion, findings highlight that the constructs are indeed distinct. Therefore, although meaningful work does not guarantee a feeling of a meaningful career contributing to a fulfilling life, those people who reported less concern about existential problems due to their career tended to be those who reported having meaningful work. This may mean that meaningless jobs provoke concerns, most strongly about wasting limited lifetime. Thus, meaningless work may be one factor hindering a fulfilling life. From an existential perspective, having a meaningful job can therefore help reach fulfillment, but the work should explicitly be experienced as meaningful by the individual.

Regarding EA, the results initially seem different than expected, finding that EA is only related to some of the existential career concerns in the structural model. Here, the strongest relationship was observed with death concerns. Given that death is life-threatening, it seems logical that having concerns about, for instance, how to spend one's limited lifetime is most strongly related to developing anxiety. However, as the ECQ scale to assess EA and the ECCI have a similar theoretical basis, with the ECQ being based on similar existential concerns, it is surprising that only death and isolation concerns related to EA. To explain this, it should be considered that the ECQ has only been initially developed and validated (Van Bruggen et al., 2017), with further validation studies lacking. Moreover, as mentioned, multicollinearity can be a reason for not finding expected relationships, given that the bivariate correlations between EA and existential career concerns are significant and positive, thus results of the SEM may be interpreted with caution.

Looking at burnout, only death concerns related to burnout as a second-order construct, and to the exhaustion and mental distance sub-dimensions. Additionally, freedom/responsibility concerns were related to the emotional impairment sub-dimension. Although these findings highlight the apparent gravity of death concerns, they are neither in line with previous research proposing a theoretical relationship between burnout and meaning concerns (e.g., Längle, 2003) nor with previous findings by Rodríguez Conde (2021). The latter found all five existential concerns to be related to at least one of the burnout dimensions, and, interestingly, established only non-significant results for the relationships found in this study. As the present scale and our expectations regarding the relationship are based on their scale and reasoning, we would have expected more similar results. Therefore, it is again likely that multicollinearity clouded the actual relationship, in both our study and in the Rodríguez Conde (2021) paper, as reported by the authors.

Lastly, the exhibited relationships between the ECCI dimensions and personality traits were different than expected. Only negative emotionality was significantly related to all ECCI dimensions with medium to large-sized relationships, indicating that people who are more prone to experiencing anxiety, depression, and emotional volatility (Soto & John, 2017), are also more prone to experiencing existential career concerns. This aligns with previous findings reporting a strong relationship between negative emotionality and EA (Shumaker et al., 2020). However, given the poor internal consistencies and factor structure of other personality traits scale, no conclusions should be drawn based on the results.

Limitations and Future Research

As the findings do not fully support our expectations, it is crucial to consider potential limitations and avenues for future research. First, the sample size and corresponding implications for the conducted analyses should be discussed. To validate a measurement instrument, an item-to-participant ratio of 1:10 is recommended (Schwab, 1980, as cited in Hinkin, 1995), resulting in 360 participants for our original 36-item ECCI. However, at least 200 participants would have been required to conduct the CFA (Hinkin, 1998; Hoelter, 1983), and preferably 400 to conduct the EFA and CFA in two independent samples (DeVellis, 2003). Moreover, as a modification based on modification indices was performed, testing the new model in an independent sample would have been important to check if the structure generalizes (MacCallum et al., 1992). The insufficiently large sample size of 190 (including missing data) is thus problematic, as the developed ECCI scale might be tailored to the current sample. Consequently, although the paper has an overall thorough design, including a strong theoretical base, an expert panel rating item clarity, and the systematic 4-step analysis,

providing preliminary support for the ECCI's validity and reliability, future research should further validate the scale in a new, independent, and larger sample.

Moreover, the sample of the study itself might have been unrepresentative of the general population in terms of several sample characteristics. For instance, nearly three-quarters of the sample were German. Although almost 90% of participants reported at least an intermediate level of English, indicating that a language barrier was likely not a problem, we received the feedback that many items were difficult to understand, potentially diminishing data quality. Moreover, the sample was predominantly Western European, potentially producing cultural differences in how the items were answered. Thus, the ECCI should not be universally used. Furthermore, just like in the previous study by Rodríguez Conde (2021), our sample was primarily highly educated with above 50% of participants having at least a Master's degree. While it is a strength of this study to have highly educated experts in the review panel qualifying them to assess our instrument, in the main study, it may limit the generalizability of our results. Hence, it is advisable to validate the scale in a different sample in terms of culture and education, including more English native speakers, as already proposed by Rodríguez Conde (2021).

Furthermore, the study's design was cross-sectional, meaning that all constructs were measured simultaneously in the same survey. As some constructs were conceptually similar (i.e., existential career concerns, meaningful work, EA), their items also had similarities. Consequently, participants anecdotally reported confusion and ending the survey earlier, explaining the high amount of missing data. As this was a first validation study of a new scale, with the primary purpose of testing the factor structure and relationships with other constructs, it is acceptable to measure all constructs simultaneously (DeVellis, 2003). However, to make the survey less repetitive, future studies could employ a longitudinal (panel) design. Interestingly, providing temporal precedence would also allow for testing causal relationships between the variables that this study already points at (e.g., between meaningful work and existential career concerns).

Although reverse-phrased items were excluded and thus did not influence the results, one area for future improvement is to include them with different wording. Reverse-phrased items are commonly used, and it is important *how* they are reversed. Weijters et al. (2013) recommend not solely using negations such as "not", as this might lead to confusion for the participants. Indeed, we reversed the items using "never" (e.g., "I never think about whether my career fits with who I am"), and received feedback that participants were unsure how to answer such items. This might potentially have resulted in careless responding, which could

influence the factor structure already if only 10% of respondents did so (Woods, 2006). As a solution, we excluded the reversed items in the final, 20-item version of the ECCI. However, future validation studies of the ECCI should consider alternative ways to avoid response sets or acquiescence bias, for instance reversing not the items but the response options (Barnette, 2000).

Practical Implications

For practice, recommendations based on the present findings are limited, due to the preliminary results. One meaningful takeaway, however, is that meaningful work and existential career concerns – also regarding meaning – are different concepts. This idea can be particularly useful in career counseling. Although one can have an objectively meaningful job (e.g., for society), it does not automatically mean that the person also experiences their work as meaningful – even though people seem to have less existential career concerns when doing meaningful work. Upon further validation, career counseling could apply the ECCI to investigate the kinds of problems or cognitions people experience when thinking about or planning their careers (MacMillan et al., 2012; Maglio et al., 2005). This could enable counselors to support them more efficiently, potentially preventing detrimental outcomes such as EA or burnout.

Conclusion

In conclusion, although the results of this validation study are promising, underlining the relevance of studying existential career concerns and providing first support for the reliability and validity of the ECCI, more work on the items and the validation is advisable. Findings provide first ideas of how existential career concerns relate to other relevant constructs, paving the way for further research on existential concerns as a source of burnout and existential anxiety, as well as meaningless work predicting their onset. In the future, we hope this preliminary research will increase the interest in applying an existential perspective not only to career counseling but I-O psychology in general, given that careers indeed can be a source of existential concerns and hence hinder but also promote a fulfilling life.

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Figure 1

Summary Conceptual Model
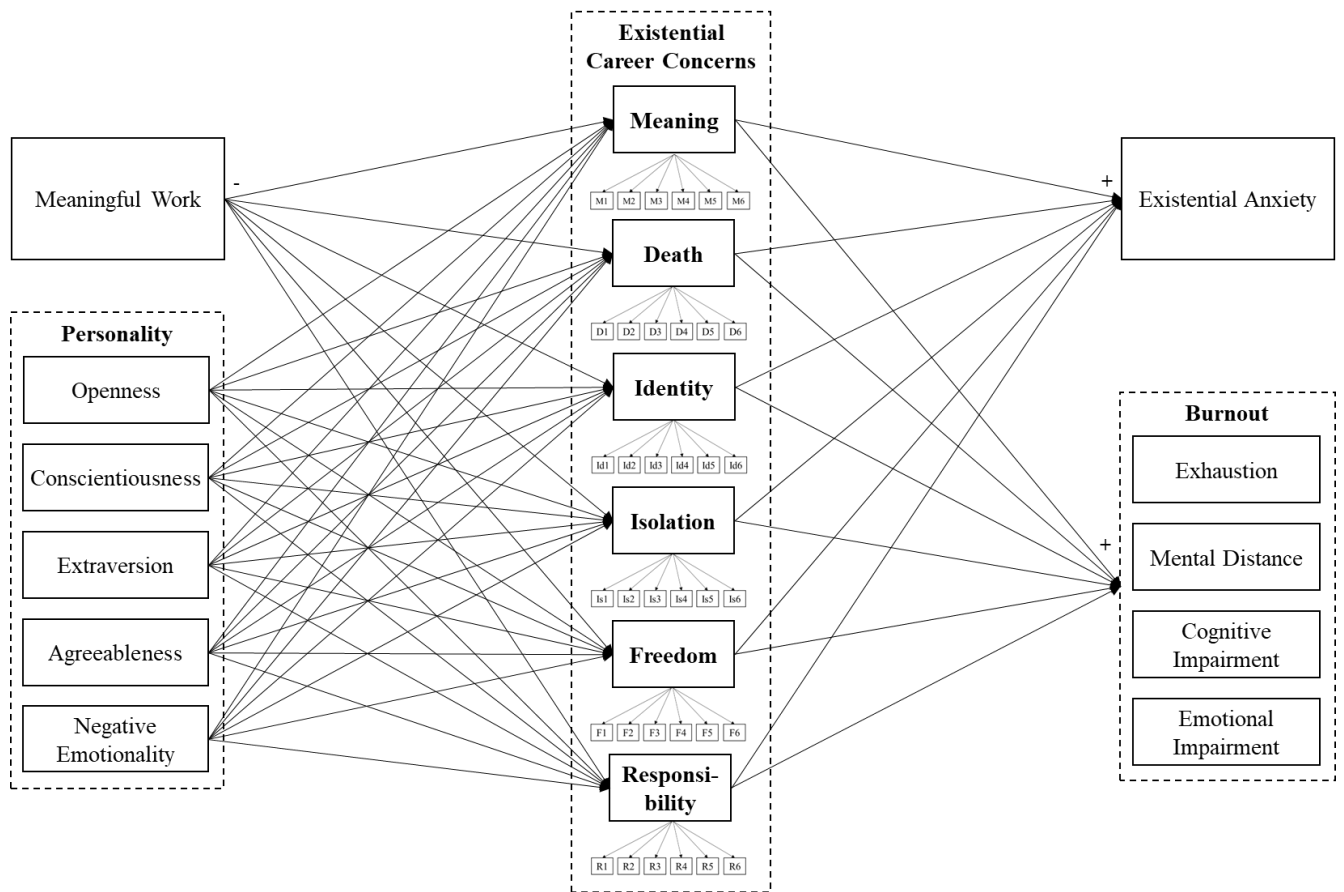
Note. All latent variables are reflected by their respective items. To simplify the model, this is only depicted here for the existential career concerns.

Table 1

Results of the Expert Ratings for Each Item and New Item Wording

Subscale	Original Item	M^a	SD	New Item
Meaning1	Questioning achievement of desired meaning through one's career	3.3	1.25	Removed 'desired'
Meaning2	Contemplating possibility of a meaningful life through one's career	4.4	0.70	'Thinking' instead of 'contemplating'
Meaning3	Wondering whether career offers meaningful accomplishments	4.7	0.48	No changes
Meaning4	Wondering whether career contributes to fulfilling life	4.8	0.42	No changes
Meaning5	Thinking about career as hindering from ling a fulfilling life	3.5	0.97	No changes
Meaning6	Having no thoughts about career providing meaning. (R)	4.1	0.88	'Never thinking' instead of 'having no thoughts'
Death1	Wondering about the sense in spending time and effort on work in life	4.9	0.32	No changes
Death2	Questioning if the career is a good use of limited time	4.6	0.70	added 'so far' in front of 'career'
Death3	Not thinking about wasting lifetime by working (R)	3.9	1.20	'Never thinking' instead of 'not thinking'
Death4	Wondering about realizing life wasted by career	4.4	0.84	No changes
Death5	Thinking about point of working in life	4.0^b	1.23^b	Simplified and shortened sentence
Death6	Thinking about the value of investing limited time into work	4.6	0.96	No changes
Identity1	Thinking about career as allowing one to define oneself	3.8	1.14	'to be' instead of 'define'
Identity2	Questioning true self-expression through one's career	4.3	1.06	No changes
Identity3	Wondering about requirements to be different because of work	4.6	0.70	No changes
Identity4	Questioning fit between career and person	4.7	0.48	No changes
Identity5	Having no thoughts on the fit between career and person (R)	4.1	1.10	'Never thinking' instead of 'having no thoughts'
Identity6	Thinking about career as hindering in being one's true self	4.4	0.84	No changes
Isolation1	Wondering about acceptance by others because of career choice	4.3	0.82	No changes
Isolation2	Thinking about not feeling connected to others because career	4.5	0.85	Simplified and shortened
Isolation3	Questioning about others relating to oneself give professional life	4.0	1.16	Added 'so far' at the end
Isolation4	Wondering about being understood in light of career choices	4.1	1.20	'Considering' instead of 'in light of'
Isolation5	Not thinking about others disapproving given career (R)	4.1	1.10	'Never thinking' instead of 'not thinking'
Isolation6	Wondering about judgement given the career choices	4.8	0.42	No changes
Freedom1	Not thinking about ability to make career choices freely	4.0	1.25	'Never thinking' instead of 'not thinking'
Freedom2	Questioning being forced into making professional life choices	4.2	1.03	No changes
Freedom3	Wondering whether current career position results from free choices	4.1	1.10	No changes
Freedom4	Wondering about being restricted in making career choices	4.4	1.08	No changes
Freedom5	Thinking about being stuck in a non-self-chosen path	4.8	0.42	No changes
Freedom6	Thinking about having made choices freely	4.4	1.08	No changes
Responsibility1	Not thinking about making the right choices in one's career. (R)	4.3	1.06	'Never thinking' instead of 'not thinking'
Responsibility2	Considering one's professional life wondering about choosing rightly	4.0	1.05	No changes
Responsibility3	Given career choices, wondering about taking responsibility	4.0	1.25	No changes
Responsibility4	Regarding professional life, wondering about living up to responsibility	3.7	1.25	Shortened and simplified
Responsibility5	Given career so far, questioning choices being right for oneself	4.7	0.68	No changes
Responsibility6	Regarding work, thinking about having taken charge of one's life	4.1	0.99	No changes.

Notes. The items in this table reworded from the originals for this thesis given a potential future journal publication; M = mean; SD = standard deviation; (R) = reverse-scored; [a] = score on a scale with options 1 = "extremely unclear", 2 = "somewhat unclear", 3 = "neither clear nor unclear", 4 = "somewhat clear", 5 = "extremely clear".

Table 2

Sample Characteristics Full Sample and Sub-Sample

	Sample (*n* = 190)	Sub-sample (*n* = 139)
Age (in years)		
Range	21 – 73[a]	21 – 65[d]
Mean	34.51[a]	33.67[d]
Standard Deviation	12.49[a]	12.29[d]
Gender		
Female	56.8%	59.0%
Male	42.6%	40.3%
Non-binary	0.5%	0.8%
Nationality		
Number of different nationalities, of which	23[a]	18
German	74.7%[a]	74.8%
Dutch	4.2%[a]	5.8%
Spanish	3.7%[a]	3.6%
Other	17.4%[a]	15.6%
Education		
Secondary school	1.1%	0.7%
High school	6.8%	5.8%
Vocational training	8.4%	8.6%
Bachelor's degree	28.4%	28.8%
Master's degree	50.5%	51.1%
Doctoral degree	4.7%	5.0%
English Level		
Basic	10.5%	8.6%
Intermediate	28.9%	28.8%
Advanced	36.3%	38.1%
Proficient/native	24.2%	24.5%
Industry		
Educational services	19.5%[b]	20.1%[d]
Professional, scientific or technical	16.8%[b]	18.0%[d]
Health care or social assistance	13.7%[b]	13.7%[d]
Other services (except public administration)	12.1%[b]	11.5%[d]
Management of companies or enterprises	7.4%[b]	5.8%[d]
Manufacturing	5.8%[b]	4.3%[d]
Finance or insurance	5.3%[b]	5.0%[d]
Other	19.4%[b]	21.6%[d]
Employment Type		
Permanent contract	69.5%[c]	65.5%[e]
Temporary contract without perspective on permanent contract	14.1%[c]	17.3%[e]
Temporary contract with perspective on permanent contract	9.5%[c]	10.8%[e]
Self-employed	4.7%[c]	2.6%[e]
Other	2.1%[c]	2.9%[e]
Position Level		
Intern/Working student/Apprentice	6.3%	7.2%
Employee	70.0%	70.5%
Leadership	16.8%	18.0%
Executive	6.8%	4.3%
Tenure (in years)		
Range	0 – 49	0 – 35
Mean	6.33	5.79
Standard Deviation	8.45	7.98
Weekly Working Hours		
Range	20 – 65	20 – 65
Mean	38.16	37.6
Standard Deviation	9.00	8.98

Note. [a] *n* = 189, [b] *n* = 187, [c] *n* = 181, [d] *n* = 138, [e] *n* = 134.

Table 3

Item Characteristics per Sub-Dimension

Items	*n*	*M*	*SD*	Skewness	Kurtosis
Meaning	172 – 190	3.08 – 3.61	1.04 – 1.22	-0.96 – -0.26	-1.17 – 0.23
Death	159 – 188	2.94 – 3.47	1.26 – 1.42	-0.47 – -0.10	-1.41 – -0.98
Identity	159 – 188	2.54 – 3.40	1.09 – 1.42	-0.61 – 0.40	-1.41 – -0.54
Isolation	159 – 189	2.09 – 2.92	1.09 – 1.29	0.01 – 0.99	-1.16 – 0.34
Freedom	159 – 188	1.99 – 2.95	1.20 – 1.35	0.02 – 1.14	-1.23 – 0.33
Responsibility	158 – 188	2.49 – 3.32	1.20 – 1.28	-0.48 – 0.35	-1.14 – -0.79

Note. M = mean, SD = standard deviation.

Table 4

Results of the 1-Factor Solution of an EFA for Each Sub-Dimension

Sub-Dimension	χ^2	RMSEA	Estimated Factor Loadings
Meaning	27.31*	0.10	0.40 – 0.73
Death	34.37**	0.12	0.58 – 0.94
Identity	23.12*	0.09	0.45 – 0.79
Isolation	9.42	0.02	0.28 – 0.79
Freedom	4.79	0.00	0.48 – 0.74
Responsibility	9.27	0.01	0.47 – 0.73

* $p < 0.05$, ** $p < 0.001$

Table 5

Comparison of Fit Indices for the Confirmatory Factor Analysis of Different Factor Models

n = 190	MLR χ²	df	RMSEA	CFI	TLI	SRMR
5-factor model[a]	304.03*	160	0.07	0.90	0.88	0.08
5-factor model modified[a]	249.95*	159	0.06	0.94	0.93	0.06
1-factor model[b]	1441.04*	594	0.09	0.69	0.67	0.09
5-factor model[b]	1149.70*	584	0.07	0.79	0.78	0.09
6-factor model[b]	1122.80*	579	0.07	0.80	0.78	0.08

Note. [a]based on revisions, including 20 items, [b]based on original 36 items.

* $p < 0.001$

Table 6

Bivariate Pearson Correlations with Means, SDs, and Cronbach's Alpha for all Variables

Variables	*M*	*SD*	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1 Meaning	3.48	0.86	(.75)																
2 Death	3.25	1.11	.44**	(.85)															
3 Identity	3.01	1.05	.53**	.60**	(.83)														
4 Isolation	2.54	1.00	.35**	.37**	.50**	(.83)													
5 Freedom/Responsibility	2.73	0.99	.45**	.60**	.68**	.54**	(.81)												
6 Burnout	2.31	0.53	.37**	.57**	.49**	.42**	.52**	(.93)											
7 Exhaustion	2.75	0.66	.35**	.58**	.44**	.33**	.45**	.89**	(.84)										
8 Mental Distance	2.15	0.74	.37**	.55**	.47**	.44**	.52**	.79**	.59**	(.80)									
9 Cognitive Impairment	2.29	0.63	.19*	.28**	.26**	.20*	.21**	.77**	.64**	.43**	(.85)								
10 Emotional Impairment	1.78	0.63	.25**	.32**	.36**	.35**	.44**	.72**	.48**	.50**	.42**	(.81)							
11 Meaningful Work	3.55	0.81	-.22**	-.48**	-.30**	-.28**	-.44**	-.39**	-.25**	-.59**	-.16*	-.26**	(.90)						
12 Existential Anxiety	2.19	0.71	.45**	.56**	.48**	.48**	.52**	.67**	.61**	.58**	.42**	.52**	-.39**	(.94)					
13 Extraversion	3.15	0.87	-.04	-.23**	-.10	-.05	-.18*	-.27**	-.28**	-.17*	-.25**	-.15	.30**	-.18*	(.59)				
14 Agreeableness	3.91	0.70	.02	.06	-.01	.04	-.01	-.08	.07	-.16	-.07	-.17*	.05	-.02	-.07	(.52)			
15 Openness	3.73	0.76	.01	-.01	.07	-.04	-.03	-.06	.05	-.26**	-.06	.05	.26**	.01	.12	.01	(.38)		
16 Negative Emotionality	2.67	1.09	.31**	.37**	.37**	.29**	.34**	.56**	.51**	.40**	.36**	.49**	-.29**	.62**	-.25**	-.06	-.01	(.80)	
17 Conscientiousness	3.75	0.87	-.05	-.26**	-.23**	-.17*	-.19*	-.50**	-.49**	-.30**	-.54**	-.23**	.21**	-.38**	.29**	-.04	.09	-.33**	(.62)

Note. Cronbach's alpha in diagonals in brackets. *M* = mean, *SD* = standard deviation.

** *p* < .001, * *p* < .05

Table 7

ECCI Dimensions' Square Root of the AVE and Correlations with Other Constructs

	Meaning	Death	Identity	Isolation	FR	MW	EA	BO	O	C	E	A	N
Meaning	0.66												
Death	0.61**	0.73											
Identity	0.73**	0.75**	0.74										
Isolation	0.44**	0.48**	0.60**	0.75									
FR	0.61**	0.78**	0.83**	0.72**	0.72								
MW	-0.31*	-0.59**	-0.35**	-0.32*	-0.50**								
EA	0.53**	0.67**	0.56**	0.53**	0.60**	-0.44**							
BO	0.42**	0.68**	0.54**	0.44**	0.57**	-0.45**	0.72**						
O	0.00	-0.08	-0.02	-0.12	-0.02	0.33	-0.13	-0.17					
C	-0.03	-0.36*	-0.32*	-0.26*	-0.28*	0.31*	-0.49**	-0.65**	0.33*				
E	-0.04	-0.27*	-0.12	-0.13	-0.14	0.36*	-0.40**	-0.49**	0.38*	0.52**			
A	0.08	-0.28	0.09	0.04	0.03	0.06	-0.41	0.06	0.09	-0.12	0.01		
N	0.34**	0.42**	0.45**	0.35**	0.42**	-0.36**	0.74**	0.64**	-0.22*	-0.50**	-0.61**	0.19	

Note. AVE = average variance explained; square root of the AVE on diagonal. MW = Meaningful Work, EA = Existential Anxiety, BO = Burnout, O = Openness, C = Conscientiousness, E = Extraversion, A = Agreeableness, N = Negative Emotionality, FR = Freedom/Responsibility.

** $p < .001$, * $p < .05$

Table 8

Model Fit Indices for Structural Equation Models in Full and Sub-Sample

Modelled Relationship	MLR χ²	df	RMSEA	CFI	TLI	SRMR
Meaningful Work → ECC						
Full sample[a]	689.78**	389	0.06	0.88	0.86	0.08
Sub-sample[b]	687.33**	389	0.07	0.87	0.85	0.08
Personality → ECC						
Full sample[a]	805.36**	514	0.06	0.87	0.84	0.07
Sub-sample[b]	-		-	-	-	-
ECC → EA						
Full sample[a]	1512.01**	803	0.07	0.81	0.80	0.08
Sub-sample[b]	1456.25**	803	0.08	0.81	0.79	0.08
ECC → Burnout						
Full sample[a]	1514.51**	844	0.07	0.79	0.78	0.08
Sub-sample[b]	1540.15**	844	0.08	0.77	0.76	0.09
ECC → Burnout Dimensions						
Full sample[a]	1159.37**	823	0.05	0.90	0.89	0.07
Sub-sample[b]	1181.54**	823	0.06	0.88	0.87	0.07

Note. ECC = existential career concerns. EA = existential anxiety.

[a] $n = 190$, [b] $n = 139$.

** $p < .001$.

Appendix

Existential Career Concerns Inventory (ECCI) Factor Loadings

Table

Existential Career Concerns Inventory (ECCI) Items and Factor Loadings

Subscale	Item	Factor Loading[a]
Meaning1	Questioning achievement of desired meaning through one's career	0.57
Meaning4	Wondering whether career contributes to fulfilling life	0.76
Meaning3	Wondering whether career offers meaningful accomplishments	0.68
Meaning2	Thinking about the possibility of a meaningful life through one's career	0.60
Death1	Wondering about the sense in spending time and effort on work in life	0.73
Death6	Thinking about the value of investing limited time into work	0.64
Death2	Questioning if the career is a good use of limited time	0.81
Death4	Wondering about realizing life wasted by career	0.72
Identity3	Wondering about requirements to be different because of work.	0.70
Identity1	Thinking about career as allowing one to define oneself	0.67
Identity2	Questioning true self-expression through one's career	0.78
Identity4	Questioning fit between career and person	0.79
Isolation4	Wondering about being understood in light of career choices	0.69
Isolation6	Wondering about judgement given the career choices	0.79
Isolation1	Wondering about acceptance by others because of career choice	0.78
Isolation3	Questioning about others relating to oneself give professional life	0.72
Freedom4	Wondering about being restricted in making career choices	0.65
Freedom6	Thinking about having made choices freely	0.79
Responsibility2	Considering one's professional life wondering about choosing rightly	0.71
Responsibility5	Given career so far, questioning choices being right for oneself	0.72

Note. All factor loadings significant with *p* < .001.

[a]Standardized factor loadings are provided for the final modified 5-factor solution of the Confirmatory Factor Analysis (CFA).