

**The Impacts of Cumulative Harm on Career Calling: How Childhood Trauma Affects
Career Vocation**

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08 Oct 2024

Word Count: 9962

Being a report of an investigation submitted as a partial requirement for the award of
Bachelor of Psychology (Honours), at the University of Southern Queensland

Statement of Originality

This report contains no material offered for the award of any other degree or diploma, or material previously published, except where due reference is made in the text.

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Date: 08/10/2024

Acknowledgements

I would like to sincerely thank Prof. Gavin Beccaria for his incredible support throughout this thesis. He was able to help me grow as a research student and was genuinely supportive of my journey throughout this process. My mother, who supported me throughout this process, always willing to talk and support me through the challenges of completing this thesis. I would like to thank my fiancé, Felicity Meaney, who has been a rock and stability for me while on this journey. My community, who have supported all the movements I have made throughout the year. They made things easier when I needed it, and it meant that I had the time to focus on my studies and complete this difficult but rewarding thesis. Also, my appreciation for the use of Dr. India Bryce's data, and her support in continuing her fantastic research into cumulative harm.

Abstract

The study seeks to improve understanding of the impacts of childhood trauma on future direction in life. This study investigates the Cumulative Harm Impact Questionnaire (CHIQ) by looking at the relationships of its subfactors with the Brief Calling Scale (BCS). It seeks to identify the relationship that cumulative harm has with career calling, through observing unique contributions of the factors and the joint contribution using a regression model. The independent variables are subfactors of the CHIQ, including accumulation of harm, identity, fit, and meaning making, which are measured against the dependent variable of vocation, as measured by the BCS. The research uses archival data from the original study that formulated the CHIQ and analyses this data using regression models and a correlation matrix. The participants were originally sourced from helping professionals or those who were studying to become helping professionals. It found there were significant relationships between most factors except between accumulation of harm and vocation ($r = .069, p = .192$). When the data was observed using a regression, accumulation of harm became significant ($\beta = -.156, p = .048, 95\% \text{ CI} = (-.750, -.004)$), indicating the possibility of mediating factors. The impacts of these findings necessitate further development of the CHIQ, to understand the relationship between factors. It also indicates the need for further research into mediating factors that can impact future direction for individuals who have experienced cumulative harm.

Keywords: calling, career, childhood, harm, meaning

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Chapter 1: Literature Review

'The light shines in the darkness, and the darkness has not overcome it' – (Jn 1:5)

Introduction

'An abnormal reaction to an abnormal situation is normal behaviour.' (Frankl, 1964, p.32). Jung (1961) initially described a wounded healer as those who utilise childhood adversity to assess limitations and strengths to pave a direction for a person's life. According to an investigation by Newcomb et al. (2015), a wounded healer will have difficulties, but also strengths that could enhance the work they do in the helping professions. Hudzik (2019) describes a case report on their personal experience of being a wounded healer in the physician profession. The experience of pain and trauma led Hudzik (2019) to becoming more compassionate to their clients. The norms of going through the motions of diagnosis and testing became abnormal due to lived experience of hospitalisation and trauma. Consider the Biblical quote above, it is a testament to the desire of humanity to seek hope in those places that are darkest. This study will seek to enhance our understanding of the impacts of childhood trauma on a person's career calling. It is hoped that further exploring the impacts of the Cumulative Harm Impact Questionnaire (CHIQ) will assist in continuation of trauma research.

Theoretical Design

Outlined below is a literature review that supports the choice for the factors, from the CHIQ, that are used in this study. It is hoped that these theoretical underpinnings may support the exploration of how cumulative harm impacts individuals in helping professions. Many of these theories are grounded in previous research into perception and development, which should be helpful in the further exploration of each of the factors.

Top-Down & Bottom-Up approach

Top-down (endogenous) processes are programmed responses in the brain that are developed by an individual for behaviour automation and execution. Where bottom-up (exogenous) processes are nerve responses to stimuli outside of the person, that are then considered within the cortex (Folk et al., 1992). Gardner (2017) discusses whether early childhood experiences impact the person's choices, or if a top-down approach should be taken, where a person may just be trying to adapt their current environment.

Super's (self-concept) development theory

Super's (1969) theory emphasized the importance of life adjustments in a person's ability to choose a career. It may be seen as a top-down approach to self-concept development. Growth (birth - 14 yrs), where a person develops their sense of self, and Exploration (15 – 24 yrs), when a person experiences novel work to discern future vocation, are important stages for self-concept formation (Brown & Brooks, 2002). Super discussed that the working habits of individuals change based on their situations of life through time and experience. Individuals progress through these stages based on maturity, rather than age, though a rough timeline is given for each of these life stages. Further self-concept and career development theories were created that incorporated bottom-up processes into their theories.

Career Construction Theory (CCT)

Savickas (2013) developed this theory to explain how a person adapts to their environment over time. This theory may be understood as a bottom-up perspective of career construction. It would argue that the internal structures of the person do not matter so much as the need to adapt to the environment. The need for the person to engage in interpersonal development of the self outweighs an identity formation made in solitude. A common saying that would utilise this theory is that you become the five people that are closest to you. Further self-concept theories were also made to use both processes, bottom-up and top-down.

Self-construction theory (SCT) and Life Design Counselling

Maree and Twigge (2016) take a top-down approach to vocation. SCT may be a good middle ground theory to tie Super and CCT together with top-down and bottom-up approaches. The theory looks at the person as a self-actualising author to their life. A person will seek to adapt to their environment to find stability in work. SCT looks to the process of self-concept as a retrospective authoring of past events to explain the current situation. Past events can be remembered to fit adaptation of the current situation. The narrative that a person has formulated from their experiences contribute to the future growth of their vocation.

Maree and Twigge (2016) observe how identity is formed through a person's own autonomy, and how they relate to others through commonality. There are impacts on the developing self personally and relationally. A person's autonomy grows based on generating a worldview from personal experiences. A personal will also develop relational identity based on the closest individuals within an ecological structure. The ecological structure in SCT accounts for family/friends, work/study, civilian life, and cosmopolitan life.

Purpose

Considering these approaches to self-development, this study seeks to understand some of the maladaptive impacts on self-development. The Cumulative Harm Impact Questionnaire (CHIQ) was developed by Bryce (2022) to investigate how accumulation of harm during childhood affects a person in different domains of life. Cumulative harm is described by Bryce et al. (2023) as patterns of events that affect a child's sense of safety, stability, and wellbeing. This definition was drawn from Bromfield and Higgins (2005) research identifying how repeated maltreatment of children resulted in a profound impact over extended periods compared to more isolated events. This study seeks to clarify how

profound this impact may be. It also considers whether some of these impacts may be positive to the person's development of character.

The thesis (Bryce, 2022) observed the impacts of cumulative harm on helping professionals and the factors that were theorised to affect functioning in life. Of interest is whether Jung's (1961) theory of the wounded healer could be accurate regarding the development of strengths from lifetime woundings. The Brief Calling Scale (BCS) (Dik et al., 2012) is a small unidimensional scale that investigates how called someone feels to their career path. Using a linear regression, it may be possible to explain the significance of the development of self-concept through career (BCS) when harm is present (CHIQ).

This study will explore factors, within the CHIQ, that have historical impacts on career calling. It is hoped that this study can help in the process of researching the impacts of harm on the developing person. The concept of the CHIQ could be understood as a programming of responses based on the accumulation of harm over the person's lifetime. What is being measured by the CHIQ is what behaviours have been affected by the experience of harm. This study should be one of many that looks at the relationship of specific factors that may impact a broader category of life.

The factors chosen for this study are accumulation of harm, how much harm has been done to the person during childhood; meaning making, how much meaning a person derives from their harm; identity, how much a person identifies with their harm; fit, how a person feels they fit into their job based on their harm experiences; and vocation, using the BCS to measure how much a person feels called to their career. Given Super's theory (1969), it would predict that identity and meaning making should have a large weight on the formation of career calling, whereas Career Construction theory (Savickas, 2013) may weigh more value on fit due to the environmental factors. This study will use a balanced approach like SCT (Maree and Twigge, 2016) which could anticipate a mixed result from the factors

investigated in this paper. That would be because a person would retrospectively model their past to explain, or fit in, to their current environmental needs at work. It is hoped this research may be one of many that help researchers support children who are suffering from trauma, so they can live fulfilling lifestyles.

The next aspect of the literature review will look at exploring current theories for each of the factors, including their relationship to vocation. This should help prepare the way for the results of the regression analysis and help structure an appropriate discussion into the impacts of these results for further research.

Operationalisation

The independent factors will be operationalised using the Cumulative Harm Impact Questionnaire (CHIQ) from the thesis of Bryce (2022). The dependent variable will be measured using the Brief Calling Scale (BCS), which will be discussed further in “vocation”. The CHIQ was developed after evidence from qualitative research showed themes for childhood adversity and victimisation in career trajectories for the helping professions. The CHIQ was used to explore correlations with existing measures. The CHIQ is made up of seven subscales that each have subgroups associated with them. Of interest for this study are nature of cumulative harm, where accumulation of harm is nested; meaning of cumulative harm, where meaning making is nested; identity conclusions of cumulative harm, where identity is nested; and adaptability of cumulative harm, where fit is nested. The results from individuals completing the CHIQ will be used as the figures for these independent factors, by comparing these results with the BCS in a regression model. Each of the factors are described in this study.

Accumulation of Harm

Gabor Mate studied the impacts of trauma, whether major or minor relative to the person, on the body in his book ‘The Myth of Normal’ (2022). Harm can impact a person’s

development of self-concept from the early stages, which potentially contributes to life-long impacts. Gabor discussed how trauma can begin from conception due to the impacts on our developmental needs. This resonates with the findings from Bryce (2022) in considering the accumulation of harm having most impact when it falls on developmental milestones and causing lasting effects throughout life. The amount of harm experienced may measurably affect the future of the person both positively and negatively.

Accumulation of harm is the measure of how many cumulative harm experiences have impacted on the development of a child, especially during the first three years of the child's life (Bryce & Callier, 2021), but also throughout development. Harm could have effects on the person based on whether they are in a stage of developmental progress. Cumulative harm is a result of multiple adverse experiences during childhood, whilst complex trauma describes multiple and prolonged traumatic events including (but not limited to) childhood. (Bryce & Callier, 2021). Based on the experiences of the individual (impacts of environment/culture), a person will formulate an identity. SCT (Maree & Twigg, 2016) discusses the constant struggle of the person to develop their self, based on experience and fitting into a commonality. Harm could have relational impacts on this development of self, as well as the feelings of autonomy that are important under the SCT framework.

Two dissertations from the U.S. have been investigating the relationships of childhood trauma and career choice. Though this research is not accounting for the developmental considerations of accumulation of harm, it is hoped this research may show some long-term impacts of harm. Reiland (2023) discusses the impact of childhood trauma on 'decent work'; a term that Reiland defines from the Duffy et al. (2016) Psychology of Working theory. Duffy et al. (2016) discuss decent work to be firstly reasonable for those striving for work, guaranteed rights for the worker, social dialogue for workers, and safe, enjoyable working conditions. Reiland (2023) found that there was a significant and direct effect of childhood

trauma on decent work. Bester (2024) has also been investigating the effects of childhood trauma on career choice. A smaller qualitative study on five special education teachers that found trends of enhanced student experience in the special education space due to better abilities of co-regulation, and general positive experiences for the students. Bester (2024) may hint at the positive influences that accumulation of harm may have on helping professions. There seems to be some relational impacts shown from these two studies, both positive and negative, that may have arisen from the developing person. Given this current research's aims for regression analysis, it is also important to discuss how the accumulation of harm may feed into other factors investigated in this study.

Given that there are few studies on harm in early childhood and career calling, the current study will be exploratory in nature. A person's feeling of being called to a career may be impacted by the harm experienced during important stages of development. There may also be impacts to the greater identity of the person due to the findings in SCT. Three studies were found to have significant findings of trauma having an impact on identity, though the expression seemed different for each one. Lehavot et al. (2012) found childhood trauma to have significant impacts on gender expression of persons, regarding the roles that the person felt they needed to undertake. This would include a person feeling they needed to fill a traditional gender role of a woman by performing perceived traditional duties like cooking or cleaning. Another study by Dereboy et al. (2018), observed that childhood trauma confused adult persons' identity. Finally, a study by Penner et al. (2019) measured the impact of childhood maltreatment on the identity diffusion of adolescents. The study found significant results of the impact on identity due to abuse, and that persons who had trouble reflecting on their experiences experienced higher identity diffusion. There seems to be a broad range of identity factors that may be affected by harm, and so this study may assist in getting a better understanding of how harm is impacting career calling specifically.

There are also other studies showing non-significant results when comparing trauma and identity. Truskauskaite-Kuneviciene et al. (2020), only found significant correlations between sexual abuse and diffused identity. This study described diffused identity as low levels of commitment, identification with commitment and exploration in breadth, with high levels of ruminative exploration. Billen et al. (2022), did not find significant correlations between trauma and identity. This was a longitudinal study, which had a sample of 94 participants, where 36 participants made it to the last of three waves. Data was lost during the 3rd wave at one institution. Other studies which showed significant results averaged 1196 participants, where the Penner et al. (2019) study had 107. These mixed findings may be the result of harm affecting specific aspects of identity, which would require a deeper understanding of how identity is formulated.

Identity

Studies are indicating an interconnectedness between personal and professional identities (Wyatt et al., 2021). Qualitative research has increased in attempt to investigate what identity means. Some recent studies on identity have been connected to professional identity formation among medical students, including those by Rivard et al. (2022), Cole et al. (2023), Lonn et al. (2023), and Finn and Hafferty (2023). What seems to come out of a lot of these studies is a perception on the profession of medicine, and how the person undergoing transformation into a medical professional (study of medicine) involves the undertaking of the persona of a medical professional. Perhaps there is a significant weight of career as a factor of identity, as opposed to other facets.

Lonn et al. (2023) regarded professional identity to be evolutionary, ongoing, and iterative. Cole et al. (2023) mentioned the difficulties for individuals with competing professional identity. In their study, they investigated how military physicians found conflicting identities between their roles as a physician and as a military officer, often opting

to prefer identifying as a physician. This became difficult in the pursuit of developing medical skills as well as military and leadership skills. The way a person identifies themselves professionally seems to have its own impacts on self-concept formation. Finn & Hafferty (2023) regarded identity as an extension of socialisation and its interrelation with culture.

Lonn et al. (2023) found evidence for identity development due to the impact of emotionally challenging situations. SCT described development of prosocial objectives as a factor of own autonomy. It could be argued that most of the study on work-based identity formation has been capturing researchers due to the nature of work involving consistent emotionally challenging situations. Booker et al. (2020) found trauma adapts the person through processing a narrative structure. A person can develop a cohesive and detailed narrative to explain their trauma to help them thrive in a working environment. Jayawickreme et al. (2021) found that a person can adapt their personality to better fit with their working environment through post-traumatic growth. This study observed Western cultural art rewarding the individual who has overcome adversity, the underdog. This has been shown to have a positive feedback loop for individuals which can be seen as post-traumatic growth. Branje et al. (2021) found that social feedback loops affect identity formation. Emotions and experiences from everyday events had effects on the development of personality depending on the social response to those emotions (e.g. negative moods meant the individual pursued others' comfort rather than educational pursuits). The prosocial response to harm would be seen as becoming the underdog, though there are also negative patterns of identity behaviour that may arise from harm.

Marcia (1966) described a person being in one of four stages of identity development. This included 'yes' or 'no' answers to whether a person has committed to an identity, and if a person had explored other identity options. The results were: Identity achievement,

committed and explored; Identity Moratorium, not committed and exploring; Foreclosure, committed but did not explore; Identity Diffusion, not committed and has not explored. Van der Gaag et al. (2020) discussed the importance of Marcia (1966) work due to its strengths in identifying the exploratory and commitment aspect of identity. Harm shows some negative impacts on the exploratory behaviours of a well-developed identity. Israelashvili et al. (2012) found young people displayed less exploratory behaviours when internet addiction was high. Exploratory behaviour is a contributor to Marcia's (1966) identity achievement, which is described as a fulfilling mode of identity development. Downing and Nauta (2010) found relationships between identity diffusion causing issues with feeling called to the current career. Higher exploration indicated more identity diffusion and higher career choice anxiety. The ability for an individual to explore their career options helps in identity achievement. When an individual experiences harm in their lives, they are less likely to explore and, therefore, are less likely to reach identity achievement. There are impacts on a person who may not be able to achieve their identity and create a clear narrative.

Narrative therapy uses the internalised life story of the individual unified with the memories of the person to establish some perception of identity (McAdams & McLean, 2013). These researchers found that redemptive meaning (bad situations turned into positive outcomes) from suffering increased psychological wellbeing and positive adaptation. These narratives could carry from childhood into adult life. Ford et al. (2013) primed participants with social or personal identity stories and found that individuals primed by social identity stories were more helpful. If the identity is clear, then there should be some positive effect on the clarity of the vocation of the individual, possibly even to encourage helpfulness. Harm clearly has potential to affect how autonomous the individual is and their commonality in a social setting. Harm also shows potential to positively and negatively affect multiple facets of identity. Clarity of identity also requires a person to make meaning from their experience.

Meaning Making

Meaning making is often investigating a person's tendency to understand events in their lives and the environment around them. Self-authoring experiences of harm involves a person processing experience by holding the experience like an object to be observed (Shore, 2021). Goodwin (2023) discussed the creative implications of meaning making, by quoting Milner in Inspector Lewis (2015),

'...where without the urge to interfere and alter oneself to fit the ideal, the ideal and the fact seemed somehow to enter into relation and produce something quite new, something that had nothing to do with being pleased with oneself for having lived up to an ideal or miserable being of having failed to...'

Meaning making serves an important role in the analysis of harm and may also be an essential aspect of identity formation. Given the many facets of identity, meaning making in career identity formation will have the most impact on vocation.

Iverson and James (2013) investigated the role of civic identity formation among learning individuals. An individual will undergo evolution into social roles from their learning experiences. Experiencing socialisation in multiple aspects of civic life helps define the individual's civic role. For example, political socialisation may involve acts of community service, which could lead to accepting a humanitarian role in society. Flores et al. (2019) found that exposing girls to university increased the likelihood of attending university. This was despite girls coming from underprivileged households who had no family history of university attendance. The researchers gave the girls an affirming experience of the university that was encouraging. Following up on this experience, the girls were given affirmation on their work to support their growth. Positive experiences may cause an individual to create meaning that can propel them forward.

Mikalsen and Lagestad (2020) found a role of emotion in the experiential process of meaning making. By aiming to promote joy in meaningful experiences, they found an increased likelihood of sustainable involvement in sports outside of school. A study from Wang et al. (2017) found that emotional reappraisal was linked to positive achievement goals, perception of agency, life satisfaction, and social desirability. These results would indicate the positive ‘snowball’ effect that occurs due to a positive narrative formation. This is reaffirmed by a study from Fitzke et al. (2021) that utilised a 20-year longitudinal study of 1728 individuals finding that positive reappraisal indicated better psychological adjustment and broader meaning in life. Further studies by Oh and Pyo (2023) showed positive cognitive reappraisal indicated positive affect which led to career satisfaction. Holley et al. (2023) found positive cognitive reappraisal led to positive resilience, psychological well-being, and job satisfaction. Son and Jung (2019) discuss wellbeing affecting job fit. Park and Hai (2024) also mention positive affect mediating calling and person-job fit. One study found indicated non-significant results regarding cognitive reappraisal (Spanouli et al., 2023). Semantically cognitive reappraisal was defined more like emotional regulation as it utilised the emotional regulation questionnaire by Gross and John (2003), which seems like a different construct to the previously mentioned studies. Depending on the context, an individual may also draw negative meaning from the experiences they face.

Scanlon (2008) observed individuals seeking higher education were required to consider their future. Participants underwent a restructuring of self-concept due to the sudden change in environment. Palacios et al. (2021) found through a qualitative study that individuals were drawing on contextual resources to make sense of their experience. If a person considers their harm when assessing the sociocultural landscape, there may arise a negative shape to the understanding of our experiences. If a person saw their schooling as a ‘flop’ and that they were destined for a ‘dead-end job’, their future authoring may suggest

aiming toward a job that they interpret as ‘dead-end’. If a person saw a garbage handling career as a ‘dead-end job’, that person would seek to become a garbage handler. Achieving a career as a garbage handler would now have meaning from their perception. It is meaningful as it has fulfilled the narrative of their schooling experience that led them to the ultimate meaning of getting a ‘dead-end job’. There is a lot of evidence for the role of emotions when deriving meaning from experience. Depending on the meaning created from harm, a person may interpret their career calling differently. This may also be intertwined with how they see their identity in general. Further, there may also be environmental and experiential impacts on a person’s ability to fit into their career.

Fit

Workplace culture fit is described by the dimensions of the environment that a person would be fitting themselves into (Martyn et al., 2021). Fit can be seen as a factor that promotes stability in a working environment. Martyn et al. (2021) continues that the personal characteristics of the individual should match well with the organisation, including peer bonding, and skills. Individuals measure workplaces by their ability to promote good workplace relationships, regulation, and flexibility (Taylor & Bobadilla, 2023). Previously, interpersonal relationships were measured by their impact on identity and meaning making. Cultural fit involves more similarity among peers in the workplace, which may make fit more independent from the other factors measuring in this study.

The more resources an individual accumulates increases how much they fit with the culture of a working environment (Chowhan & Pike, 2023). There are different aspects of resources that could be considered important to promoting the culture of a working environment. Employment and wages are important for an individual’s well-being (Schwabe & Castellacci, 2020). Schwabe and Castellacci (2020) mention that the more that an individual has invested into their career (including higher education, travel from home), the

more that individual will expect from their workplace to meet satisfaction. Workplace culture may also be defined by the social environment, and how the person integrates into this environment.

Nordhall et al. (2020) found collective identity had a positive correlation with personal identity, indicating that personal character must fit with the collective character to promote fit. Similarly, Altunay and Ozdemir (2024) found that the person's learning characteristics had some correlations with organisational identity. Further, Shang et al. (2022) found that job satisfaction and career calling had a positive relationship and a positive relationship with occupational self-efficacy which may relate having a place among the social dynamics of the environment. Occupational self-efficacy was also positively related to career calling. If a person feels self-efficacious, they may increase in positive affect which should have positive impacts on vocation.

Individuals spend most of their lives at work, and so well-being is important to determine the behaviours of the individual; including lower motivation and effort when well-being is low (Schwabe & Castellacci, 2020). The same study found that individuals who feel like their role could be replaced will experience negative affect toward job satisfaction. If a person feels as though they are replaceable, they will not feel as though they fit in their workplace. Research from Zhang et al. (2015) has been finding career calling relates with self-directed career attitude (autonomy), and career calling linked with career satisfaction, and life satisfaction. This is a consistent trend with further research from Peng et al. (2020), who found intrinsic job satisfaction had positive relationships with career calling and meaning making; and extrinsic job satisfaction had positive relationships with career calling and meaning making. Stress in the environment leads to lower subjective well-being and impacts the performance of the individual (Chowhan & Pike, 2023). Security in a job is also important for fit; however, it should be noted that security is pervasive to life outside of work,

including financial stability (Taylor & Bobadilla, 2023). Fit, when considering SCT, includes aspects of identity and meaning formation, both regarding autonomy and commonality, as well as other dimensions of commonality included in the working role. It seems that harm could have its social impact negatively on the ability of the individual to fit into the environment. However, there is also potential for an individual to find a niche environment where others have experienced similar events that facilitate fit. The identity of the wounded healer among helpers may be a common experience within the profession.

Vocation

Vocation will be defined as the felt sense of calling on a career and will be measured using the BCS discussed previously. The study by Bryce (2022) investigated vocation through asking direct questions regarding vocation and senses of belonging: 'I see my career choice as a vocation', and 'I feel I need to be in this career'. There is a uni-dimensionality of these questions that also arises from the questions in the BCS. Ultimately, it is hoped that by combining the independent factors into a regression model, it may be possible to quantitatively observe how a person arrives at a 'feeling' of being called to their career.

A study by Dix (2022), investigated how vocation was represented in contemporary American fiction using career construction theory. Themes from this study included fulfillment of hopes, dreams, and ambitions. Dix (2022) also mentioned the person establishing a vocational 'life theme'. The study also mentions a person identifying roles to be pursued, aspiring to fill those roles, and fulfilling those aspirations. Dix (2022) argued that vocation can be evolving with the person. If the person fulfills an aspiration, they now have a new environment to observe new opportunities; the person would theoretically undergo a transformation process that re-authors the direction of their lives from a new and privileged standpoint. These ideas could share a commonality with the exploratory nature of identity formation found with Marcia (1966). Dix (2022) also seems to be including the narrative

aspects of identity formation when discussing a vocational ‘life theme’, which helps understand the quantitative impact of the regression that will be used in this study.

Randall and Procter (2023) that describe vocation to be associated with career commitment. This definition includes an endpoint as opposed to Dix (2022) who argues that there is an ever-transforming person. It may be logical to accept both definitions where a person is feeling that they have achieved a career commitment may still seek to re-author themselves based on the experiences that they are exposed to. Further exploration will be made in the regression to find what aspects of identity formation and socialisation may impact a person’s felt sense of career calling.

Brief Calling Scale

Vocation will be operationalised using the Brief Calling Scale (BCS). The BCS is a 4-item scale with a 5-level response scale. Dik et al. (2012), studied the BCS and found it to be valid using a multitrait-multimethod matrix design, paired with the CVQ (Calling and Vocation Questionnaire). It was also found that the scales were convergent and discriminant from each other. The convergent scores for the “presence” sub-scale were stronger than the “search” sub-scale.

The BCS is a unidimensional scale as compared with other calling scales that often opt for more multidimensionality (such as the CVQ). Duffy et al. (2015), evaluated the BCS among other calling scales, including the CVQ, and found that the BCS had a negative kurtosis, where individuals would often answer at the low end of the scale; though this was possibly exacerbated by half of the group noting that they had a calling. Given its unidimensionality, the BCS is better at measuring whether someone has a general calling, rather than understanding the facets of the calling. It allows participants to utilise their individual conceptualisation of calling, rather than leaning into the more elaborate concepts of other

tools. The BCS also had the most individuals answering that they did have a calling as compared with other tools also.

Marsh and Dik (2021) used the tool to measure individual's understanding of calling, and Duffy has used the BCS with other measures to elaborate on work as career calling (Duffy, et al., 2019; Bott & Duffy, (2015); Duffy et al. (2019)). He et al. (2024) has recently used this scale to measure how calling may predict psychological burnout. Often, the BCS has been used in the context of undergraduate studies and professionals. The Bryce (2022) study joined in this by utilising the BCS as the primary measure of career calling, named vocation. This research will use the data found in the Bryce (2022) study, to form a regression model from the previously mentioned independent variables where vocation (using the BCS) will be the dependent variable.

Research Questions

The CHIQ is still in its early stages of development, it is also apparent that the factors being investigated are infant in nature. So, this study will be using research questions to explore the relationships that arise from the CHIQ. This is a more conservative approach to the research, as there are so many factors to consider when making a prediction for each of the variables. The research is not clear enough, and most of the factors do not yet have a clear definition, so approaching this conservatively will be most effect for this exploration. The research questions are:

1. What are the relationships of each of the Accumulation of Harm, Meaning Making, Identity, and Fit with Vocation?
2. What are the unique contributions between the independent variables (Accumulation of Harm, Meaning Making, Identity, and Fit) and the dependent variable (vocation)?
3. How much of the variance for vocation, as measured by the Brief Calling Scale, can be explained by the independent variables from the CHIQ?

Chapter 2: Methods

Participants

There were 384 adults were recruited who were either helping professionals or studying to be a helping professional. Of those, 357 participants completed the scales in full, and so 27 participants were removed due to incomplete data. The age range was 19 – 61 years, with an average of 28.5 years. The sample consisted of 15.7% men ($n = 56$), 82.6% woman ($n = 295$) and 1.7% identifying and non-binary ($n = 6$).

Materials

There are five key variables of interest for this project: Accumulation of Harm, Meaning Making, Identity, Fit, and Vocation. Data for Gender and Age were also recorded. All alpha coefficients (using Chronbach's) were between .7 and 1 for all CHIQ subscales. (Bryce, 2022).

Accumulation of Harm was measured using 7 items (such as 'I have experienced ongoing and repetitive incidents of harm throughout my childhood') that were included in the Nature of Cumulative Harm scale on the CHIQ using a 5-point Likert-type scale from 'strongly disagree' to 'strongly agree'. The internal consistency was $\alpha = .950$ ($M = 2.53$, $SD = 1.22$). The items were drawn from themes of Chronicity (CH1, CH3, CH4, CH6, CH7) which relates to ongoing and repetitive nature of adversity, and Poly-victimisation (MU1, MU3) which refers to experiencing multiple types of abuse.

Meaning Making was measured using 4 items (such as 'I have experienced ongoing and repetitive incidents of harm throughout my childhood') that were included in the Meaning of Cumulative Harm scale on the CHIQ using a 5-point Likert-type scale from 'strongly disagree' to 'strongly agree'. The internal consistency was $\alpha = .932$ ($M = 2.74$, $SD = 1.22$). The items were drawn from themes of Meaning making from vocational choice (ME1, ME2, ME3, ME4) which relates to career helping make sense of cumulative harm.

Identity was measured using 12 items (such as 'My cumulative harm experiences have influenced my sense of who I am as a person') that were included in Identity conclusions of Cumulative Harm model in the CHIQ, using a 5-point Likert-type scale from 'strongly disagree' to 'strongly agree'. An internal consistency measure was taken $\alpha = .964$, ($M = 3.25$, $SD = 1.15$). The items were drawn from themes of Growth of Self (GR4, GR5) which relates to personal growth due to career choice, Impact of trauma on sense of self (SE1, SE2, SE3, SE4) which relates to how cumulative harm has influenced how the person sees themselves, Identity Formation (ID1, ID2), which refers to how a sense of identity has been constructed, and Perception Creating (PC1, PC2, PC3, PC5), which refers to how the person sees themselves, how others see them, and how they want the world to see them.

Fit was measured using 3 items (such as 'I believe I have chosen a career in the helping professions because it fits with my cumulative harm experiences') that were included in the Adaptability of Cumulative Harm scale on the CHIQ using a 5-point Likert-type scale from 'strongly disagree' to 'strongly agree'. Internal consistency was taken $\alpha = .718$, ($M = 2.98$, $SD = 1.22$). The items were drawn from themes of Goodness of Fit (IG3, IG4) which relates to being well-suited to a career, and Insight (IN1) which refers to deep personal experience of harm in lived experience.

Vocation (Career Calling) was measured using 4 items (such as 'I have a calling to a particular kind of work') that were included from the BCS where the first item is scaled using a 5-point Likert-type scale from 'not at all' to 'totally', and the other 3 items use 5-degrees from '1' to '5'. The scale has shown significant relationships with career decision self-efficacy, intrinsic work motivation, religious commitment, and meaning in life (Dik & Steger, 2008; Duffy & Sedlacek, 2007; Steger et al., 2010). Alphas were recorded for the presence ($\alpha = .926$) and search ($\alpha = .882$) subscales. The BCS measures the extent to which people perceive that they have a calling or are seeking one.

Procedure

The original study was completed in 2022 by Bryce and utilised the nine steps for scale development from Boateng et al. (2018). The CHIQ was developed for a third study, after completing two qualitative studies on individuals in the health industry who had experienced accumulation of harm. Themes from the qualitative study were used to develop scales for the CHIQ. The CHIQ underwent a pilot test with five participants to measure face validity and functionality. This study will be using the archival data from the tests that were completed after the pilot test, on 384 participants. 357 of these participants fully completed the CHIQ, and so the data will be using their responses. The CHIQ was used as a cross-sectional survey and was delivered using electronic format through advertisements placed on study desks, university notice boards for special courses, and via recruitment through a website called Prolific (<https://www.prolific.co/>). These individuals who entered through Prolific were paid \$5 for participation.

Analysis Plan

Analysis will be undertaken for three research questions. First, a correlation matrix will be used to observing the relationships of each of the factors. (Nathans, 2012) Second, a regression table will be used to identify the unique contributions of the dependent variable (vocation) has with the independent variables (Accumulation of Harm, Meaning Making, Identity, and Fit). The last research question will involve analysis of independent variables, and their variance explained (R^2) against the dependent variable. The strength and variance will be observed in a regression where non-significant factors are removed. This will give room for discussion on future research. This will assist in observing collinearity among the independent variables.

Chapter 3: Results

Research Question 1

What are the unique contributions of each of the factors?

Table 1. Correlation matrix for RQ1

Variable	M(SD)		1	2	3	4	5
BCS	12.08 (2.95)	<i>r</i>	—				
		<i>p</i>	—				
AoH	2.53 (1.22)	<i>r</i>	.069	—			
		<i>p</i>	.192	—			
MM	2.74 (1.22)	<i>r</i>	.175***	.700***	—		
		<i>p</i>	<.001	<.001	—		
Identity	3.25 (1.15)	<i>r</i>	.190***	.705***	.748***	—	
		<i>p</i>	<.001	<.001	<.001	—	
Fit	2.98 (1.22)	<i>r</i>	.241***	.572***	.701***	.823***	—
		<i>p</i>	<.001	<.001	<.001	<.001	—

* p < .05, ** p < .01, *** p < .001

BCS = Brief Calling Scale, AoH = Accumulation of Harm, MM = Meaning Making

Meaning making, fit, and identity showed significance in the correlation matrix where accumulation of harm did not. It seems that the items that form these factors hinge on the presence of cumulative harm, and the results may be swayed by the survey methodology. This is discussed further in the limitations regarding the structure of questions in the CHIQ for these factors.

Fit

Fit shows significant positive correlations with all other factors. Fit has the highest correlation with the BCS, which is measuring vocation. Fit's next highest correlation is with the Accumulation of Harm, then Meaning Making, and is showing very high correlations with Identity. It would be expected that with these correlations wot meaning making and

identity, the regression may show enough similarity between the factors to exclude some of them. The correlation with accumulation is high also.

Identity

Identity is showing very high correlations with accumulation of harm and meaning making, indicating that there may be small differences between the factors. When using this in the regression, it may show more similarity between them that may reduce the significance.

Meaning Making

Meaning making is showing a high correlation with accumulation of harm, it has already been shown to possibly have little difference from the other factors also.

Accumulation of Harm

Given the insignificant correlation with the BCS, and the high correlations with other factors, accumulation of harm may be more different to the other factors. The regression will show more information about these factors. Usually at this stage of analysis, accumulation of harm may be taken off the regression analysis given its low correlation with the BCS. However, given its high correlation with other factors, and those factors' correlations with the BCS, analysis will continue.

Research Question 2

Is there a relationship between the independent variables (Accumulation of Harm, Meaning Making, Identity, and Fit) and the dependent variable (vocation)?

Table 2. Regression analysis for RQ2

Effect	Estimate	SE	95% CI		p
			LL	UL	
Intercept 0	12.08	0.16	11.77	12.38	<.001
Intercept 1	10.41	0.46	9.51	11.31	<.001
Fit	0.56	0.23	0.12	1.01	0.013
Meaning Making	0.22	0.21	-0.19	0.63	0.289
Accumulation of Harm	-0.37	0.19	-0.75	-0.00	0.048
Identity	0.10	0.28	-0.44	0.65	0.714

* p < .05, ** p < .01, *** p < .001

CI = Confidence Interval, LL = Lower Limit, UL = Upper Limit

It was found that there was a positive relationship between the independent variables (Meaning Making, Identity, and Fit) and the dependent variable (vocation), where: as a person is more likely to make meaning from their harm; are more likely to identify with their harm; and they are more likely to fit in with their workplace, the more a person's perception of being called to their career increases. However, in this regression model, it was found that Identity and Meaning Making were non-significant. A significant result found that Accumulation of Harm was negatively correlated with Vocation.

The previous correlation matrix found that accumulation of harm was non-significant, while the other factors were. However, when moving to the regression model, accumulation of harm was significant, with fit, where meaning making, and identity were non-significant. The collective R² value of accumulation of harm, meaning making, and identity was very

small. The research mentioned in the literature review showed the nested similarities between these factors. Given the impact of fit in this regression, it may be that the aspects of identity and meaning making are more like fitting in socially. Where fit differentiates from the other factors is in the resourcefulness of the individual. It is also possible these results could indicate that the linear model is not strong enough to show how the amount of harm will affect the person's feeling of fitting into the workplace, and this could impact the significance of meaning making and identity.

Research Question 3

How much of the variance for vocation, as measured by the Brief Calling Scale, can be explained by the independent variables from the CHIQ?

It was found that there was a small effect size when considering the independent variables from the CHIQ against the dependent variable from the BCS. The variance explained by the four independent factors was $R^2 = .069$. It was also found when the non-significant factors were removed (meaning making & identity), the effect size remained small ($R^2 = .065$). Of note also is the second regression table indicated that accumulation of harm was no longer significant ($\beta = -.245, p = .106, 95\% CI = (-0.543, 0.053)$), while fit remained significant ($\beta = .723, p = <.001, 95\% CI = (0.424, 1.021)$).

Suppressor Effect

Generally, non-significant factors are eliminated due to common techniques in the stepwise regression (Akinwande et al., 2015). Akinwande et al. (2015) also describe multicollinearity to refer to situations where multiple factors may predict the dependent variable due to the interrelatedness of the factors. In this paper's regression model, there is evidence that the factors meaning making and identity are influencing the significance of accumulation of harm, due to the changes between non-significance to significance when present, see Appendix 2 for the regression without meaning making and identity.

Multicollinearity usually suppresses the effects of correlated factors, though the opposite is happening in this study. Akinwande et al. (2015) studied classic suppression, where the suppressor variables decrease the variability of other factors which makes the factor more stable and increases the beta-weights. This is like what is occurring in the model for this study, due to the low beta-weight of accumulation of harm, it is non-significant in the correlation matrix. When adding the other factors to the regression model, they suppress the variance of accumulation of harm, making it significant. This is like negative suppression, since accumulation of harm has the negative beta-weight, and the suppressors are positive (meaning making, identity, and fit).

Horst (1941) originally described the effect of suppressors to decrease the noise from criterion-irrelevant variation. Kim (2019) discusses the argument of statistical researchers on the role of suppressor variables. The bias that may exist, from a causal perspective, is desirable from a point of view that it is good to be able to better predict a criterion. In the case of this research further investigation should be made for the relationship that the amount of harm has with the sense of career calling. Ludlow and Klein (2014) discuss the power of an a priori research for suppressor variables. It seems that there are some suppressive relationships arising from meaning making and identity, as well as fit, which may be mediative in nature. In this circumstance, Ludlow and Klein (2014) would describe the arising of suppression effects as the '#3 strategy', and so caution should be taken in presenting these findings as definite suppressor effects. Kim (2019) discusses three structures that could be at play with suppressor variables: the suppressor acts as a mediator, the suppressor affects both the predictor and the criterion, or the suppressor is affected by the predictor and the criterion. This would be a good basis for further study into the CHIQ and its relationships with vocation.

Quadratic regression

This concept is out of the scope of this study; however, it is worthwhile mentioning the possibility of a quadratic regression effect from accumulation of harm. It is possible that as the amount of harm increases, there are effects on the vocational choice of the person. It is also possible that there is a maximum, where any more harm would create an opposing effect on career calling. Boente and Parada (2023) discusses the usefulness of increasing use of quadratic functions to understand relationships where the linear model imposes too many restrictions. These methods could be used to investigate a possible quadratic relationship between accumulation of harm and vocation in future research.

Chapter 4: Discussion

Fit

Fit showed a positive correlation with career calling, which was predicted by some of the research in the literature review. Chowhan and Pike (2023) mention that more resources will help the person fit in better at work. Martyn et al. (2021) also mentions a person's characteristics matching workplace culture. There were other pieces of research mentioned that may be consistent with the findings where workplace flexibility (Taylor & Bobadilla, 2023), non-replaceability (Schwabe & Castellacci, 2020), and learning style (Altunay & Ozdemir, 2024) were regarded as helping a person fit into their job. Quantitative findings indicate a strong possibility that personal fit arises from a feeling of belonging (Nordhall et al., 2020) and job satisfaction (Peng et al., 2020), (Zhang et al, 2015), (Shang et al., 2022)). Further, Son and Jung (2019) discuss wellbeing affecting job fit. Park and Hai (2024) also mention positive affect mediating calling and person-job fit.

In the regression model, fit showed a small effect, which was the largest of the factors. Fritz et al. (2012) observed, in a meta-analysis, that half of their studies did not report effect size, a large group did not report the statistic used, and most studies did not attempt to interpret the effect sizes. It seems in this scenario, there is a great need for interpretation. Fritz et al. (2012) state that the effect sizes of variables within a regression allow the evaluation of variables collectively and in terms of individual contributions.

If cumulative of harm was not present in the questions for fit, would fit have increased or decreased impact on vocation. Schwarz's (1999) work is affirmative of the construction of the questions pertaining to fit. Respondents make meaning of a question being asked of them. Given the research found on fit and career calling, particularly the similarities to satisfaction, individuals may understand fit in all its nested aspects. However, there are limitations to the survey that may impact future direction for research on the CHIQ.

Identity

The findings indicated a positive correlation for identity and vocation. It was observed that more exploration helps construct a narrative. That should indicate a clearer identity should predict more clarity of vocation. When observing the quantitative studies from the literature, there seems to be an emphasis on diffusion of identity or less identity exploration leading to lower identity clarity (Downing & Nauta. (2010); Israelashvili et al. (2012); Van der Gaag et al. (2020)).

The Lonn et al. (2023) study showed that emotionally challenging situations could help form identity. It was mentioned during the discussion on meaning making, that joy would improve the persons' ability to make meaning from situations in their life and create a narrative. Su et al. (2024) found that teachers who were able to regulate their emotions displayed more enthusiasm and engagement with teaching. Given previous discussion, it is possible that there is a close interplay between meaning and identity being affected by emotional regulation and joy. Russolillo et al. (2024) also found a mediating role of emotional regulation when investigating how lack of identity correlated with future suicidal behaviour. Alcohol consumption was described as an increase in likelihood of risky behaviour which may be linked to the inability to regulate emotions well.

In the regression model, identity became non-significant. The results showed that identity had a large correlation with fit, which may have indicated that most of the variance for the BCS was explained by fit rather than identity. This would indicate that there are probably many similarities between the factors in this study. Wyatt et al. (2021) and Cole et al. (2023), identified conflicting identities impacted the clarity of professional identity. It is also possible that the professional identity has a large impact on the overall identity of the individual when it comes to career calling.

Meaning Making

It was found that meaning making was positively correlated with career calling. The theory behind meaning making was the idea of a person's ability to create a narrative from context (Iverson & James, (2013); Flores et al., (2019); Palacios et al., (2021); Goodwin, (2023)) and it was presupposed that the individuals would take on the role of a wounded healer. Mikalsen and Lagestad (2020) discuss how emotions impact the meaning of wounding in life. It was noted in the quoted quantitative studies (Wang et al., (2017); Fitzke et al., (2021); Oh & Pyo, (2023); Holley et al., (2023); Spanouli et al., (2023)) that the ability to positively appraise situations gave rise to positive meaning making for context.

Söyünmez and Seki Öz (2024) found that among student nurses, as childhood traumatic experiences increased, happiness decreased. A study by John-Henderson et al. (2024) found that among native Americans, high levels of childhood trauma with frequent use of cognitive reappraisal and expressive suppression, had more alcohol problems, compared with others who did not use these regulation methods. This may show an increase in risky behaviour when an individual struggles with regulation of emotions. Wang et al. (2017) found positive results of individuals who used emotional reappraisal while Spanouli et al. (2023) found non-significant results. It seems that there is a complicated interplay with the likelihood of an individual making meaning from their harm with the amount of harm in their childhood.

In the regression model, meaning making became non-significant. The results showed that meaning making had a large correlation with fit, which may have indicated that most of the variance for the BCS was explained by fit rather than meaning making. This would indicate the possibility of a large similarity between the two factors. It is possible that the concept of a wounded healer could be too like identity and fit. Where making meaning from experience is much more impacted by what we do.

Accumulation of Harm

It was found that accumulation of harm and career calling had a non-significant, positive relationship. Reiland (2023) and Bester (2024) had found that there were positive influences of experiencing childhood harm in improving regulation ability and clarity of how the individual would help others. This could be interpreted to assume that the amount of harm that an individual experiences should increase the person's self-awareness or drive to conquer what they had dealt with in their life, like a wounded healer.

Yang and Oshio (2023) discuss the relationship of attachment and self-concept clarity, where attachment anxiety had a negative relationship with clarity due to hyperactive strategies, such as catering to others' evaluations and self-abandonment. Avoidantly attached individuals would neglect the needs of others, which meant the person had a relatively clear self-concept without much attention to others' feedback to confirm their self-concept. These findings could help understand the non-significant relationship between accumulation of harm and career calling.

Accumulation of harm initially had no significance, and with each regression model increased in significance, until all factors were added and made accumulation of harm significant. The Yang and Oshio (2023) study investigated the mediating role of mindfulness in the attachment to self-concept clarity relationship. Attachment anxiety did not reveal a significant direct effect on clarity; however, when matched with mindfulness, there were significant results. Theoretically, here may lie some of the reasons that harm increased in significant when considering the other factors. It is possible that increased accumulation of harm affected clarity of vocation negatively, as mediated by degree of meaning making and identity. However, these beg more questions since meaning making and identity became non-significant, which may have occurred due to the similarity with fit.

It is important to mention that accumulation of harm accounted for a very small effect on the variability explained for vocation. Given the small size, and that accumulation of harm had only just made it over the mark for significance, Smithson (2001) would question further the impact of a non-centralised normal distribution among the data. Looking at the descriptives in Appendix 1 it is possible to see that the skewness was positively leaning and kurtosis below 3, indicating a low number of outliers and that the distribution may skew closer to 0 (given Accumulation of Harm had a negative correlation in the regression model). Vacha-Haase and Thompson (2004) discussed effect sizes being better able to emphasise the importance of the statistic.

Limitations

Retrospective Bias

An issue arises from the questions that there is a possible bias effect that is causing significant results. Blome and Augustin (2015), discuss the issue for quality-of-life research having high risks of bias due to retrospective measurements. When a person is considering whether their trauma fits with their career choice, they are risking an attempt to make a retrospective assessment of their reasons for choosing a helping profession. This could lead to bias through making the narrative fit with the question.

Suppression effect

Regarding suppression effects, it is important to note the findings of Salgado et al. (2019). Personality accounted for a large suppression effect on their research regarding job satisfaction and subjective well-being. When exploring new surveys that can be used to predict vocational choice, including factors that are like job satisfaction and subjective well-being, there may need to be some accounting for personality. This research does not account for personality, which could help strengthen the evidence, if significant findings exist despite personality being accounted for.

Construct validity

Smith (2005) indicates that when measuring the construct validity of a factor the theory, or the psychometrics of the construct should be investigated. Rorschach (1964) was involved in a famous debate among scientists regarding the construct validity of a perception test. Initially it underwent scrutiny and showed low construct validity, though future psychometrics by Exner's (1974) indicated that the theory of Rorschach was sound, but there was difficulty in capturing its performance.

In future, convergent validity could be measured to see if it correlates with similar tests, and discriminant validity, whether it is dissimilar to tests that it should not correlate with Piedmont (2024). This is a possible pathway to investigate each factor further, though further research also requires increased clarity.

Leading questions

The methodology of the survey questions should be discussed. Groves (2004) discusses methodology where closed questions, such as what was used in the CHIQ, present a list of acceptable answers. The way that respondents answer closed questions will depend on the information given and the limitations of the constraints. It is possible for respondents to give more weight to certain response options, based on differing issues with biases. A possible issue that has arisen is that fit includes questions such as: 'My cumulative harm experiences make the helping profession a good fit for me as a career'. A few points to note, accumulation of harm is referring to the amount of harm experienced as a child, which is not considered in this question. An approaching respondent may interpret this question based on any level of harm they have experienced. Further, there is an issue with retrospective consideration of fit and cumulative harm experiences. Groves (2004) mentions that although someone has lived through an event, it may not indicate the person has absorbed much

information regarding the event. This same issue arises for the other factors which also include harm in the questioning.

Erčulj and Šulc (2024) discuss leading questions that cue respondents to a desired response. This article investigated the effects of leading questions among investigators; however, this theory can be considered regarding the CHIQ. Considering the large discrepancy between fit and the other factors, and that questions for fit included the keyword 'harm'. The best example of how the questions in fit may have been leading exist in Erčulj and Šulc's (2024) research. 'Did the person's glasses break?', means that you will assume the person has glasses. The question in fit includes 'My cumulative harm experiences ...' which leads the person to imply that they may have cumulative harm experiences.

Future Research

Future research could investigate if this relationship exists when the data for dependent variables (meaning making, identity, accumulation of harm, and fit) are collected from separate validated tools that are not interrelated. Then, the study could compare these results with further data from the CHIQ and the BCS. The inclusion of multiple validated tools would allow for powerful statistical analysis to be incorporated, including investigations into mediative relationships.

Quadratic Regression

Future research could investigate the possibility of quadratic relationships among the factors associated with the accumulation of harm. The non-significance of the factor in the correlation may indicate a poor fit to the linear model rather than the complete difference of the factor vocation. Given the nature of harm, as harm increases, there may be an optimal maximum for increasing vocation before the amount of harm causes identity issues surrounding vocation. This will need to be investigated further.

Conclusions

This study has investigated the relationships that cumulative harm (including the factors accumulation of harm, meaning making, identity, and fit) has with career calling. There is potential in this research for further studies around suppression effects on how cumulative harm affects an individual's sense of calling. There seems to be methodological issues in the CHIQ that should be addressed, primarily to increase clarity of each construct. Clarity needs to be made to differentiate these factors from each other before inferences can be suggested. I look forward to observing the research that arises from the CHIQ and the potential that can be drawn from the contents. It is hoped that this questionnaire has the potential to expand to other professions (outside of helping) and assist in discovering the effects of cumulative harm.

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Appendix 1

Descriptive Statistics

	Accum	Meaning	Identity	Fit	BCS
Valid	357	357	357	357	357
Missing	0	0	0	0	0
Mean	2.529	2.744	3.253	2.984	12.076
Std. Deviation	1.221	1.220	1.145	1.220	2.953
Skewness	0.306	0.010	-0.830	-0.339	-0.060
Std. Error of Skewness	0.129	0.129	0.129	0.129	0.129
Kurtosis	-1.156	-1.152	-0.415	-0.960	0.780
Std. Error of Kurtosis	0.257	0.257	0.257	0.257	0.257
Minimum	1.000	1.000	1.000	1.000	4.000
Maximum	5.000	5.000	5.000	5.000	20.000

Appendix 2

Linear Regression

Model Summary - BCS

Model	R	R ²	Adjusted R ²	RMSE
H ₀	0.000	0.000	0.000	2.953
H ₁	0.255	0.065	0.059	2.864

ANOVA

Model		Sum of Squares	df	Mean Square	F	p
H ₁	Regression	201.117	2	100.559	12.259	< .001
	Residual	2903.841	354	8.203		
	Total	3104.958	356			

Note. The intercept model is omitted, as no meaningful information can be shown.

Coefficients

Model		Unstandardized	Standard Error	Standardized	t	p
H ₀	(Intercept)	12.076	0.156		77.258	< .001
H ₁	(Intercept)	10.539	0.420		25.095	< .001
	Fit	0.723	0.152	0.298	4.765	< .001
	Accum	-0.245	0.152	-0.101	-1.618	0.106