THESIS

GOING WITH THE FLOW: EMPLOYEE FLOW EXPERIENCES ACROSS THE CREATIVE PROFESSION SPECTRUM

Submitted by

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ABSTRACT

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Ties between the psychological state of flow and creativity, as well as flow and occupational health, have been documented relatively well within the organizational psychological literature, but fewer studies attempt to bridge these relationships together in a single study, especially when considering the lens of work design. In this study, I sought to test a model comprising work design, creative processes, flow experiences, and occupational health variables to empirically examine whether creative problem-solving and work-related flow mediate the relationship between job characteristics and worker well-being. I conducted an online self-report survey among a convenience sample of 326 workers employed in a variety of occupations. In general, the results provided support for the hypothesized model. Results indicated that job characteristics relate to creative problem-solving, flow, and worker well-being, which can inform ways to possibly increase flow at work. This research contributes to the broader literature that has previously identified numerous benefits of work-related flow, such as positive mood, overall well-being, in-role job performance, organizational citizenship behaviors, work recovery, and depleted burnout.

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INTRODUCTION

Flow, also called an optimal experience, refers to a psychological state whereby an individual becomes completely absorbed in a task, particularly marked by undivided attention and reduced awareness of other thoughts and feelings (Csikszentmihalyi, 1990). During flow experiences, people find the activity at hand incredibly enjoyable, even to the extent that they might engage in it solely for its own sake (Csikszentmihalyi, 1990).

Understanding flow is essential in the workplace because it is associated with numerous pertinent issues for workers and organizations. When individuals experience flow while working, it can have a direct impact on their perceived work-related experiences and outcomes. Prior research suggests that higher levels of flow at work are linked to various positive effects, such as improved employee performance, life satisfaction, and better business outcomes (Farina et al., 2018), in addition to increased work enjoyment, positive emotions, self-efficacy, and self-rated job performance (Burke, 2010). Furthermore, frequent flow experiences on the job may protect workers against the detrimental effects of burnout (Aust et al., 2022). In terms of the relationship between flow and the overlap between work and non-work domains, individuals who have a harmonious passion for an activity (i.e., are intrinsically motivated) may experience more flow, leading to increased happiness (Carpentier et al., 2012). With harmonious passion, this effect can even spill over into unrelated activities, such as one's work (Carpentier et al., 2012). The motivating aspect of flow is perhaps its most significant factor, as people who become so immersed in a task that it becomes effortless and purposeful may also become more productive and satisfied at work. Considering just a few of these effects of flow in the workplace, it is evident that flow can play a unique and crucial role in a professional environment, and further research on this topic is warranted within organizational contexts.

Purpose of Present Study

The purpose of this study was to understand how certain work design elements that likely differ across a span of creative and non-creative professions (i.e., job characteristics) are related to flow at work. Furthermore, I wanted to identify how these elements relate to engagement in creative processes, flow experiences at work, and occupational health outcomes for employees. It is important to identify job characteristics that may improve flow at work, as the benefits of experiencing flow in the workplace are well-documented throughout the literature, including ties to increased personal and organizational resources (Salanova et al., 2006), positive mood and overall well-being (Fullagar & Kelloway, 2009), in-role performance and organizational citizenship behaviors (Demerouti, 2006), recovery from work (Demerouti et al., 2012), and reduced burnout (Aust et al., 2022).

The specific aims of this project were: 1) to determine work design recommendations to increase the quantity and quality of work-related flow experiences and health outcomes, and 2) determine key phases of the creative process that leaders should encourage to promote these favorable consequences. These objectives are important in the fact that intrinsic motivation plays a monumental role in the workplace, often serving as a buffer between stressor and strain outcomes such as burnout (Rubino et al., 2009). As work-related flow is a highly motivational experience (Bakker, 2008), further insights into this construct in relation to how to design work and engage in creative processes contributes to worker motivation, performance, and occupational health psychology. The achievement of these objectives increases our understanding of the link between job characteristics and other work design variables, allowing for the emergence of recommendations for leaders on how to better foster employee flow, positive job attitudes, and worker well-being.

Background & Theoretical Underpinnings

Flow Theory. Flow Theory primarily serves as the basis for the operational definition of the flow experience (Nakamura & Csikszentmihalyi, 2009), but is also ever-expanding with every additional novel finding related to flow within the literature. Flow is defined as a ninefold construct, with some dimensions more necessary to remain in a state of flow than others; the following nine dimensions are cited from Csikszentmihalyi (1990). First, a balance of the challenges presented by one's work and the skills required to fulfill those challenges (referred to as the challenge-skill balance) is necessary to both enter and maintain a flow experience. Challenges that are too great for one's skills to fulfill may result in anxiety, while taking on challenges that are much lower in difficulty compared to one's work-related skills may result in boredom. The process of creating a relative match between one's challenges and skills (known as the flow channel) is integral for both entering and remaining in a state of flow. Second, complete absorption in the activity must occur, where the action and awareness merge and any external distractions become insignificant. Third, high levels of clarity of one's goals are important to experience flow. To enhance this aspect of flow, Locke and Latham's (2002) goal-setting theory suggests setting specific and realistic goals, which can help motivate oneself toward achieving them. Fourth, consistent and unambiguous feedback related to one's goal progress is important to foster and maintain flow. Fifth, there is the need for complete concentration on the task at hand, where all of one's attention is focused on the present moment. Sixth, there is a paradox of control within flow, whereby individuals experience either a sense of perceived control or a lack of worry despite reduced control. Seventh, individuals may experience a loss of self-consciousness, where their concept of self fades from their awareness, and they become unaware of their own mental and physical processes. Eighth, time may undergo a transformation where it appears to

pass differently than usual (i.e., drastically speeding up or slowing down), yet this does not always occur during flow. Ninth, individuals in flow are engaged in an autotelic experience, or completing an activity for its own sake rather than to reap external rewards. The majority of relevant studies today use these nine dimensions to operationalize flow, or a combination thereof based on situational factors, to my knowledge.

Several theories proposed in the organizational psychological literature are relevant for comprehending the relationship between flow and work in addition to Flow Theory. These theories, described as follows, offer a background and framework for explaining the antecedents and outcomes of flow.

The Job Characteristics Model. The Job Characteristics Model (JCM; Hackman & Oldham, 1974) is one of the frameworks relevant to consider in these relationships. The JCM, a dominant model describing work design in the organizational psychology literature, emphasizes five job components, namely skill variety, task significance, task identity, autonomy, and feedback, that are linked with several critical psychological states at work. As a result, these psychological states may lead to positive outcomes for workers, such as increased work motivation, performance, and job satisfaction, through the lens of perceived meaningfulness, responsibility, and understanding of the results of their work (Hackman & Oldham, 1974). Among the job characteristics, feedback at work may possess the strongest correlation with flow, as unambiguous feedback is one of the nine primary conditions for attaining a flow experience (Csikszentmihalyi, 1996). Furthermore, I anticipated that skill variety may have a negative association with flow, especially in work roles that require managing multiple responsibilities at once, as total concentration is another dimension of psychological flow (Csikszentmihalyi, 1990). An example of this is a healthcare worker role, where constant task-switching and

multitasking on the job (as documented by Walter et al., 2014) could potentially cause interruptions in an employee's flow while performing a specific task.

The Job Demands-Resources Model. In addition to examining job characteristics, the Job Demands-Resources Model (JD-R Model; Bakker & Demerouti, 2007) is also relevant to this research. According to Bakker and Demerouti (2007), employees often strive to find a balance between the demands of their work and the resources available to meet those demands. If the demands of their work exceed the available resources, employees may experience increased work strain, leading to worsened job performance; conversely, if the resources are sufficient to meet the demands, employees may experience increased work motivation, leading to higher job performance (Bakker & Demerouti, 2007). Flow Theory and job demands and resources are often studied together (Bakker & van Woerkom, 2017), as both concepts are related to the challenges and skills relevant to work tasks. Additionally, the JD-R Model is a widely used paradigm for understanding the relationship between flow and work engagement (Farina et al., 2018) and for informing the implementation of work engagement interventions on the job (Yan & Donaldson, 2022).

The Conservation of Resources Model. The Conservation of Resources (COR) Model (Hobfoll, 1989) is a resource-based framework which suggests that employees seek to collect and protect various resources on the job, including organizational resources (e.g., pay, supervisor support) and personal resources (e.g., skills, knowledge). When these resources are threatened, stress may emerge, potentially resulting in psychological or physiological harm (Hobfoll, 1989). This paradigm is relevant for understanding work-related flow experiences because a higher degree of personal and organizational resources may allow employees to further broaden their

skills, set work goals, and avoid the distractions necessary to enter flow, while threatened resources may produce the opposite effect (Salanova et al., 2006).

Flow at Work

The proclaimed "father of flow" Mihaly Csikszentmihalyi (1990) noted that nearly any activity imaginable can become a flow experience, whereby an individual intertwines with the task at hand in a way such that attention is fully focused in the present moment. However, because researchers found this highly productive state to be more prevalent at work than in leisure (Csikszentmihalyi & LeFevre, 1989), it is important that organizations and leaders place an emphasis on fostering work-related flow to improve employee performance and health outcomes.

Flow at work is associated with a number of occupational health constructs across various job contexts. Notably, a systematic review of both cross-sectional and longitudinal research indicates that flow possessed a negative relationship with burnout suggesting directional evidence that the frequent experience of flow on the job serves as a protective experience against short- and long-term burnout (Aust et al., 2022). This was consistent when examining burnout broadly as well as its factors, with flow exhibiting negative relationships with cynicism, emotional exhaustion, and positive relationships with personal accomplishment across several studies (Aust et al., 2022). Burnout has been found to be associated with a vast assortment of negative stress-related health outcomes (Maslach & Leiter, 2016), including "headaches, chronic fatigue, gastrointestinal disorders, muscle tension, hypertension, cold/flu episodes, and sleep disturbances" (p. 353), as well as mental health issues (e.g., anxiety, depression) and substance use disorders. Burnout has additionally been linked to behavioral outcomes such as work withdrawal (i.e., absence, intentions to quit, and turnover) (Maslach & Leiter, 2016), costing

organizations and employees alike. It is particularly important that work-related burnout is targeted through a variety of interventions due to its contagious nature, as burnout has documented spillover effects to colleagues at work and to family at home. Common examples of interventions include prevention programs targeting employees' coping strategies, self-efficacy, and social support (Maslach & Leiter, 2016). In addition, researchers found that setting daily goals related to mastery, understanding, and gaining resources predicted flow and its respective occupational health outcomes including engagement, which is in some respects considered to be the antithesis to burnout (Weintraub et al., 2021).

Although it is important to recognize that the ability to experience flow consistently varies based on individual traits (Csikszentmihalyi, 1990), we must also consider situational work design aspects that may contribute to flow. In a study conducted on architectural students, the authors found that roughly three-quarters of the variance in flow reported by the participants was due to state rather than trait factors (Fullagar & Kelloway, 2009). Furthermore, work high in the job characteristics of skill variety and autonomy was related to flow, and flow predicted positive mood and subjective well-being (Fullagar & Kelloway, 2009). These health outcomes align with performance outcome finding reported by Demerouti (2006), who found that motivating job characteristics allowed for a higher degree of work-related flow, and that flow improved both one's in-role performance (e.g. task performance) and organizational citizenship behaviors (e.g., willingness to help others). Moreover, work consisting of high skill and challenge has been found to be directly associated with performance outcomes, with positive mood partially mediating this relationship (Eisenberger et al., 2005). Of note, these significant relationships between flow and performance only appeared to occur with employees high in

conscientiousness and need for achievement, respectively (Demerouti, 2006; Eisenberger et al., 2005).

In terms of flow at work, it is also important to understand how one may manipulate aspects of their work context that may improve flow and additional positive outcomes. Work context is broadly defined as the combination of physical and psychosocial environmental factors that play into employee experiences and outcomes (e.g., motivation, flow, performance), a "structured amalgam of informational, physical, and conceptual resources" (Kirsh, 2001, p. 306). Because the design and content of one's work stems from the context in which it takes place, Parker and colleagues (2001) argued that there is no one work design that fits all, as it is fully dependent on work context including organizational factors (e.g., technology available, management style), individual factors (e.g., self-efficacy, interpersonal trust) and work characteristics (e.g., skill variety, team autonomy). Accordingly, employees may tend to proactively change their working environment through several self-determination strategies, including self-leadership, job crafting, playful work design, and utilizing specific strengths (Bakker & van Woerkom, 2017). These strategies can fulfill several needs on the job, promoting flow at work and leading to improved aspects of performance, such as task performance, creativity, and productivity (Bakker & van Woerkom, 2017). Additionally, levels of performance may inform the organization through the lens of human resources practices and leadership, as well as influence employees' resources like self-efficacy, optimism, and resilience at work. These organizational and personal resources may then feed back into how employees choose (or fail to choose) certain self-determination strategies, or even moderate the relationship between self-determination and flow (Bakker & van Woerkom, 2017).

As well as self-determination strategies, flow influences how employees preserve and protect resources on the job, particularly through the lens of resource-related theories such as the Job Demands-Resources Model (Bakker & Demerouti, 2007) or the Conservation of Resources Theory (COR; Hobfoll, 1989). In a sample of teachers, Salanova and colleagues (2006) found that organizational resources such as social support and innovation climate, and personal resources such as self-efficacy, were tied to the occurrence of flow at work. Further, they demonstrated a reciprocal relationship between flow and resources, whereby aspects of flow at work (e.g., absorption, work enjoyment, intrinsic work motivation) predicted an increase in both types of resources over time. The authors noted that these findings build upon COR by stating that employees may not only be motivated to protect their resources to evade stressful outcomes but also to experience improved work outcomes such as the experience of flow (Salanova et al., 2006).

In addition to the work experience itself, flow research has demonstrated implications for how employees recover from work on the job and at home. For instance, Demerouti and colleagues (2012) found that each dimension of flow at work (operationalized by Bakker, 2008) demonstrated associations with positive non-work outcomes (2012). Specifically, the factors of absorption and intrinsic work motivation were linked to increased vigor in work and home activities, and work enjoyment was linked to improved vigor and reduced exhaustion, both at home and at work. Interestingly, this positive spillover effect was stronger when employees did not adequately recover through the use of work breaks, suggesting that flow may act as a "cushion" for employee well-being at home when reliable recovery at work fails to occur. Additionally, participants experienced improved vigor and reduced exhaustion at home particularly when they psychologically detached from their work at home (Demerouti et al.,

2012). This study is supported further by longitudinal data from Mäkikangas et al. (2010), who found that exhaustion negatively predicted both job resources and flow for employment agency workers. Moreover, this aligns with the Stressor-Detachment Model (Sonnentag & Fritz, 2015), which states that psychological detachment from work (PDfW) inhibits the direct relationship between stressor and strain. In total, these findings suggest that organizations should promote conditions that allow employees to experience flow at work on a regular basis (e.g., clear goals, unambiguous feedback), particularly in roles with limited break time, and provide resources that allow for employee PDfW at home.

One particular construct that can significantly affect one's flow and well-being outcomes is one's unfinished tasks at work, or work tasks that are left in an incomplete or unsatisfactory state at the time of ending one's working period. In a series of studies combining cross-sectional and daily diary methods, Peifer et al. (2020) found that heightened levels of unfinished work tasks were negatively correlated with flow during work and during evening activities, as well as employee well-being. Mediation analyses revealed that reduced flow partially mediated the relationship between unfinished tasks and reduced well-being (Peifer et al., 2020). Thus, these findings supported the evidence-backed notion that work-related flow is crucial for employee experiences of PDfW.

Flow and Creativity

It is well documented throughout the literature that flow experiences can be created by situations consisting of high degrees of challenge, skill, and creativity (Csikszentmihalyi, 1990; Fullagar & Kelloway, 2009). Flow has been found to predict creativity (Amabile et al., 1996; Zubair & Kamal, 2015), as well as be an outcome of the creative process (Csikszentmihalyi, 1996). Additionally, flow has been studied in a wide variety of creative roles, including but not

limited to musicians (Bakker, 2005; MacDonald et al., 2006; Sinnamon et al., 2012), theater actors (Martin & Cutler, 2002), artists (Csikszentmihalyi, 1990; Schere, 1998), writers (Schere, 1998), architects (Fullagar & Kelloway, 2009), teachers (Bakker, 2005; Shim et al., 2022), and engineers (Schere, 1998). Given that flow was found to be more prevalent at work than in leisure (Csikszentmihalyi & LeFevre, 1989), it is important that leaders design work tasks and create social environments that foster flow. Employees who experience flow may be more likely to foster a sense of creative problem-solving (Amabile et al., 1996), and this is supported when leadership promotes creative work environments (Amabile et al., 2004). Furthermore, opportunities for creativity at work have been found to strengthen the relationship between employee intrinsic motivation and flow (Moneta, 2012).

Creativity and flow may create spillover effects between people and situations. For a population of teachers in a creative environment (i.e., music education), a variety of resources such as autonomy, feedback, and social support were found to contribute to their challenge-skill balance (Bakker, 2005). Furthermore, certain dimensions of teachers' flow were correlated with aspects of student flow, providing some evidence of a flow spillover effect from teachers to learners. Are such spillover effects prevalent in a more traditional organizational context (i.e., leader flow spilling over into employee flow experiences)? If a parallel effect exists, this could simply be a product of a joint climate for creativity between leaders and members of an organization, so future research in this area would most certainly be of interest.

The Creative Process

For the proposed study, I am interested in examining how workers experience flow, and how that may vary by the extent to which work involves creativity. Researchers studying creativity have tested and identified different steps of creative processes that appear to be

consistent across a variety of situations. The history of creative process theories began with Dewey's model of creative problem-solving (1910), expanded by Wallas (1926) to include stages of preparation, incubation, illumination, and verification. Wallas's four-stage model was widely accepted but critiqued for conceptual issues (e.g., Eindhoven and Vinacke (1952) describe creativity as a nonlinear blend of processes), as well as methodological flaws of other studies (e.g., Patrick, 1935) in support of Wallas's creative process (Lubart, 2001). Subsequent adaptations by Osborn (1953), Merrifield and colleagues (1962), and Parnes (1967) introduced additional stages and refinements, eventually leading to Mumford and colleagues' (1991) model.

Despite the turbulent history of conceptualizations of the creative process, Mumford and colleagues' (1991) model is the standard model of the creative process to this day (Mumford & McIntosh, 2017). This model revolves around three core assumptions as well a number of core subprocesses that comprise the overarching creative process of problem-solving. These assumptions include (a) creative problem-solving entails crafting sophisticated, innovative, and refined answers to intricate, new, and ambiguous problems, (b) this necessitates some value of former knowledge, training, or understanding, and (c) although various areas of performance require distinct knowledge prerequisites and handle stress, significance, and procedures differently, the underlying core processes for creative problem-solving remain the same across most areas of pursuit (Mumford & McIntosh, 2017). The model also posits underlying processes consisting of (a) problem definition, (b) information gathering, (c) concept/case selection, (d) conceptual integration, (e) idea generation, (f) idea evaluation, (g) implementation planning, and (h) adaptive execution (Mumford et al., 1991; Mumford & McIntosh, 2017). Although Vincent et al. (2002) argued that the underlying forces for creative problem-solving consist of high levels of expertise, intelligence, and divergent thinking (i.e., brainstorming multiple creative solutions to a

problem), the validity for this model is evident across the literature nonetheless, with findings supporting the predictive validity of individual core processes on creative problem-solving (Mumford & McIntosh, 2017; Mumford et al., 1997). Additionally, acting upon these subprocesses was strongly linked to effective creative performance, particularly in jobs where creative thought is highly valued (Vincent et al., 2002). Furthermore, the order of processes proposed by Mumford and colleagues' model (1991) was supported through the finding that flaws made in earlier subprocesses (e.g., problem definition) has a profound effect on later stages of the creative process (e.g., information gathering) (Friedrich & Mumford, 2009). In this research study, the Mumford et al. (1991) model served as a foundation for the development of my model to understand the creative process in a work setting.

Other frameworks aiming to capture creativity consist of facet and cognitive frameworks, in addition to process models (Mumford et al., 1991). Rather than identifying creativity as a process through distinct steps, facet models explain creativity as an outcome of multiple attributes, such as personality, social influences, and skill utilization, and motivation (Mumford et al., 1991). Alternatively, cognitive models promote the notion of creativity as a series of mental processes, such as encoding stimuli into memory and utilizing heuristics to make problem-solving decisions (Mumford et al., 1991). For the sake of this study, I focused on measuring engagement in the creative process to determine if any steps of this process are more significantly tied to work design antecedents, flow at work, or occupational health outcomes than other steps in this process. Creative process engagement (CPE) was defined as "employee involvement or engagement in creativity relevant cognitive processes, including (1) problem identification, (2) information searching and encoding, and (3) idea and alternative generation" (Zhang & Bartol, 2010, p. 111-112). Although the authors acknowledged the existence of the

evaluation of ideas and alternatives within the creative process (i.e., the final 3 stages of the Mumford et al., 1991, model), they chose to omit a scale factor related to these concepts due to the fact that this implementation phase is less dependent on actual development of creative ideas (Zhang & Bartol, 2010). I chose to utilize the measurement of CPE within my research model due to the finding that minimally engaging in the creative process may create problem solutions that are neither imaginative nor helpful. However, when higher degrees of effort are placed in each step of this process, innovative and constructive problem solutions are more likely to emerge (Zhang & Bartol, 2010). This is consistent with the findings of Runco (1986), who reported that initial solutions generated to combat a problem are often more mundane and less creative compared to ideas generated later in the creative process (Zhang & Bartol, 2010).

Creative & Artistic Professions

One goal of this study was to investigate how various characteristics of jobs relate to creative processes and experiences of work-related flow. According to the National Center for O*NET Development (2023), there are a variety of occupations that are characterized as involving a high level of creative thinking. One example is music therapists (MTs), who are ranked highest among occupations in terms of the importance that thinking creatively plays on the job based on O*NET ratings (National Center for O*NET Development, 2023). MTs utilize empirically supported music-based interventions (e.g., singing, songwriting, playing instruments, listening to music) to address various physical, emotional, cognitive, and social needs, with the goal of enhancing individuals' well-being and achieving therapeutic objectives (Wong, 2023). MTs work with clients across different physical/neurological statuses and in a plethora of job settings (e.g., schools, hospitals, private practice) (Wong, 2023). It has been recognized that experiences of music and flow possess a unique level of overlap (Fidelibus, 2004), with similar

qualities (e.g., concentration, absorption, challenge-skill balance) and outcomes (e.g., self-growth, self-knowledge, self-esteem). Further, flow is proposed as a bidirectional construct within the realm of music therapy, with both MTs and their clients experiencing frequent levels of flow during sessions (Silverman & Baker, 2018). This may be the result of MTs utilizing their skills in the challenging task of curating interventions based on both client needs and data-driven strategies, while clients may experience a challenge-skill balance on the receiving end of an intervention (Silverman & Baker, 2018).

Two common themes across the assessment of music therapy interventions include its communicative and relationship-building tendencies, both contributing to the health of clients and MTs alike. Some techniques emphasizing both qualities are community music and improvisation, which were linked to a number of flow and well-being outcomes in a study of hospice patients with cancer (e.g., increased absorption, self-confidence, relaxation, and relief of stress), even for participants not self-described as musicians (MacDonald, 2013). Improvisation is a common practice in music therapy, upon which MTs also report frequent flow experiences and improved well-being (e.g., perceived ease and pleasure) (Wilhelmsen, 2012). Another technique utilizing both communication and relationship-building is known as therapeutic songwriting, an intervention used to assist clients with a variety of diagnoses as an engaging avenue for self-exploration, boosting mood, and producing a gratifying artistic outcome (MacDonald, 2013). In this collaborative activity between MT and clients, qualitative analyses reveal that mutual flow experiences appear through facets of a challenge-skill balance, increased intrinsic motivation, and the transformation of time (MacDonald, 2013). Lyric writing is one example of a music therapeutic intervention linked with flow, but the relationship appears to be even stronger when clients also create music to go along with their lyrics, suggesting that

musical experiences of increased creativity may be predictive of deeper experiences of flow (Silverman & Baker, 2018). In summary, while it is evident that one of the goals for MTs is to act as a facilitator of flow for their clients (Wilhelmsen, 2012), this facilitation may function in both directions, contributing to improved well-being outcomes for both parties.

In addition to music therapists, professional musicians likely experience flow on a regular basis, with research revealing ties between these flow experiences and both creativity and occupational health. In a review of the literature examining flow to musicians, researchers found that common methods to assess flow within musicians include measuring dispositional flow, as well as quantitative self-report and qualitative interview techniques (Tan & Sin, 2021). Csikszentmihalyi discovered that those who play musical instruments tend to experience flow more frequently, with additional studies confirming ties between flow in music and increased subjective well-being (Tan & Sin, 2021). Flow in music performance possesses a number of psychological and physiological associations, being tied to reduced stress and anxiety, as well as improved practice efficiency, self-efficacy and life satisfaction (Tan & Sin, 2021). Furthermore, flow in piano performance is correlated with a number of skeletomuscular, cardiovascular, and respiratory measures (de Manzano et al., 2010).

Although the intent of this section is to focus on professional musicians, flow possesses documented implications for the development of skills of young musicians, including ties to increased practice as well as high achievement orientation (O'Neill, 1999; Tan & Sin, 2021). This is particularly important for elite student musicians (i.e., those who study music performance full-time with the aim of playing music professionally), as well as amateur student musicians, who reported experiencing flow frequently (ninety-five and eighty-seven percent of participants, respectively) (Sinnamon et al., 2012). Certain aspects predictive of creative

performance when developing music skills include encouraging self-direction and exploring music in addition to facilitating intrinsic motivation (O'Neill, 1999), two factors akin to the autotelic experience of flow described by Csikszentmihalyi (1990). Music composition is one example in which flow plays a role, with two studies finding that flow predicted higher levels of creativity and quality of work of student composers (Byrne et al., 2003; MacDonald et al., 2006). Further, several elements of flow are important in the training regimens of performing musicians, such as setting goals and receiving feedback through mentors, and challenging one's skills by performing. Because daily music practice has predicted both global flow as well as its respective components (Araújo & Hein, 2019; Tan & Sin, 2021), flow may be a bridge for motivation and skill development that can elevate music students to a desired professional level.

Moreover, music performance anxiety (MPA) is a well-documented phenomenon within the music literature, with several ties to occupational health identified. Across multiple types of performing music artists, MPA is found to be related to episodes of acute anxiety, depression, increased stress and reduced professional and personal functioning (Kenny, 2005). Physiological symptoms of MPA include nausea, dizziness, trembling (Steptoe, 1989), heightened heart rate and blood pressure (Spahn et al., 2010), which can lead to chronic health outcomes when combined over the length of a musician's career. In a large sample of orchestra musicians (N = 2212), higher levels of occupational stress broadly correlated with a number of musculoskeletal, respiratory, and cardiovascular issues, in addition to sleep disturbances and stage fright (Middlestadt & Fishbein, 1988).

Although medication is one potential course of action to target severe MPA directly, a cognitive method identified to reduce the occurrence of MPA is for musicians to tap into flow during gigs or practice. With the high prevalence of beta-blocker medications used to target MPA

(Cohen & Bodner, 2019; Kenny, 2011), it is important to highlight effects associated with this approach. Although beta-blocker use is helpful for reducing many of the physiological symptoms of MPA, it is also tied to negative side effects (e.g., a dulled sense of the playing experience, reduced effectiveness with time); this is especially concerning given that beta-blocker use may be under-reported and frequently used without medical supervision (Cohen & Bodner, 2019; Kenny, 2011). These high beta-blocker usage rates may reflect the majority of professional performing musicians reporting MPA, as well as the use of substances or medications at least once to reduce its effects (Cohen & Bodner, 2019).

Conversely, rooted in positive psychology, flow has been identified as a less invasive approach to reduce the psychophysiological impact of MPA. Certain interventions (e.g., yoga, meditation) have shown to aid professional musicians in relieving performance anxiety, improving mood, and experiencing flow (Khalsa & Cope, 2006; Khalsa et al., 2009). Flow and MPA are described as "antithetical states in which the presence of one minimizes the magnitude of the other" (Cohen & Bodner, 2019, p. 430), suggesting that facilitating flow on the job can help improve well-being and optimize performance for professional musicians. Kirchner and colleagues (2008) discovered in their study of undergraduate music students that while both MPA and flow can coexist, they were significantly and negatively correlated, indicating that the conditions conducive to flow in performance should be emphasized, acknowledged, and encouraged among musicians. Qualitative interviews evaluating professional and student musicians' perspectives on flow revealed that these conditions encompass aspects including quality practice and performance preparation, intrinsic motivation, high degrees of focus, social support, and awareness of one's body, skills, and self-confidence (Antonini Philippe et al., 2022).

Ultimately, to reduce MPA, professional musicians can engage in a number of strategies to attain frequent flow experiences themselves, including mental preparation, establishing a consistent work agenda, mastery goal setting, cognitive restructuring strategies to foster adaptive thinking, as well as kinesthetic awareness and attentional focus techniques (Antonini Philippe et al., 2022).

Aside from music therapists, the National Center for O*NET Development (2023) reported that dance choreographers engage in thinking creatively more than any other profession. Choreographers and dancers work creatively in conjunction with one another, and it is commonplace for choreographers to experience sensations of inspiration, motivation, and flow during their work (Smith, 2012). Due to what is known about the potential of flow spillover effects in creative settings (Bakker, 2005), it is no surprise that dancers engage in flow frequently as well (Hefferon & Ollis, 2006). In their qualitative analyses of professional dancers' flow experiences, Hefferon and Ollis found that the flow experiences of dancers matched the characteristics of Csikszentmihalyi's nine-dimension framework, with flow related to improved confidence, concentration, and performance, as well as reduced negative thoughts, apathy, and anxiety. Interpretive phenomenological analysis also revealed a number of antecedents for professional dancer flow experiences, including close social support from choreographers and fellow dancers, in addition to constructive feedback and pre-performance preparation (Hefferon & Ollis, 2006). Music also plays a significant role in professional dance and can serve as either a facilitator or inhibitor of flow depending on a number of factors (Panebianco-Warrens, 2014). Although professional dance possesses a variety of physiological and psychological demands, the psychological benefits of flow serve as a motivational factor for dancers to return to the dance studio day after day (Hefferon & Ollis, 2006). These findings could possibly serve as a

framework to enhance motivation for other creative or artistic professions, particularly those with high tendencies for burnout or turnover.

Flow has also been studied in conjunction with more serious psychological health issues with dancers, including the negative effects associated with adverse childhood events (ACEs) such as abuse or neglect (Thomson & Jaque, 2018), as well as self-objectification and frequent body surveillance associated with eating disorders (Tiggemann & Slater, 2001). In a sample of professional performing artists consisting of primarily dancers, nearly a fifth of participants reported experiencing childhood trauma, with more ACEs predicting higher levels of anxiety, shame, and adult trauma (Thomson & Jaque, 2018). However, participants with higher degrees of ACEs also reported more intense creative experiences, with no significant differences in flow compared to participants who experienced few or no ACEs (Thomson & Jaque, 2018). With creativity possessing ties to improved executive functioning and resilience (Thomson & Jaque, 2018), these findings suggest that work may serve as an "escape" for performers with former ACEs, where they can experience increased flow and absorption as well as acquire some psychological tools to develop higher levels of resilience. Furthermore, dancers are at higher risk of developing eating disorders (e.g., anorexia nervosa) compared to other occupations (Arcelus et al., 2014), which is tied to frequent self-objectification, body surveillance, and number of other detrimental psychological and physiological effects (Tiggemann & Slater, 2001). In particular, frequent body surveillance by female dancers predicted a significant decrease of flow on the job, preventing them from experiencing its beneficial motivational and well-being effects (Tiggemann & Slater, 2001). This may be explained by the fact that mentally or physically dwelling on parts of the body can minimize one's ability to lose self-consciousness or merge their awareness with the action at hand. Observing flow in conjunction with these three creative

professions allows us to gain some insight into how flow may interact with creativity, and in-turn, stages of the creative process. Although these professions are characterized highly in terms of the importance of "thinking creativity," many occupations incorporate creative thinking and problem-solving in work tasks, suggesting a latent creative profession spectrum. This breadth of knowledge of engaging in work-related flow and creative processes supports the emergence of the following research questions.

Current Research Questions

As stated earlier, the goal of this study was to investigate how various job characteristics relate to flow at work, and in turn relate to worker well-being. In addition, I wanted to study how elements of job characteristics relate to engagement in creative processes at work across a variety of jobs. More specifically, this study investigated the following research questions:

1. How are job characteristics related to experiencing flow at work when considering engagement in the creative process?
2. Is creative process engagement related to occupational health outcomes when considering work-related flow?

Hypotheses

In order to investigate these research questions, I proposed to test the model depicted in Figure 1 (p. 72). Based on the research questions stated above, I formed eleven distinct hypotheses in response to these queries.

Hypothesized Direct Relationships

Given that work tasks rated highly in Hackman & Oldham's job characteristics (1974) allow employees to expand their skills employed at work, responsibility on tasks, and work

autonomy, this may ultimately result in an increase in creative opportunities at work. Therefore, I hypothesized:

(H1) Job characteristics (i.e., feedback, task significance, task identity, autonomy, and skill variety) will be positively related to CPE (i.e., problem identification, information searching and encoding, idea generation).

When employees enter a flow experience, they are more inclined to nurture a habit of innovative problem-solving, and this propensity is reinforced when leadership actively encourages creative work environments (Amabile et al., 2004). Therefore, I hypothesized:

(H2) CPE (i.e., problem identification, information searching and encoding, idea generation) will be positively related to work-related flow (i.e., absorption, enjoyment, intrinsic work motivation).

According to the Job Demands-Resources Theory (Bakker & Demerouti, 2007) and previous empirical research based on this theory, employees who have sufficient resources to perform their jobs and meet their job demands will experience higher levels of work motivation. Flow may also be conceptualized as a positive motivational state serving as a resource to facilitate work, and in turn, positive aspects of worker well-being. Therefore, based on the JD-R theory, I proposed the following four hypotheses:

(H3) Work-related flow (i.e., absorption, enjoyment, intrinsic work motivation) will be negatively related to burnout (i.e., personal and work-related burnout).

(H4) Work-related flow (i.e., absorption, enjoyment, intrinsic work motivation) will be positively related to job satisfaction.

(H5) Work-related flow (i.e., absorption, enjoyment, intrinsic work motivation) will be positively related to life satisfaction.

(H6) Work-related flow (i.e., absorption, enjoyment, intrinsic work motivation) will be positively related to psychological recovery from work experiences (i.e., psychological detachment and relaxation).

Hypothesized Mediated Relationships

The next part of the research model illustrates proposed mediating variables. Because opportunities for creativity at work may act as an intermediary variable between employee motivation and flow (Moneta, 2012), it was logical to hypothesize that engaging in creative processes also serves as a mediator between motivating job characteristics. Therefore, I hypothesized the following:

(H7a) Job characteristics (i.e., feedback, task significance, task identity, autonomy, and skill variety) will be positively related to work-related flow, and (H7b) that these relationships will be partially mediated by CPE.

Finally, with flow identified as a potential protective factor against burnout (Aust et al., 2022), as well as linked to increased work enjoyment, positive emotions, self-efficacy, self-rated job performance, and life satisfaction (Burke, 2010; Farina et al., 2018), I anticipate work-related flow to explain the potential ties between CPE and indicators of worker well-being. In other words, when employees engage in creative processes at work, they may foster flow experiences more frequently (Csikszentmihalyi, 1996), and in turn, attain an improved sense of well-being. Thus, I hypothesized:

(H8a) CPE will be negatively related to workers' perceptions of burnout (i.e., personal burnout, work-related burnout, client-related burnout), and (H8b) that these relationships will be partially mediated by work-related flow.

(H9a) CPE will be positively related to job satisfaction, and (H9b) that this relationship will be partially mediated by work-related flow.

(H10a) CPE will be positively related to life satisfaction, and (H10b) that this relationship will be partially mediated by work-related flow.

(H11a) CPE will be positively related to recovery experiences (i.e., psychological detachment, relaxation), and (H11b) that these relationships will be partially mediated by work-related flow.

METHOD

Participants

Participants in this study were $N = 326$ U.S. adults who were at least 18 years of age and working for pay at least 10 hours per week. On average, study participants were $M = 36.08$ years old ($SD = 12.00$). Participants were also mostly white (82.14%), women (83.12%), and approximately half reported having earned a master's degree as their highest level of education (47.73%).

Across the sample, study participants held a wide variety of occupations across varied industries. Participants primarily consisted of music therapists (64.71%), who according to O*NET, have a job in which "thinking creatively" on the job is more important than any other occupation among the nearly nine hundred other occupations listed in its database. Participants mostly worked in the healthcare industry (70.25%), worked an average of 37.68 hours per week ($SD = 11.19$), and worked in the same job, occupation, and organization for 6.09 years ($SD = 8.16$), 9.33 years ($SD = 9.91$), 5.37 years ($SD = 7.02$), respectively.

Procedure

I recruited participants through an online convenience sample, aiming to target a wide variety of professions that vary in the extent to which they are characterized as "creative." To help acquire a sample of participants whose jobs vary across the creative profession spectrum, I searched O*NET to identify jobs that were deemed to involve "thinking creatively" (i.e., defined by O*NET as "developing, designing, or creating new applications, ideas, relationships, systems, or products, including artistic contributions") to lesser or greater degrees. Occupations for which "thinking creatively" is highly important to the job include music therapists, choreographers, and

art directors, with the lower end of the spectrum consisting of court reporters, recyclable material collectors, and medical transcriptionists (National Center for O*NET Development, 2023).

I posted the survey online via social media (e.g., LinkedIn, Instagram), and recruited participants through online message boards (e.g., Reddit) to target workers in specific jobs, including but not limited to artists, music educators, and fashion designers. Additionally, I used word-of-mouth to target more specific professions ranging from highly creative to lower in creativity, such as music therapists and performing artists through the Colorado State University School of Music, Theatre, and Dance, as well as court workers and assistants through personal contacts. Through this process I acquired an email list from the Certification Board for Music Therapists and sent my survey link to over nine thousand board-certified MTs.

The survey was administered online via Qualtrics through Colorado State University. The first page of the survey presented an informed consent statement. Individuals who agreed to participate responded to survey items about job characteristics, creative process engagement, work-related flow, and occupational health variables. Furthermore, items targeted participants' job titles, related industry, job tenure, general work tasks, as well as demographic variables (e.g., race/ethnicity, gender, education level). Three attention check items were included in the survey, and if participants failed to answer two of the three attention check items correctly, their data was withheld from analyses. After completing the survey, participants had the option to enter their email address to qualify to receive one of eighty $10 Amazon.com gift cards.

Measures

Self-report survey measures were used to identify levels of proposed antecedents (i.e., job characteristics), mediators (i.e., creative process engagement, work-related flow), and worker well-being indicators (i.e., burnout, job satisfaction, life satisfaction, and psychological recovery

from work). The measures utilized a 5-point Likert-type rating scale with anchors spanning from (1) strongly disagree to (5) strongly agree, unless otherwise specified. In cases where multiple items were utilized to gauge levels of a construct, composite scores were generated by averaging participants' responses across all items within that particular scale. Elevated scores on the measures signify greater levels of the corresponding construct. Coefficient alphas assessing internal consistency reliability are shown along the diagonal in Table 3. See the Appendix for a full list of specific items.

Proposed Antecedents

Job characteristics. To measure job characteristics, I utilized the 15-item Job Diagnostic Survey (JDS; Hackman & Oldham, 1974). This instrument was designed to assess levels of the five core job characteristics proposed by Hackman and Oldham, consisting of skill variety (i.e., degree to which a job requires multiple skills, abilities, and tasks), task significance (i.e., degree of importance a task has on an individual, team, or organization), task identity (i.e., degree to which a job requires employees to complete whole and identifiable work tasks), autonomy (i.e., degree of independence and control an employee has in their work tasks), and feedback (i.e., degree of information an employee receives about their performance). An example item of the JDS includes “After I finish a job, I know whether I’ve performed well” (Feedback dimension). Although scholars have debated the factor structure of the JDS (Harvey et al., 1985), the measure possesses adequate validity and internal consistency reliability (Hackman & Oldham, 1974; Harvey et al., 1985), and has been successfully used across a variety of jobs including hotel workers (Lee-Ross, 1998), oncology nurses (Charalambous et al., 2013), and the national guard (Harvey et al., 1985). Scale scores were constructed for each of the five job characteristics.

Proposed Mediating Variables

Creative process engagement. I used the 11-item Creative Process Engagement (CPE; Zhang & Bartol, 2010) measure with CPE defined as "employee involvement or engagement in creativity relevant cognitive processes, including [the factors of] (1) problem identification, (2) information searching and encoding, and (3) idea and alternative generation" (p. 112). The goal of implementing this measure was to further understand if work design elements contribute to more engagement in specific stages of the creative process than others, or if certain stages of the creative process possess stronger ties to flow and occupational health outcomes than others. This 5-point scale's anchors ranged from (1) never to (5) always, with an example item being "I spend considerable time shifting through information that helps to generate new ideas" (Idea and Alternative Generation dimension). In research by Zhang and Bartol (2010), three factors were validated by subject matter expert review, with acceptable model fit and internal consistency reliability coefficients (e.g., $\alpha > .77$) This measure has been used in a variety of industries including information technology (Tolkamp et al., 2022; Zhang & Bartol, 2010), biotechnology, engineering, logistics, and pharmaceuticals (Tolkamp et al., 2022).

Work-related flow. I adopted the 13-item Work-Related Flow Inventory (WOLF; Bakker, 2008), which measures flow at work operationalized as brief moments of employee optimal experiences marked by the factors of absorption, work enjoyment, and intrinsic work motivation. This instrument prompted participants to reflect on their recent work experiences using a 5-point Likert scale, ranging from (1) never to (5) always. An example item from the WOLF consists of "I get my motivation from the work itself, and not from the reward for it" (Intrinsic Work Enjoyment dimension). In its original validation, the WOLF demonstrated high factorial validity (i.e., a confirmatory factor analysis promoted a 3-factor model over a unidimensional model), construct validity (i.e., 3 factors significantly correlated with general flow index), and predictive

validity (i.e., significant correlations with in-role and extra-role performance), in addition to internal consistency reliability ($.63 < \alpha < .96$) and test-retest reliability of a 6-week test interval (.75; Bakker, 2008). Bakker noted that data from only one out of seven samples (i.e., a temporary work agency) produced a Cronbach's α below .70, and argues that the remaining reliability coefficients are evident of a consistent measurement of work-related flow. The WOLF has been utilized in industries such as education, finance, government, and hospitality (Demerouti et al., 2012), and has been additionally validated cross-culturally (Bakker & van Woerkom, 2017).

Proposed Outcomes

Burnout. I used two scales of the Copenhagen Burnout Inventory (CBI; Kristensen et al., 2005) to assess levels of personal and work-related burnout. Personal burnout is defined as the combination of psychological and physiological fatigue and exhaustion experienced by an individual, whereas work-related burnout uses this same definition as it is perceived to relate to an individual's work tasks. These scales totaling 13 items CBI were scored on a 5-point Likert scale, ranging from (1) never to (5) always. An example item of the CBI is "Are you exhausted in the morning at the thought of another day at work?" (Work-Related Burnout scale). In previous research, the personal burnout and work-related burnout scales each possessed a sufficient Cronbach's α of .87, as well as predictive validity in terms of anticipating future sickness absence, sleep disturbances, pain-killer usage, and turnover intentions (Kristensen et al., 2005). Although the CBI additionally contains a client-related burnout scale, I choose to omit this scale for my survey as not all participants may deal directly with clientele in their role (e.g., court assistants), thus the inclusion of this scale is not relevant to all participants and may alienate a significant portion of desired participants and result in a high level of missing data.

Overall, the CBI has been utilized in a variety of job settings, including the human service sector (Borritz et al., 2006) and education (Denny et al., 2011).

Job satisfaction. For the job satisfaction measure, I selected three items from Cammann et al. (1983) which were recently validated in research by Gibbons & Fisher (2023). A confirmatory factor analysis of these items fit a one-factor model with high item factor loadings (ranging from .77 - .91) and appropriate internal consistency reliability ($\alpha = .86$). The three items consist of 1) "All in all, I am satisfied with my job," 2) "In general, I don't like my job (reverse-coded)," and 3) "In general, I like working for this job." Job satisfaction denotes the overall judgment or evaluation that a person has about their occupation, encompassing the contentment received from their job ranging from favorable to unfavorable (Judge et al., 2017). Although job satisfaction can be measured globally (i.e., overall job satisfaction) or by facet (i.e., satisfaction related to individual job elements) (Judge et al., 2017), I elected to use a three-item global instrument to detect participants' comprehensive assessments of their jobs, while also reducing participant burden, criterion contamination, and increasing face validity. Furthermore, while facet measures can gauge employee satisfaction related to aspects such as pay and leadership, this study does not concern those factors, thus a global measure for our purposes is sufficient.

Life satisfaction. For the life satisfaction measure, I selected three items from Diener et al. (1985) which were recently validated in research by Gibbons & Fisher (2023). A confirmatory factor analysis of these items fit a one-factor model with high item factor loadings (ranging from .76 - .86) and appropriate internal consistency reliability ($\alpha = .85$). The three items consist of: 1) "As a whole, I am satisfied with my life," 2) "In most ways, my life is close to ideal," and 3) "The conditions of my life are excellent." Life satisfaction is defined as an

individual's comprehensive evaluation of their emotions and attitudes concerning their life at a specific moment (Diener et al., 1985). Similar to the job satisfaction measure, I used this global life satisfaction measure rather than a facet measure for the same reasons listed above.

Psychological recovery from work. I utilized the 16-item Recovery Experience Questionnaire (REQ; Sonnentag & Fritz, 2007) to assess the ways in which participants recover from their work, including the dimensions of psychological detachment from work and relaxation. The developers of this measure found adequate content and construct validity, internal consistency reliability (all factors with a Cronbach's $\alpha \geq .79$), and model fit (Sonnentag & Fritz, 2007). An example item from this scale consists of "I don't think about work at all" (Psychological Detachment dimension).

To simplify my hypothesized model and sharpen my focus on two more relevant outcome dimensions, I removed two factors from the REQ (Sonnentag & Fritz, 2007) from my model, including mastery (i.e., extracurricular pursuits that divert attention from one's professional responsibilities while offering stimulating challenges and opportunities for growth in different areas) and control (i.e., extent to which an individual can determine which pastime to engage in during their free time, as well as the timing and manner in which they partake in that activity). Although these individual behaviors may contribute to recovery experiences, I am more interested in whether employees who experience CPE and flow at work are able to psychologically detach themselves from their work, as well as engage in relaxation after work. By only including the REQ factors of psychological detachment and relaxation in my survey, I was able to 1) focus on the dimensions that make more conceptual sense with my model, and 2) reduce overall length of the survey. Although all four factors are strategies included in this

validated measure of recovery experiences, these two chosen factors may be more directly related to work-related flow.

Demographic Characteristics and other Key Items

In addition to scales assessing my proposed antecedents, mediators, and outcomes, I assess a number of demographic and other key items to differentiate between participant characteristics to explore potential intergroup differences.

Demographics. To describe the characteristics of the sample and obtain a greater depth of understanding demographic differences within my sample, I assessed participant race/ethnicity, education level, gender identity, and age. Racial and ethnic categories were derived from the 2020 U.S. Census, with a "check all that apply" approach to account for multiple identities. I also accounted for a wider span of identities in the gender item by including "Non-binary," "Transgender man," and "Transgender woman" as options.

Thinking creatively at work. To assess participants' own perceptions of the extent to which they think creatively on the job, I used the single-item measure used by O*NET: "To what degree does your job consist of 'developing, designing, or creating new applications, ideas, relationships, systems, or products, including artistic contributions?'" (National Center for O*NET Development, 2023). The response scale used was a 5-point Likert-type scale ranging from (1) to a very low degree to (5) to a very high degree.

Occupation. To categorize participants' occupations, I asked participants open-ended items such as "What is your job title?" followed by "Please list three of the job tasks that you do most often." Participants additionally chose from a drop-down menu of occupations from O*NET that best matched their own; this was included to assess the degree to which O*NET has recorded their occupation in terms of the importance of "thinking creatively" at work.

Tenure. To assess participant job, occupation, and organizational tenure, I asked "How long have you worked in your job with your current job title," "How long have you worked in your current occupation," and "Please indicate the number of years and months you have worked in your current organization." Participants responded using open-ended response options to indicate the number of years and months of tenure in each of these instances.

RESULTS

Data Cleaning

I received a total of *N*=1,280 responses to the survey. Once all of the study data were collection was completed, I conducted a series of analyses to review and clean the dataset. I conducted all statistical analyses using RStudio version 2023.06.1+524 (Posit Team, 2023). First, I strategized to generate and review frequency distributions to investigate missing and abnormal data. In the case of missing data, I planned to use the full information maximum likelihood (FIML) method, as FIML estimates have been shown to be less biased and more efficient under several missing data conditions (Enders & Bandalos, 2001). By checking frequencies for each variable, I verified that variable coding was correct. Next, I reviewed responses to attention check items as a check on participants' sufficient attention to and effort in responding to survey item content while responding to the survey. I withheld data from further analyses from any participant who failed to answer two of the three attention check items correctly. I reviewed and cleaned the data by doing the following: First, I removed the 31 responses that remained from pilot testing and the 399 responses that failed to respond correctly to 2 out of 3 attention check items. Next, I separated the remaining 850 responses into presumed bot (n = 344) and human responses (n = 506) based on their ReCAPTCHA score, utilizing the Qualtrics Fraud Detection guide (Qualtrics, 2024) as a resource for ReCAPTCHA score cutoffs. Because ReCAPTCHA scores are not a definite indicator of bot status (Qualtrics, 2024), I recategorized the presumed bot and presumed human response groups into final bot (n = 479) and final human response groups (n = 326), the latter of which I used for further data analyses. Along with the help of two undergraduate research assistants, we determined these final groups using a number of participant response factors (e.g., odd email address, job title, and job task responses). Once the

final human response group was determined, I computed descriptive statistics of all variables to ensure the data were ready for analysis. See Figure 2 (p. 71) for a flowchart and summary of data cleaning decisions.

Psychometric Data Analyses

Prior to hypothesis testing, I computed confirmatory factor analyses and the internal consistency reliability estimates (coefficient alphas) for each scale to assess the dimensionality and psychometric properties of study measures in this sample. Next, I computed scale scores for each scale or dimension of multi-dimensional scales. I examined descriptive statistics for all study variables, and Pearson correlation coefficients for all continuous variables to investigate bivariate correlations among items. I computed measures of central tendency and variability and examined response distributions for potential skewness by determining if skewness values fell between -2.0 and +2.0 (i.e., recommended decision rule for skewed distributions; Hair et al., 2010). All study variables in my proposed model were relatively normal and mesokurtic, according to recommendations by Hair et al. (2010). To test my hypothesized model, I used structural equation modeling, and assessed model fit statistics based on recommendations by Hu and Bentler (1999). In testing mediation, I used the modern product of coefficients approach (MacKinnon et al., 1995) using bootstrapped confidence intervals (CIs) with 5000 bootstrapped resamples per model. I chose this approach due to its higher level of statistical rigor compared to the Baron & Kenny (1986) causal steps approach (Preacher et al., 2007).

Confirmatory Factor Analyses

To ensure factor structure and model fit of each scale, I examined factor loadings and model fit statistics of each construct measure, utilizing cutoff recommendations from Hair et al. (2010) and Hu & Bentler (1999), respectively. According to Hair and colleagues (2010), an item

must have a factor loading of .35 or greater to be deemed significant for a sample size of 250 participants. According to Hu & Bentler (1999), statistical indices that support good model fit include the values of the comparative fit index (CFI) and Tucker-Lewis index (TLI) being greater than .90, root-mean-square error of approximation (RMSEA) being less than .06, and standardized root-mean-square residual (SRMR) being less than .08. Hu & Bentler (1999) also state that a nonsignificant χ^2 test ($p > .05$) indicates good model fit, but this statistic is highly sensitive to sample size. As for internal consistency reliability, Cronbach's alphas are reported along the diagonal in Table 3 (p. 70) which each value representing an acceptable reliability above .70 (Taber, 2018).

The Job Diagnostic Survey (JDS) factors of feedback, task significance, autonomy, and skill variety each possessed items with adequate factor loadings ($.520 < \lambda < .934$). However, task identity possessed one item (JDS_2: "I do a 'whole' and identifiable piece of work. That is, it is not a small part of the overall piece of work, which is finished by other people or by automatic machines") with an inadequate factor loading ($\lambda = .321$). Because latent variables ideally should not be composed of only 2 indicators (Kenny, 1979), I chose to model task identity as an observed variable averaged from its two remaining items for the remainder of my analyses. Since each of these factors only comprised 3 items, model fit statistics (i.e., χ^2, *CFI*, *TLI*, *RMSEA*, *SRMR*) were not generated.

The CPE factors of problem identification, information searching and encoding, and idea generation each demonstrated adequate factor loadings ($.513 < \lambda < .872$). When tested as a single factor scale, CPE also possessed good factor loadings ($.558 < \lambda < .866$). Aside from significant χ^2 tests and high RMSEA values, idea generation (*CFI* = .955, *TLI* = .910, *SRMR* = .042), and CPE as a whole (*CFI* = .939, *TLI* = .918, *SRMR* = .050) possessed good model fit. Since problem

identification and information searching and encoding only consisted of 3 items each, model fit statistics were not generated.

The Work-Related Flow Inventory (WOLF) factors of absorption, work enjoyment, and intrinsic work motivation each demonstrated adequate factor loadings ($.462 < \lambda < .904$). When tested as a single factor scale, work-related flow also possessed adequate factor loadings ($.440 < \lambda < .902$). Aside from significant χ^2 tests and high RMSEA values, absorption (*CFI* = .989, *TLI* = .966, *SRMR* = .024), work enjoyment (*CFI* = .975, *TLI* = .926, *SRMR* = .023), intrinsic work motivation (*CFI* = .951, *TLI* = .902, *SRMR* = .047), and work-related flow as a whole (*CFI* = .956, *TLI* = .945, *SRMR* = .045) possessed good model fit.

Personal burnout ($.617 < \lambda < .795$) and work-related burnout ($.415 < \lambda < .800$) each possessed good factor loadings. Aside from both scales having significant χ^2 tests and high RMSEA values (as well as a borderline TLI value for personal burnout), personal burnout (*CFI* = .938, *TLI* = .897, *SRMR* = .046) and work-related burnout (*CFI* = .967, *TLI* = .950, *SRMR* = .036) demonstrated adequate model fit.

Job satisfaction ($.706 < \lambda < .873$) and life satisfaction ($.732 < \lambda < .890$) both demonstrated adequate factor loadings. Since these scales only consisted of 3 items each, model fit statistics were not generated.

The Recovery Experience Questionnaire (REQ) factors of psychological detachment from work and relaxation both demonstrated adequate factor loadings ($.492 < \lambda < .895$). Psychological detachment from work possessed adequate model fit in terms of CFI and SRMR (*CFI* = .924, *SRMR* = .069), but not in terms of its χ^2 test, TLI, and RMSEA. Relaxation displayed excellent model fit across all fit statistics aside from its χ^2 test (*CFI* = .998, *TLI* = .993, *RMSEA* = .051, *SRMR* = .013). When tested as a one-factor scale, recovery experiences

possessed adequate model fit in terms of CFI and TLI (*CFI* = .935, *SRMR* = .904), but not in terms of its χ^2 test, RMSEA, and SRMR.

Hypothesis Testing

To test my hypotheses, I computed an overall structural equation model with all hypothesized paths specified. However, I was unable to fit this fully saturated model due to sample size constraints. Therefore, I tested portions of the hypothesized model by computing multiple structural equation models. This approach also allowed me to analyze results with greater attention to detail by considering specific dimensions of the constructs in the proposed model. The following section describes the models I computed and the results I obtained.

(H1) Job characteristics will be positively related to CPE.

To test Hypothesis 1, I first ran a SEM regressing a latent CPE variable on all five job characteristic latent variables. However, this model produced slightly substandard fit ($\chi^2(239) = 573.305$, $p < .001$; *CFI* = .892; *TLI* = .875; *RMSEA* = .067; *SRMR* = .071). This SEM produced results such that only skill variety positively predicted CPE ($\beta = 0.204$, $p = .005$), with feedback ($\beta = 0.078$, $p = .214$), task significance ($\beta = 0.129$, $p = .076$), task identity ($\beta = -0.014$, $p = .613$), and autonomy ($\beta = -0.107$, $p = .227$) failing to significantly predict CPE.

Because this first SEM possessed some slightly substandard fit, I continued to run five more SEMs, each with a single latent job characteristic predicting a latent CPE variable. In these individual job characteristic models, model fit improved ($0.936 < CFI < 0.953$; $0.919 < TLI < 0.941$; $0.043 < SRMR < 0.048$), aside from the χ^2 tests and *RMSEA*. When considered in models as lone predictors, feedback ($\beta = 0.210$, $p < .001$), task significance ($\beta = 0.256$, $p < .001$), autonomy ($\beta = 0.199$, $p = .001$), and skill variety ($\beta = 0.274$, $p < .001$) positively and

significantly predicted CPE, with only task identity ($\beta = 0.033$, $p = .197$) failing to significantly predict CPE. Therefore, Hypothesis 1 is partially supported (see Figure 3, p. 72).

(H2) CPE will be positively related to work-related flow.

To test Hypothesis 2, I ran a SEM with work related-flow regressed on CPE. This model produced adequate model fit ($\chi^2(245) = 529.352$, $p < .001$; *CFI* = .927; *TLI* = .918; *RMSEA* = .060; *SRMR* = .051), with CPE positively and significantly predicting flow ($\beta = 0.372$, $p < .001$). Therefore, Hypothesis 2 is supported (see Figure 4, p. 72).

(H3) Work-related flow will be negatively related to burnout.

To test Hypothesis 3, I first ran a SEM with personal burnout regressed on work-related flow in parallel with work-related burnout regressed on work-related flow. This model produced borderline adequate model fit ($\chi^2(293) = 708.827$, $p < .001$; *CFI* = .908; *TLI* = .898; *RMSEA* = .066; *SRMR* = .068), with flow negatively and significantly predicting both personal burnout ($\beta = -0.545$, $p < .001$) and work-related burnout ($\beta = -0.976$, $p < .001$).

To improve model fit and to account for the fairly high correlation between the two burnout scales ($r = .79$), I ran two additional models with work-related flow predicting personal burnout and work-related burnout in separate models. In the first of these models, model fit was improved ($\chi^2(148) = 350.150$, $p < .001$; *CFI* = .935; *TLI* = .925; *RMSEA* = .065; *SRMR* = .055) and flow negatively and significantly predicted personal burnout ($\beta = -0.564$, $p < .001$). In the second of these models, model fit was improved in some ways from the more parsimonious model ($\chi^2(166) = 414.913$, $p < .001$; *CFI* = .923; *TLI* = .912; *RMSEA* = .068; *SRMR* = .069), and flow negatively and significantly predicted work-related burnout ($\beta = -0.946$, $p < .001$). Therefore, Hypothesis 3 is supported (see Figure 5, p. 73).

(H4) Work-related flow will be positively related to job satisfaction.

To test Hypothesis 4, I ran a SEM with job satisfaction regressed on work-related flow. This model produced good model fit ($\chi^2(100) = 215.460$, $p < .001$; *CFI* = .960; *TLI* = .952; *RMSEA* = .060; *SRMR* = .044), with flow positively and significantly predicting job satisfaction ($\beta = 1.988$, $p < .001$). Therefore, Hypothesis 4 is supported (see Figure 6, p. 73).

(H5) Work-related flow will be positively related to life satisfaction.

To test Hypothesis 5, I ran a SEM with life satisfaction regressed on work-related flow. This model produced good model fit ($\chi^2(100) = 215.609$, $p < .001$; *CFI* = .958; *TLI* = .949; *RMSEA* = .060; *SRMR* = .046), with flow positively and significantly predicting life satisfaction ($\beta = 0.967$, $p < .001$). Therefore, Hypothesis 5 is supported (see Figure 7, p. 74).

(H6) Work-related flow will be positively related to psychological recovery from work experiences.

To test Hypothesis 6, I first ran a SEM with personal burnout regressed on recovery experiences (i.e., psychological detachment, relaxation). However, the model specified did not converge, preventing the generation of model fit statistics.

To counter this issue, I ran two additional models with work-related flow predicting psychological detachment and relaxation in separate models. In the first of these models, model fit was adequate ($\chi^2(115) = 310.263$, $p < .001$; *CFI* = .927; *TLI* = .913; *RMSEA* = .072; *SRMR* = .062) and flow negatively predicted psychological detachment from work but was not significant ($\beta = -0.188$, $p = .284$). In the second of these models, model fit was adequate ($\chi^2(115) = 225.255$, $p < .001$; *CFI* = .962; *TLI* = .955; *RMSEA* = .054; *SRMR* = .045), and flow positively and significantly predicted relaxation ($\beta = 0.325$, $p = .013$). Therefore, Hypothesis 6 is partially supported (see Figure 8, p. 74).

(H7a) Job characteristics will be positively related to work-related flow, and (H7b) that these relationships will be mediated by CPE.

To test Hypothesis 7a and 7b, I first ran a saturated SEM including all five job characteristics, CPE, and work-related flow. However, this model produced poor model fit ($\chi^2(643) = 6761.272$, $p < .001$; *CFI* = .447; *TLI* = .395; *RMSEA* = .175; *SRMR* = .128). I amended the model to only include feedback, CPE, and work-related flow, which still produced poor fit ($\chi^2(341) = 6308.246$, $p < .001$; *CFI* = .395; *TLI* = .330; *RMSEA* = .234; *SRMR* = .135). I then ran a model which included all five job characteristics, only one dimension of CPE (i.e., problem identification), and work-related flow, which demonstrated near adequate model fit ($\chi^2(358) = 776.064$, $p < .001$; *CFI* = .898; *TLI* = .884; *RMSEA* = .061; *SRMR* = .072), but the variance-covariance matrix was not positive definite as a result of multicollinear predictors. Due to the issues associated with these larger models, I then tested fifteen less saturated models, each with a single job characteristic, a single CPE factor, and flow.

First, I ran three SEMs with flow regressed on feedback, with problem identification, information searching and encoding, and idea generation as the respective mediators in each model. In testing flow regressed on feedback, as mediated by problem identification ($\chi^2(146) = 281.713$, $p < .001$; *CFI* = .950; *TLI* = .942; *RMSEA* = .053; *SRMR* = .047), feedback positively and significantly predicted work-related flow ($\beta = 0.288$, $p < .001$), and the indirect effect of feedback on flow via problem identification was positive and significant ($\beta = 0.043$, 95% Bootstrapped CI [0.013, 0.083]). In testing flow regressed on feedback, as mediated by information searching and encoding ($\chi^2(146) = 287.451$, $p < .001$; *CFI* = .950; *TLI* = .942; *RMSEA* = .055; *SRMR* = .047), feedback positively and significantly predicted work-related flow ($\beta = 0.294$, $p < .001$), and the indirect effect of feedback on flow via information searching and

encoding was positive and significant (β = 0.036, 95% Bootstrapped CI [0.010, 0.071]). In testing flow regressed on feedback, as mediated by idea generation ($\chi^2(183) = 340.801$, $p < .001$; *CFI* = .950; *TLI* = .942; *RMSEA* = .051; *SRMR* = .047), feedback positively and significantly predicted work-related flow ($\beta = 0.292$, $p < .001$), and the indirect effect of feedback on flow via idea generation was positive and significant (β = 0.041, 95% Bootstrapped CI [0.011, 0.083]). Therefore, feedback predicted flow and was partially mediated by all three dimensions of creative process engagement (see Figures 9.1-9.3, pp. 75-76).

Second, I ran three SEMs with flow regressed on task significance, with problem identification, information searching and encoding, and idea generation as the respective mediators in each model. In testing flow regressed on task significance, as mediated by problem identification ($\chi^2(146) = 316.255$, $p < .001$; *CFI* = .939; *TLI* = .928; *RMSEA* = .060; *SRMR* = .050), task significance positively and significantly predicted work-related flow ($\beta = 0.304$, $p < .001$), and the indirect effect of task significance on flow via problem identification was positive and significant (β = 0.036, 95% Bootstrapped CI [0.003, 0.078]). In testing flow regressed on task significance, as mediated by information searching and encoding ($\chi^2(146) = 329.197$, $p < .001$; *CFI* = .936; *TLI* = .926; *RMSEA* = .062; *SRMR* = .050), task significance positively and significantly predicted work-related flow ($\beta = 0.302$, $p < .001$), and the indirect effect of task significance on flow via information searching and encoding was positive and significant (β = 0.031, 95% Bootstrapped CI [0.007, 0.065]). In testing flow regressed on task significance, as mediated by idea generation ($\chi^2(183) = 379.234$, $p < .001$; *CFI* = .938; *TLI* = .929; *RMSEA* = .057; *SRMR* = .049), task significance positively and significantly predicted work-related flow ($\beta = 0.304$, $p < .001$), and the indirect effect of task significance on flow via idea generation was positive and significant (β = 0.035, 95% Bootstrapped CI [0.010, 0.073]). Therefore, task

significance predicted flow and was partially mediated by all three dimensions of creative process engagement (see Figures 9.4-9.6, pp. 76-77).

Third, I ran three SEMs with flow regressed on task identity, with problem identification, information searching and encoding, and idea generation as the respective mediators in each model. In testing flow regressed on task identity, as mediated by problem identification ($\chi^2(114) = 240.759$, $p < .001$; *CFI* = .947; *TLI* = .937; *RMSEA* = .060; *SRMR* = .047), task identity positively and significantly predicted work-related flow ($\beta = 0.081$, $p < .001$), but the indirect effect of task identity on flow via problem identification was not significant ($\beta = 0.012$, 95% Bootstrapped CI [-0.006, 0.035]). In testing flow regressed on task identity, as mediated by information searching and encoding ($\chi^2(114) = 248.534$, $p < .001$; *CFI* = .946; *TLI* = .936; *RMSEA* = .062; *SRMR* = .048), task identity positively and significantly predicted work-related flow ($\beta = 0.090$, $p < .001$), but the indirect effect of task identity on flow via information searching and encoding was not significant ($\beta = 0.005$, 95% Bootstrapped CI [-0.014, 0.024]). In testing flow regressed on task identity, as mediated by idea generation ($\chi^2(147) = 291.832$, $p < .001$; *CFI* = .948; *TLI* = .939; *RMSEA* = .056; *SRMR* = .047), task identity positively and significantly predicted work-related flow ($\beta = 0.080$, $p < .001$), but the indirect effect of task identity on flow via idea generation was not significant ($\beta = 0.015$, 95% Bootstrapped CI [-0.005, 0.041]). Therefore, task identity predicted flow but was not mediated by any of the three dimensions of creative process engagement (see Figures 9.7-9.9, pp. 78-79).

Fourth, I ran three SEMs with flow regressed on autonomy, with problem identification, information searching and encoding, and idea generation as the respective mediators in each model. In testing flow regressed on autonomy, as mediated by problem identification ($\chi^2(146) = 299.059$, $p < .001$; *CFI* = .946; *TLI* = .937; *RMSEA* = .057; *SRMR* = .049), autonomy positively

and significantly predicted work-related flow ($\beta = 0.356$, $p < .001$), and the indirect effect of autonomy on flow via problem identification was positive and significant ($\beta = 0.053$, 95% Bootstrapped CI [0.015, 0.107]). In testing flow regressed on autonomy, as mediated by information searching and encoding ($\chi^2(146) = 302.127$, $p < .001$; *CFI* = .947; *TLI* = .938; *RMSEA* = .057; *SRMR* = .048), autonomy positively and significantly predicted work-related flow ($\beta = 0.370$, $p < .001$), and the indirect effect of autonomy on flow via information searching and encoding was positive and significant ($\beta = 0.034$, 95% Bootstrapped CI [0.002, 0.076]). In testing flow regressed on autonomy, as mediated by idea generation ($\chi^2(183) = 365.022$, $p < .001$; *CFI* = .944; *TLI* = .936; *RMSEA* = .055; *SRMR* = .048), autonomy positively and significantly predicted work-related flow ($\beta = 0.375$, $p < .001$), but the indirect effect of autonomy on flow via idea generation was not significant ($\beta = 0.034$, 95% Bootstrapped CI [-0.005, 0.088]). Therefore, autonomy predicted flow and was partially mediated by problem identification and information searching and encoding, but was not mediated by idea generation (see Figures 9.10-9.12, pp. 79-80).

Fifth, I ran three SEMs with flow regressed on skill variety, with problem identification, information searching and encoding, and idea generation as the respective mediators in each model. In testing flow regressed on skill variety, as mediated by problem identification ($\chi^2(146) = 312.355$, $p < .001$; *CFI* = .941; *TLI* = .931; *RMSEA* = .059; *SRMR* = .051), skill variety positively and significantly predicted work-related flow ($\beta = 0.153$, $p = .002$), and the indirect effect of skill variety on flow via problem identification was positive and significant ($\beta = 0.067$, 95% Bootstrapped CI [0.022, 0.124]). In testing flow regressed on skill variety, as mediated by information searching and encoding ($\chi^2(146) = 323.283$, $p < .001$; *CFI* = .939; *TLI* = .929; *RMSEA* = .061; *SRMR* = .052), skill variety positively and significantly predicted work-related

flow ($\beta = 0.168$, $p < .001$), and the indirect effect of skill variety on flow via information searching and encoding was positive and significant ($\beta = 0.049$, 95% Bootstrapped CI [0.019, 0.087]). In testing flow regressed on skill variety, as mediated by idea generation ($\chi^2(183) = 380.811$, $p < .001$; *CFI* = .939; *TLI* = .930; *RMSEA* = .058; *SRMR* = .051), skill variety positively and significantly predicted work-related flow ($\beta = 0.166$, $p < .001$), and the indirect effect of skill variety on flow via idea generation was positive and significant ($\beta = 0.055$, 95% Bootstrapped CI [0.020, 0.106]). Therefore, skill variety predicted flow and was partially mediated by all three dimensions of creative process engagement (see Figures 9.13-9.15, pp. 81-82). All in all, Hypothesis 7a was supported, as all five job characteristics predicted work-related flow. However, Hypothesis 7b was only partially supported, with only various dimensions of CPE mediating the relationship between certain job characteristics and work-related flow.

(H8a) CPE will be negatively related to burnout, and (H8b) that these relationships will be mediated by work-related flow.

Due to the issues associated with highly saturated models above, as well as to get more nuanced results, I tested six models for Hypotheses 8a and 8b, each with a single factor of CPE, flow, and a single burnout scale (i.e., personal or work-related burnout).

First, I ran three SEMs with personal burnout regressed on CPE, with problem identification, information searching and encoding, and idea generation as the respective predictors and work-related flow as the mediator in each model. In testing personal burnout regressed on problem identification, as mediated by work-related flow ($\chi^2(203) = 426.419$, $p < .001$; *CFI* = .934; *TLI* = .925; *RMSEA* = .058; *SRMR* = .054), problem identification positively and significantly predicted personal burnout ($\beta = 0.260$, $p = .010$), and the indirect effect of problem identification on personal burnout via flow was negative and significant ($\beta = -0.205$,

95% Bootstrapped CI [-0.359, -0.101]). In testing personal burnout regressed on information searching and encoding, as mediated by work-related flow ($\chi^2(203) = 465.819$, $p < .001$; *CFI* = .925; *TLI* = .915; *RMSEA* = .063; *SRMR* = .056), information searching and encoding did not significantly predict personal burnout ($\beta = 0.058$, $p = .288$), but the indirect effect of information searching and encoding on personal burnout via flow was negative and significant ($\beta = -0.104$, 95% Bootstrapped CI [-0.170, -0.052]). In testing personal burnout regressed on idea generation, as mediated by work-related flow ($\chi^2(246) = 519.483$, $p < .001$; *CFI* = .928; *TLI* = .920; *RMSEA* = .058; *SRMR* = .055), idea generation did not significantly predict personal burnout ($\beta = 0.118$, $p = .080$), but the indirect effect of idea generation on personal burnout via flow was negative and significant ($\beta = -0.148$, 95% Bootstrapped CI [-0.243, -0.075]). Therefore, only problem identification directly predicted personal burnout (albeit in the opposite of the proposed direction), but flow mediated the relationship between all three CPE dimensions and personal burnout (see Figures 10.1-10.3, pp. 82-83).

Second, I ran three SEMs with work-related burnout regressed on CPE, with problem identification, information searching and encoding, and idea generation as the respective predictors and work-related flow as the mediator in each model. In testing work-related burnout regressed on problem identification, as mediated by work-related flow ($\chi^2(224) = 514.893$, $p < .001$; *CFI* = .918; *TLI* = .907; *RMSEA* = .063; *SRMR* = .068), problem identification positively and significantly predicted work-related burnout ($\beta = 0.180$, $p = .030$), and the indirect effect of problem identification on work-related burnout via flow was negative and significant ($\beta = -0.290$, 95% Bootstrapped CI [-0.478, -0.150]). In testing work-related burnout regressed on information searching and encoding, as mediated by work-related flow ($\chi^2(224) = 523.709$, $p < .001$; *CFI* = .910; *TLI* = .907; *RMSEA* = .064; *SRMR* = .068), information searching and

encoding did not significantly predict work-related burnout (β = 0.036, p = .496), but the indirect effect of information searching and encoding on work-related burnout via flow was negative and significant (β = -0.161, 95% Bootstrapped CI [-0.248, -0.093]). In testing work-related burnout regressed on idea generation, as mediated by work-related flow ($\chi^2(269) = 582.164$, $p < .001$; *CFI* = .920; *TLI* = .911; *RMSEA* = .060; *SRMR* = .065), idea generation positively and significantly predicted work-related burnout (β = 0.143, p = .039), and the indirect effect of idea generation on work-related burnout via flow was negative and significant (β = -0.232, 95% Bootstrapped CI [-0.358, -0.132]). Therefore, only problem identification and idea generation directly predicted work-related burnout (albeit in the opposite of the proposed direction), but flow mediated the relationship between all three CPE dimensions and work-related burnout (see Figures 10.4-10.6, pp. 84-85). All in all, Hypothesis 8a was not supported, as only problem identification positively and directly predicted personal burnout, and problem identification and idea generation positively and directly predicted work-related burnout. However, Hypothesis 8b was supported, with flow mediating the relationship between all CPE dimensions and burnout.

(H9a) CPE will be positively related to job satisfaction, and (H9b) that this relationship will be mediated by work-related flow.

To test Hypotheses 9a and 9b, I ran three SEMs with job satisfaction regressed on CPE, with problem identification, information searching and encoding, and idea generation as the respective predictors and work-related flow as the mediator in each model. In testing job satisfaction regressed on problem identification, as mediated by work-related flow ($\chi^2(146) = 291.921$, $p < .001$; *CFI* = .954; *TLI* = .946; *RMSEA* = .055; *SRMR* = .047), problem identification negatively and significantly predicted job satisfaction (β = -0.264, p = .009), and the indirect effect of problem identification on job satisfaction via flow was positive and significant (β =

0.602, 95% Bootstrapped CI [0.348, 0.957]). In testing job satisfaction regressed on information searching and encoding, as mediated by work-related flow ($\chi^2(146) = 283.275$, $p < .001$; *CFI* = .957; *TLI* = .950; *RMSEA* = .055; *SRMR* = .047), information searching and encoding negatively and significantly predicted job satisfaction ($\beta = -0.179$, $p = .001$), and the indirect effect of information searching and encoding on job satisfaction via flow was positive and significant (β = 0.368, 95% Bootstrapped CI [0.230, 0.542]). In testing job satisfaction regressed on idea generation, as mediated by work-related flow ($\chi^2(183) = 348.077$, $p < .001$; *CFI* = .953; *TLI* = .946; *RMSEA* = .053; *SRMR* = .048), idea generation negatively and significantly predicted job satisfaction ($\beta = -0.271$, $p = .001$), but the indirect effect of idea generation on job satisfaction via flow was negative and significant (β = 0.522, 95% Bootstrapped CI [0.339, -0.743]). All in all, Hypothesis 9a was not supported, as all three dimensions of CPE significantly predicted job satisfaction in the opposite of the hypothesized direction. However, Hypothesis 9b was supported, with flow mediating the relationship between all CPE dimensions and job satisfaction (see Figures 11.1-11.3, pp. 85-86).

(H10a) CPE will be positively related to life satisfaction, and (H10b) that this relationship will be mediated by work-related flow.

To test Hypotheses 10a and 10b, I ran three SEMs with life satisfaction regressed on CPE, with problem identification, information searching and encoding, and idea generation as the respective predictors and work-related flow as the mediator in each model. In testing life satisfaction regressed on problem identification, as mediated by work-related flow ($\chi^2(164) = 290.084$, $p < .001$; *CFI* = .951; *TLI* = .942; *RMSEA* = .056; *SRMR* = .049), problem identification did not significantly predict life satisfaction ($\beta = -0.215$, $p = .070$), but the indirect effect of problem identification on life satisfaction via flow was positive and significant (β = 0.324, 95%

Bootstrapped CI [0.164, 0.558]). In testing life satisfaction regressed on information searching and encoding, as mediated by work-related flow ($\chi^2(164) = 296.271$, $p < .001$; *CFI* = .950; *TLI* = .942; *RMSEA* = .057; *SRMR* = .050), information searching and encoding did not significantly predict life satisfaction ($\beta = -0.027$, $p = .654$), but the indirect effect of information searching and encoding on life satisfaction via flow was positive and significant ($\beta = 0.181$, 95% Bootstrapped CI [0.111, 0.273]). In testing life satisfaction regressed on idea generation, as mediated by work-related flow ($\chi^2(183) = 347.110$, $p < .001$; *CFI* = .950; *TLI* = .943; *RMSEA* = .053; *SRMR* = .049), idea generation did not significantly predict life satisfaction ($\beta = -0.058$, $p = .484$), but the indirect effect of information searching and encoding on life satisfaction via flow was positive and significant ($\beta = 0.258$, 95% Bootstrapped CI [0.147, 0.402]). All in all, Hypothesis 10a was not supported, as all three dimensions of CPE did not significantly predict life satisfaction directly. However, Hypothesis 10b was supported, with flow mediating the relationship between all CPE dimensions and life satisfaction (see Figures 12.1-12.3, pp. 87-88).

(H11a) CPE will be positively related to recovery experiences (i.e., psychological detachment, relaxation), and (H11b) that these relationships will be mediated by work-related flow.

Due to the issues associated with highly saturated models above, as well as to get more nuanced results, I tested six models for Hypotheses 11a and 11b, each with a single factor of CPE, flow, and a single REQ dimension (i.e., psychological detachment or relaxation).

First, I ran three SEMs with psychological detachment regressed on CPE, with problem identification, information searching and encoding, and idea generation as the respective predictors and work-related flow as the mediator in each model. In testing psychological detachment regressed on problem identification, as mediated by work-related flow ($\chi^2(164) =$

387.145, $p < .001$; *CFI* = .922; *TLI* = .910; *RMSEA* = .066; *SRMR* = .061), problem identification did not significantly predict psychological detachment (β = -0.001, p = .997), and the indirect effect of problem identification on psychological detachment via flow was nonsignificant (β = -0.055, 95% Bootstrapped CI [-0.210, 0.083]). In testing psychological detachment regressed on information searching and encoding, as mediated by work-related flow ($\chi^2(164) = 388.376$, $p <$ .001; *CFI* = .924; *TLI* = .912; *RMSEA* = .066; *SRMR* = .061), information searching and encoding did not significantly predict psychological detachment (β = 0.023, p = .818), and the indirect effect of information searching and encoding on psychological detachment via flow was nonsignificant (β = -0.036, 95% Bootstrapped CI [-0.134, 0.045]). In testing psychological detachment regressed on idea generation, as mediated by work-related flow ($\chi^2(203) = 443.928$, $p < .001$; *CFI* = .926; *TLI* = .915; *RMSEA* = .061; *SRMR* = .059), idea generation did not significantly predict psychological detachment (β = -0.052, p = .682), and the indirect effect of idea generation on psychological detachment via flow was nonsignificant (β = -0.037, 95% Bootstrapped CI [-0.160, 0.078]). Therefore, none of the three CPE dimensions directly predicted psychological detachment, and flow did not mediate the relationship between CPE and psychological detachment.

Second, I ran three SEMs with relaxation regressed on CPE, with problem identification, information searching and encoding, and idea generation as the respective predictors and work-related flow as the mediator in each model. In testing relaxation regressed on problem identification, as mediated by work-related flow ($\chi^2(164) = 311.336$, $p < .001$; *CFI* = .952; *TLI* = .945; *RMSEA* = .053; *SRMR* = .048), problem identification did not significantly predict relaxation (β = 0.071, p = .581), and the indirect effect of problem identification on relaxation via flow was nonsignificant (β = 0.090, 95% Bootstrapped CI [-0.008, 0.211]). In testing relaxation

regressed on information searching and encoding, as mediated by work-related flow ($\chi^2(164) = 300.822$, $p < .001$; *CFI* = .957; *TLI* = .950; *RMSEA* = .051; *SRMR* = .047), information searching and encoding did not significantly predict relaxation ($\beta = 0.134$, $p = .059$), and the indirect effect of information searching and encoding on relaxation via flow was nonsignificant ($\beta = 0.042$, 95% Bootstrapped CI [-0.014, 0.102]). In testing relaxation regressed on idea generation, as mediated by work-related flow ($\chi^2(203) = 360.015$, $p < .001$; *CFI* = .955; *TLI* = .949; *RMSEA* = .049; *SRMR* = .048), idea generation did not significantly predict relaxation ($\beta = 0.103$, $p = .271$), and the indirect effect of idea generation on relaxation via flow was nonsignificant ($\beta = 0.069$, 95% Bootstrapped CI [-0.020, 0.157]). Therefore, none of the three CPE dimensions directly predicted relaxation, and flow did not mediate the relationship between CPE and relaxation. All in all, Hypothesis 11a was not supported, as all three dimensions of CPE did not significantly predict recovery experiences. Additionally, Hypothesis 11b was not supported, as flow did not mediate the relationship between any CPE dimensions and recovery experiences (see Figures 13.1-13.6, pp. 88-91).

DISCUSSION

The purpose of this study was to investigate the relationships between various work design elements and the experience of flow at work. Additionally, I sought to explore how these elements are associated with engagement in creative processes, experiences of flow at work, and occupational health for employees. Overall, the results from evaluating direct effect and indirect effects via structural equation modeling and results from testing partial mediation provide evidence to support various hypotheses in my proposed research model. Although I was unable to run a fully saturated model to address my research questions due to sample size constraints, breaking this research model down into multiple structural equation models allowed me to analyze data and interpret the results with more specificity.

Summary and Interpretation of Results

First, several job characteristics were related to engaging in creative processes at work. Feedback, task significance, autonomy, and skill variety were positively related to workers' reports of creative process engagement (CPE), with skill variety possessing the greatest effect size of the job characteristics. These data suggest that using a variety of skills and abilities on the job may be more important for fostering flow experiences on the job than other job characteristics, particularly in groups of highly creative professionals. I ran separate SEMs with individual job characteristics regressed on each due to increased model fit and a potential suppression effect in the more saturated model (i.e., the effect of various predictors on outcomes becomes more difficult to interpret when new, potentially multicollinear predictors are introduced; Beckstead, 2012). Those who experienced more guidance and self-determination on the job felt that their work was meaningful and important, and utilized a multitude of their skills and abilities at work were also those who typically engaged in dimensions of creative

problem-solving. Although it was surprising to find that task identity did not significantly relate to CPE, this may be an artifact of measurement issues associated with this job characteristic (i.e., one dimension of task identity did not load well on the factor, thus resulting in a two-item observed measure). Given the important role of work context for creative problem-solving, as well as creativity's impact on personal and organizational outcomes (Amabile et al., 1996), it is important for work to be intentionally designed from the perspective of these job characteristics for employees to more easily engage in creative processes at work. In other words, employers can cultivate creative environments by crafting tasks and roles that prioritize feedback, task significance, task identity, autonomy, and skill variety, empowering employees to make innovative and meaningful contributions to the organization.

Second, engaging in creative subprocesses appears to be related to work-related flow, which captures experiences of deep absorption, enjoyment, and intrinsic motivation associated with work tasks at hand. This finding supports previous research findings that fostering creative environments allows for flow experiences at work (Fullagar & Kelloway, 2009). This is particularly relevant for roles that are traditionally considered creative (Bakker, 2005; Csikszentmihalyi, 1990; Martin & Cutler, 2002, etc.). These results suggest that structuring work environments to support employees' creative behavior may be key for maximizing flow experiences at work. For instance, employers can provide a range of professional development opportunities to employees that are tailored to worker interests and promote divergent thinking, potentially enhancing work-related flow experiences. Because this study only examines one way in which worker creativity can be conceptualized and measured (i.e., CPE), future research should measure creative personality and/or comfort with expressing creativity as a potential moderator in this relationship.

Third, work-related flow experiences appear to be related to a variety of well-being indicators, including personal and work-related burnout, job and life satisfaction, and relaxation as a means of recovering from work. Effect sizes from this study indicate that flow is most strongly related to job satisfaction, followed by work-related burnout, life satisfaction, personal burnout, and relaxation, respectively. The large effect size between flow and job satisfaction may be an artifact of the WOLF measure containing work enjoyment as one of its factors, which in some respects can be considered equivalent to job satisfaction. Additionally, the fact that flow predicted work-related burnout with a larger effect compared to predicting personal burnout is likely due to the focus of the WOLF to measure the work-related experience of flow, rather than flow more broadly. These findings are consistent with prior research which indicated that flow experiences are negatively related to feelings of burnout (Aust et al., 2022) and exhaustion after work (Demerouti et al., 2012), and positively related to enjoyment and positive emotions at work (Farina et al., 2018), satisfaction with one's life (Farina et al., 2018), and reduced exhaustion after work (Demerouti et al., 2012). In addition to replicating similar findings, this study contributes to the literature by assessing potential differences in the multiple facets of constructs such as burnout (i.e., personal vs. work-related burnout) and recovery (i.e., detachment vs. recovery).

The current study findings are particularly important for understanding job characteristics, creative process engagement, flow, and well-being in a sample of predominantly music therapists (MTs). This is important because MTs are susceptible to reduced occupational health (i.e., burnout) through a number of work, client, and individual factors (Clements-Cortes, 2013).

Interestingly, my data did not support a direct relationship between experiencing flow at work and psychologically detaching from work. One potential explanation for this lack of significant finding is that workers may continue to think about work, bring work home with them (e.g., work on tasks or work email at home) or ruminate about unfinished tasks, which have been found to predict reduced flow at work and home, and in turn, reduced employee well-being (Peifer et al., 2020). Additionally, because flow is highly motivational (Nakamura & Csikszentmihalyi, 2009), workers who frequently experience flow at work may be more motivated to complete work tasks during non-work hours, resulting in less detachment. Despite this surprising nonsignificant finding, it is important that leaders facilitate work experiences that allow and promote work-related flow due to the construct's widespread ties to important indicators of worker well-being.

Fourth, when considering the three dimensions of CPE (i.e., problem identification, information searching and encoding, idea generation) as mediators between job characteristics and work-related flow, all three factors served as partial mediators between feedback, task significance, and skill variety. This finding suggests that engaging in creative problem-solving behaviors serves as one potential explanation to why certain aspects of well-designed work are related to work-related flow experiences. Meanwhile, only problem identification and information searching and encoding partially mediated the relationship between autonomy and flow. One potential explanation for this finding is that higher levels of autonomy or degrees of freedom on the job may allow for flow when engaging in earlier stages of the creative process; however, generating creative ideas and solutions to problems may require more team- or client-dependent factors (Paulus, 2000), which inherently reduces individual autonomy. This may be particularly relevant for music therapists who engage one-on-one with clients to generate

data-driven solutions to fulfill client-oriented goals. Additionally, task identity was positively related to work-related flow when modeled alongside CPE (albeit a small effect size), yet no significant mediation effects were found among the CPE factors. Since this nonsignificant finding could potentially stem from the observed task identity measure previously discussed, further research should reassess the connection between task identity, CPE, and work-related flow.

Fifth, when considering the three dimensions of CPE (i.e., problem identification, information searching and encoding, idea generation) as predictors of occupational health variables via work-related flow, flow served as a partial mediator between all three dimensions of CPE predicting burnout, job satisfaction, and life satisfaction. However, flow did not mediate the relationship between CPE and recovery experiences (i.e., psychological detachment, relaxation). In terms of burnout, some direct relationships between predictor and outcomes in these mediation models were significant, with problem identification positively predicting personal burnout, and problem identification and idea generation positively predicting work-related burnout. However, flow mediated the relationship between all CPE dimensions and burnout, suggesting a full mediation effect of flow between information searching and encoding and personal burnout, idea generation and personal burnout, and information searching and encoding and work-related burnout. This finding may suggest that the mere presence of perceived problems at work, as well as the need to identify solutions to those problems, may insinuate situations contributing to burnout. However, when the experience of flow is involved in these creative problem-solving situations, this may help to explain why workers report less burnout.

Similarly, all three dimensions of CPE significantly related to job satisfaction, but in the opposite direction that was hypothesized (i.e., a negative direction). Furthermore, CPE did not significantly relate to life satisfaction in any mediation models. However, flow mediated the relationship between all CPE dimensions and job and satisfaction in the hypothesized positive direction. These findings may indicate that work-related flow is a key psychological experience that seems to be beneficial for navigating creative solutions to issues identified at work, especially in terms of job and life satisfaction outcomes associated with engaging in creative processes.

Finally, none of the three CPE dimensions significantly predicted recovery experiences (i.e., psychological detachment, relaxation), nor did work-related flow mediate the relationship between CPE and recovery experiences. Although this finding was unexpected, this may align with the notion that individuals recover from work in different ways, such as mastering other skills in non-work time or feeling in control of one's non-work schedule (Sonnentag & Fritz, 2007). Furthermore, those who frequently experience work-related flow may be more motivated to continue working during non-work time, rather than detach from work or relax due to flow's highly motivational nature and association with positive emotions (Nakamura & Csikszentmihalyi, 2009) Future research should investigate other recovery behaviors (e.g., physical exercise, meditation, sleep) that may be related to work-related flow experiences, creativity, and job characteristics.

Theoretical Implications

Altogether, these direct and indirect relationships between study variables align with several organizational theories discussed previously in this paper. First, Flow Theory (Nakamura & Csikszentmihalyi, 2009) was utilized by focusing on the definition of work-related flow

(Bakker, 2008) and its relationships of work-related antecedents, mediators, and outcomes. Although the Work-Related Flow Inventory (WOLF) may be deficient in capturing certain aspects of flow experiences broadly (e.g., time transformation), the use of this measure is justified as it demonstrates adequate validity and reliability in work-oriented experiences across multiple cultures (Bakker, 2008; Demerouti et al., 2012; Bakker & van Woerkom, 2017). Measuring flow in the context of work, as well as its associations with key work-related variables, helps to expand the nomological net of flow more broadly.

Second, these findings provide further support for the Job Characteristics Model (Hackman & Oldham, 1974), which suggests that well-designed work for critical employee psychological experiences consists of optimal levels of feedback, task identity, task significance, autonomy, and skill variety. Although the task identity factor did not significantly relate to CPE directly, it was related to work-related flow when modeled alongside CPE as a mediator. Moreover, feedback, task significance, autonomy, and skill variety each predicted work-related flow directly, as well as indirectly via various aspects of CPE. These findings may help expand the taxonomy of critical psychological states created by high levels of job characteristics to include creativity and flow.

Third, understanding Job Demands-Resources Theory (JD-R Model; Bakker & Demerouti, 2007) contributed to these findings by interpreting job characteristics, the ability to engage in creative processes, and work-related flow experiences for linking to multiple aspects of worker-well-being). By examining the direct and indirect relationships between these study variables, I found additional evidence for work design elements (e.g., job characteristics, environments allowing for creative problem-solving) acting as tangible resources that may help alleviate common demanding experiences that employees face at work (e.g., burnout).

Fourth, although these results cannot be considered causal due to the cross-sectional nature of this research, these findings may provide some evidence consistent with the notion of upwards resource spirals as discussed by the Conservation of Resources theory (Hobfoll, 1989). In addition to Hobfoll's proposition that individuals strive to obtain and maintain work-related resources to counteract perceived strain (1989), he describes resource spirals such that the loss of resources contributes to even more loss because of insufficient resources to compensate for said loss. Conceptualizing my examined variables as resources, the current study provides further evidence of upward *gain* spirals of resources (e.g., autonomy for creativity) and flow, correlating to even more resources (e.g., life satisfaction), supporting past research of these upward spirals (Salanova et al., 2006).

Practical Implications

Although there is a decent depth and breadth of research literature on flow and creativity in the extant literature, as well as flow and occupational health, no previous research appears to have tied these two ends of flow together within one given study, to my knowledge. This study helps to fill this gap in the respective flow, creativity, and occupational health psychology literatures, while simultaneously merging these concepts. Furthermore, by examining the relationships of study variables in tandem with various stages of CPE modeled separately (as opposed to a global creativity measure), this allows for deeper data-driven insights related to the implications of creative problem-solving in the workplace. Although our results cannot be interpreted as evidence of causality, managers or practitioners who hope to improve employees' work-related absorption, enjoyment, and intrinsic motivation, as well as better occupational health outcomes, should look into facilitating work environments that allow for high degrees of

relevant positive job characteristics, creative problem-solving, and work-related flow experiences.

In particular, leaders and managers can take several actionable steps to improve the design of work to enhance employee flow experiences. First, in line with Flow Theory (Csikszentmihalyi, 1990; Nakamura & Csikszentmihalyi, 2009), Goal-Setting Theory (Locke & Latham, 2002), and various other research findings (e.g., Weintraub et al., 2021), leaders should facilitate daily autonomous goal-setting behaviors for employees, and provide tailored, clear, and specific feedback to each of those employee-set goals. Second, supervisors should routinely check in with their subordinates to ensure the challenges presented to them at work are appropriately aligned with employee skills. If this challenge-skill balance is not present, leaders should give employees access to resources that improve their work-related knowledge, skills and abilities (e.g., professional development opportunities), and/or reduce the challenges their employees face on a day-to-day basis (e.g., offering flexible working hours/locations). Third, leaders should reduce attempt to reduce any distractions in the working day that may inhibit the experience of employee flow (e.g., meetings that lack purpose or relevance to employee attendees). Through these tangible strategies, leaders may find success in creating a working environment that allows employees to experience flow, identify novel solutions to problems, and improve their occupational health.

Limitations

One limitation of this study is that participants reported flow experiences retrospectively. Given that flow experiences are an "in-the-moment" phenomenon, it is considered ideal to measure flow directly after a flow state may occur (Jackson & Marsh, 1996). One popular method of measuring flow once or several times throughout a workday is through the experience

sampling approach (Csikszentmihalyi & Larson, 2014), where participants are asked to report their flow experience immediately after being paged by a buzzer or another form of direct notification. Of course, this approach can have negative consequences as well, as creating an interruption and thus buzzing someone out of their state of flow frequently may lead to a participant expecting the notification, and as a result, less likely to enter another flow experience. Future research should utilize alternative scales (e.g., Flow State Scale; Jackson & Marsh, 1996) and/or methods (e.g., daily diary studies) to address this potential issue in examining flow at work.

Second, utilizing a cross-sectional research design prohibited me from confirming the true directionality of relationships between the variables in this study. Related to this, I was unable to accurately investigate mediation without using a longitudinal design. Although I can confirm the statistical significance of relationships between variables, a longitudinal survey design would be required to investigate the directionality of these relationships. For example, it is possible that actively experiencing burnout may deplete the resources to engage in further flow experiences on the job, rather than the opposite direction proposed by my research model.

To reduce the possibility of common method bias, I utilized several recommendations from Podsakoff et al. (2012). For example, I highlighted the confidential nature of the survey as well as the strong desire for and the value of participants responding honestly when I contacted participants. Furthermore, the authors recommend statistical techniques such as the confirmatory factor analysis marker technique as well as design techniques such as varying the anchors across Likert scales (Podsakoff et al., 2012). This technique involves modeling additional variables to estimate out any variance attributable to common method bias. Another approach that has been used to combat common method bias is collecting data at multiple time points rather than all at

once. However, that also introduces concerns about needing a larger initial sample size due to likely attrition.

Third, the sample obtained in this study did not represent a wide spectrum of non-creative and creative professions as originally intended. Because approximately two-thirds of the sample consisted of music therapists ($N = 209$; see Table 2 (p. 64) for full job-related variable descriptive statistics), participants were overall highly ranked on a 1-99 point scale in terms of the importance that thinking creatively plays on the job (*Mdn.* = 99.00, $M = 88.89$, $SD = 15.94$, *Min.* = 33.00, *Max.* = 99.00), according to O*NET ratings (National Center for O*NET Development, 2023). Participants additionally self-reported the degree of importance in which thinking creatively plays a role in their jobs on a 5-point Likert scale (*Mdn.* = 5.00, $M = 4.31$, $SD = 0.95$), which were significantly correlated to O*NET ratings ($r = .52$, $p < .01$). Although this limitation somewhat prevents generalizing these study results to a wide range of creativity involved in various jobs, this also allows for greater confidence in generalizing these results to other occupations in which thinking creatively is integral to daily operations.

Recommendations for Future Research

Based on the results obtained in this study, there are a number of directions that future researchers in this domain can begin to explore. First, as stated previously, future research should examine spillover effects to a greater extent than this study provides. While flow spillover has been documented in the relationships between teachers and students (Bakker, 2005), this is less understood within traditional organizational contexts such as through leader-member exchange. Second, gig workers are an increasingly prominent population of interest within organizational psychology literature (Watson et al., 2021); it would be interesting to continue our study by further dividing the spectrum of creative workers into gig workers (i.e. freelance creators) and

non-gig workers (e.g., those employed by a creative agency). With gig work possessing a number of work design benefits (e.g., task variety, autonomy) yet related to several detrimental outcomes (e.g., social isolation, exhaustion; Wood et al., 2019), it would be fascinating to gain insights into the role that the psychological state of flow plays in the larger gig economy. Third, future research should endeavor into examining work design, flow, and occupational health from a team perspective. For example, recent research suggests that when the concept of flow is implemented in group settings, the advantages of enhanced well-being, meaningful tasks, and improved performance can extend to entire teams or units of employees (van den Hout et al., 2018). Furthermore, efforts are underway to create interventions aimed at fostering optimal collaboration, such as the development of a team flow protocol (van den Hout, 2016) utilizing the Team Flow Monitor (van den Hout et al., 2019), an assessment targeting team flow prerequisites (e.g., psychological safety) and characteristics (e.g., sense of joint progress). Ultimately, approaching future organizational research from these novel perspectives may give us deeper insights into the vast potential of optimizing flow experiences at work.

Conclusion

The present study examined how various work design elements interplay with employee creative processes, flow and relevant worker outcomes. Engaging in creative processes at work partially explained the relationship between various job characteristics and work-related flow, and flow partially explained the relationship between creative process engagement and occupational health. Additionally, numerous direct relationships between relevant study constructs were observed and documented. Although this study was primarily an exploratory search of the associations between study variables, these novel insights may serve as a springboard for future research into the intricate ties between work design, creativity, flow, and

occupational health, as well as practical implications of promoting flow at work for improved worker well-being and performance.

TABLES & FIGURES

Table 1: Sample Descriptive Statistics

		N	*M*	*SD*
Age		304	36.08	12.00
			N	*%*
Gender	Male		39	12.66
	Female		259	83.12
	Non-Binary		5	1.62
	Transgender Male		2	0.65
	Prefer not to say		6	1.95
			N	*%*
Race/Ethnicity	Black or African-American		7	2.22
	Native Hawaiian or Other Pacific Islander		1	0.32
	Asian, Indian, or Asian American		26	8.25
	Hispanic or Latinx		18	5.71
	Middle Eastern or North African		5	1.59
	Native American or Alaska Native		1	0.32
	White or Caucasian		253	80.32
	Multiracial or Biracial		8	2.54
	Prefer not to answer		6	1.90
			N	*%*
Highest Level of Education	Associate's Degree		1	0.32
	Some College		3	0.97

Bachelor's Degree	140	45.45
Master's Degree	147	47.73
Doctoral Degree	16	5.19
Prefer not to answer	1	0.32

Note: Some *N*s and percentages may add up to more than the total sample size or 100%. This accounts for many demographic and job-related descriptive variables using a "check all that apply" approach.

Table 2: Job-Related Descriptive Variables

		N	*M*	*SD*
Job Tenure		309	6.09	8.16
Occupational Tenure		308	9.33	9.91
Organizational Tenure		313	5.37	7.02
			N	*%*
Occupation	Accountants and Auditors		3	0.93
	Acute Care Nurses		1	0.31
	Administrative Services Managers		1	0.31
	Agriculture Inspectors		1	0.31
	Art, Drama, and Music Teachers, Postsecondary		3	0.93
	Automotive Engineers		1	0.31
	Business Intelligence Analysts		1	0.31
	Clergy		1	0.31
	Clinical and Counseling Psychologists		2	0.62
	Clinical Data Managers		1	0.31
	Clinical Research Coordinators		3	0.93

Coaches and Scouts	1	0.31
Community Health Workers	1	0.31
Computer Programmers	2	0.62
Computer Systems Analysts	1	0.31
Computer Systems Engineers/Architects	2	0.62
Construction Managers	1	0.31
Craft Artist	1	0.31
Customer Service Representatives	1	0.31
Database Architects	1	0.31
Directors, Religious Activities and Education	1	0.31
Education Administrators, Postsecondary	1	0.31
Education Teachers, Postsecondary	2	0.62
Educational, Guidance, and Career Counselors and Advisors	2	0.62
Elementary School Teachers, Except Special Education	2	0.62
English Language and Literature Teachers, Postsecondary	1	0.31
Fashion Designers	1	0.31
Financial Examiners	1	0.31
Financial Quantitative Analysts	1	0.31
Forest and Conservation Technicians	1	0.31
General and Operations Managers	1	0.31
Health Education Specialists	1	0.31
Healthcare Social Workers	1	0.31
Home Health Aides	1	0.31
Human Resources Assistants, Except Payroll and Timekeeping	1	0.31
Human Resources Managers	2	0.62

Human Resources Specialists	3	0.93
Industrial-Organizational Psychologists	1	0.31
Information Security Analysts	1	0.31
Information Technology Project Managers	1	0.31
Insurance Claims and Policy Processing Clerks	1	0.31
Insurance Sales Agents	1	0.31
Legal Secretaries and Administrative Assistants	1	0.31
Market Research Analysts and Marketing Specialists	1	0.31
Marketing Managers	1	0.31
Medical Assistants	1	0.31
Medical Secretaries and Administrative Assistants	1	0.31
Meeting, Convention, and Event Planners	1	0.31
Mental Health and Substance Abuse Social Workers	1	0.31
Mental Health Counselors	14	4.33
Music Directors and Composers	1	0.31
Music Therapists	209	64.71
Musicians and Singers	4	1.24
Occupational Therapists	1	0.31
Office Clerks, General	1	0.31
Patient Representatives	1	0.31
Psychiatrists	1	0.31
Recreational Therapists	1	0.31
Regulatory Affairs Specialists	2	0.62
Secondary School Teachers, Except Special and Career/Technical Education	1	0.31
Secretaries and Administrative Assistants, Except Legal, Medical, and Executive	1	0.31

	Social and Community Service Managers	2	0.62
	Social Science Research Assistants	1	0.31
	Software Quality Assurance Analysts and Testers	2	0.62
	Special Education Teachers, Preschool	1	0.31
	Special Education Teachers, Secondary School	1	0.31
	Speech-Language Pathologists	4	1.24
	Speech-Language Pathology Assistants	1	0.31
	Substance Abuse and Behavioral Disorder Counselors	1	0.31
	Supply Chain Managers	1	0.31
	Survey Researchers	1	0.31
	Terrazzo Workers and Finishers	1	0.31
	Training and Development Specialists	2	0.62
	Tutors	1	0.31
	Web Developers	1	0.31
	Other	2	0.62
		N	*%*
Industry	Agriculture	2	0.61
	Utilities	5	1.53
	Finance	9	2.76
	Entertainment	13	3.99
	Education or Knowledge Work	78	23.93
	Healthcare	229	69.94

Information Services	9	2.76
Data Processing	4	1.23
Food Services	3	0.92
Hotel Services	1	0.31
Legal Services	3	0.92
Military	1	0.31
Other	11	3.68
Prefer not to answer	1	0.31

Note: Some *N*s and percentages may add up to more than the total sample size or 100%. This accounts for many demographic and job-related descriptive variables using a "check all that apply" approach.

Table 3: Intercorrelations between Job Characteristics, Creative Process Engagement, Flow, and Occupational Health Variables

	M	*SD*	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1. Feedback	3.85	0.71	**.74**														
2. Task Significance	4.30	0.68	.43**	**.71**													
3. Task Identity	3.54	1.01	.47**	.23**	**.81**												
4. Autonomy	4.27	0.69	.34**	.37**	.25**	**.76**											
5. Skill Variety	4.46	0.63	.38**	.49**	.12*	.45**	**.78**										
6. Problem Identification	3.89	0.63	.23**	.31**	.08	.17**	.34**	**.74**									
7. Information Searching and Encoding	3.94	0.70	.24**	.29**	.05	.13*	.33**	.62**	**.77**								
8. Idea Generation	3.59	0.66	.22**	.23**	.09	.69*	.30**	.59**	.69**	**.84**							
9. Creative Process Engagement	3.77	0.58	.26**	.31**	.09	.16**	.37**	.81**	.87**	.92**	**.90**						
10. Work-Related Flow	3.29	0.58	.42**	.46**	.20**	.43**	.34**	.30**	.31**	.34**	.36**	**.88**					
11. Personal Burnout	3.05	0.69	-.09	-.06	-.22**	-.18**	.04	.04	-.07	-.03	-.03	-.26**	**.87**				
12. Work-Related Burnout	2.82	0.70	-.21**	-.10	-.28**	-.26**	-.01	-.05	-.14*	-.10	-.10	-.38**	.79**	**.85**			
13. Job Satisfaction	4.15	0.79	.38**	.38**	.21**	.51**	.32**	.16**	.17**	.15**	.18**	.70**	-.34**	-.50**	**.85**		
14. Life Satisfaction	3.80	0.81	.24**	.21**	.28**	.22**	.07	.07	.16**	.14**	.15**	.41**	-.47**	-.42**	.40**	**.86**	
15. Recovery Experience	3.40	0.62	.05	-.11*	.11	.00	-.10	.02	.09	.03	.05	-.01	-.30**	-.30**	.09	.32**	**.83**

Notes: Reliability coefficients (Cronbach's α) listed along the diagonal in bold.
* = Statistically significant correlation coefficient (Pearson *r*) at $p < .05$.
** = Statistically significant correlation coefficient (Pearson *r*) at $p < .01$.
Problem Identification, Information Searching and Encoding, and Idea Generation are subscales of Creative Process Engagement.

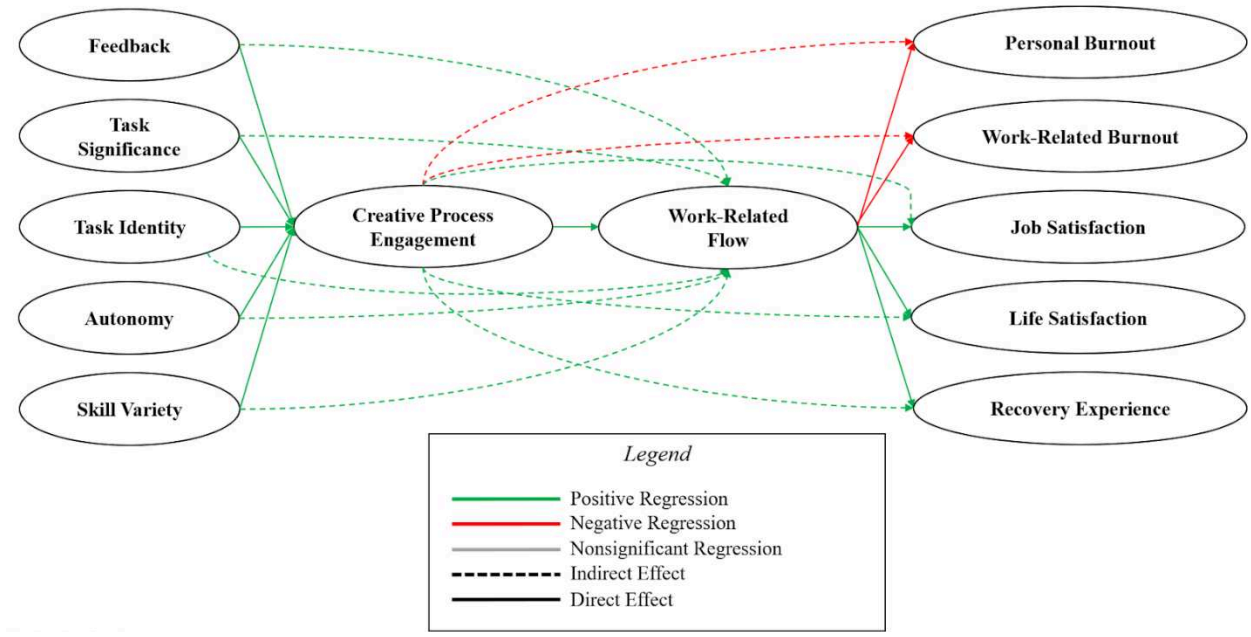


Figure 1. Proposed Research Model

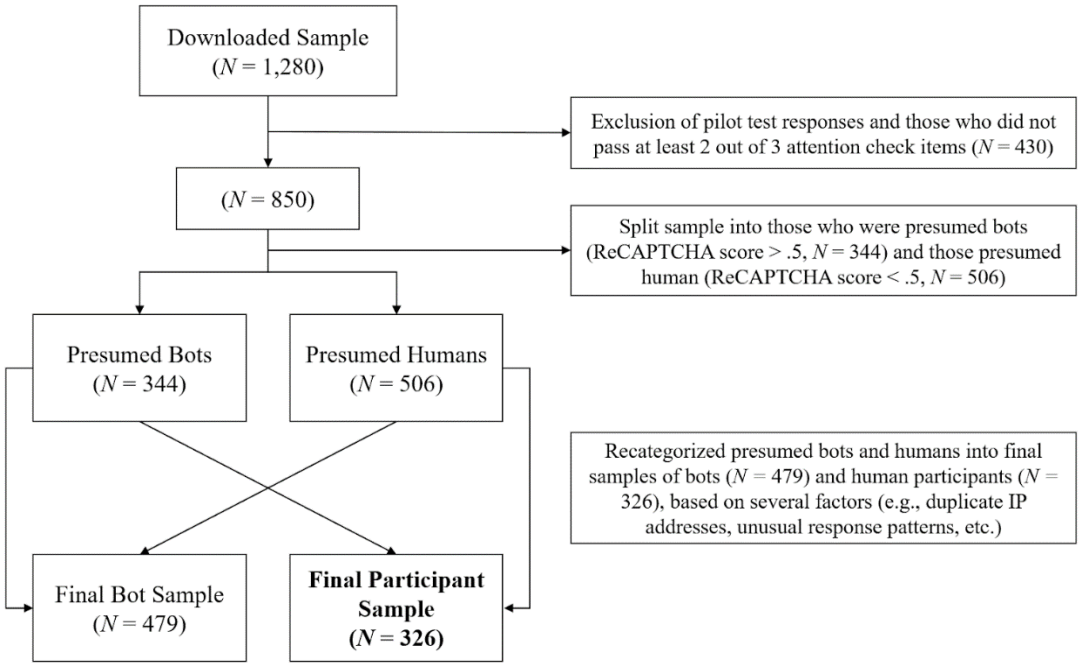
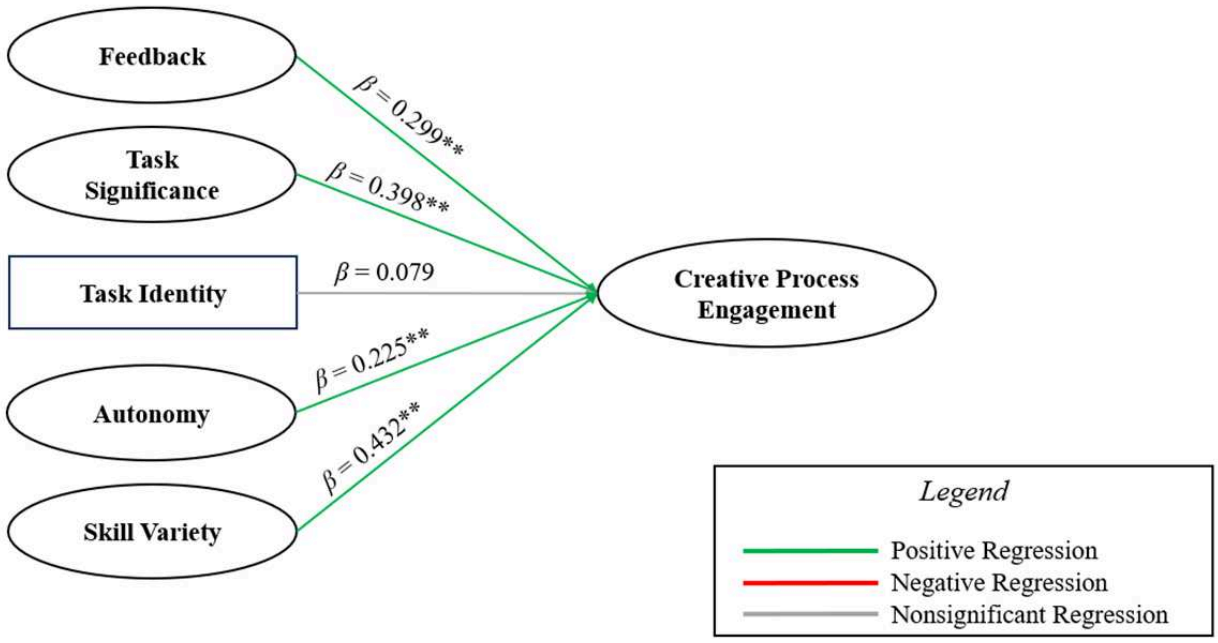
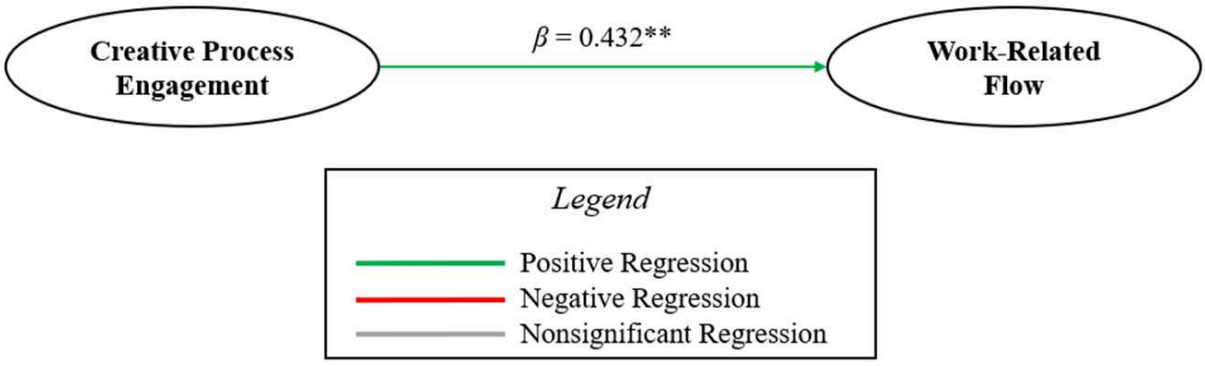


Figure 2. Flowchart of Data Cleaning Decisions



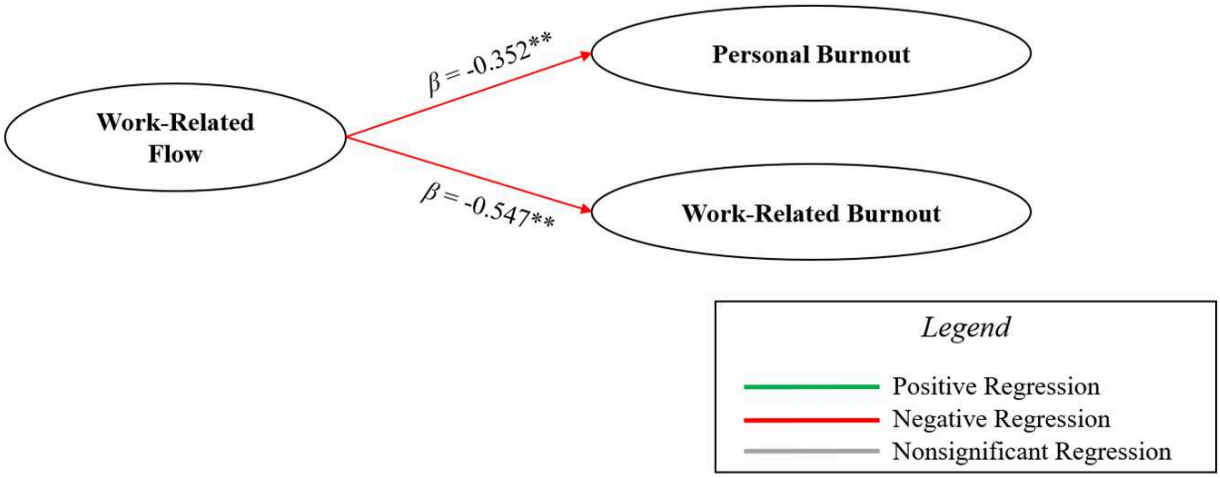
Note: Individual predictors were run in separate SEMs, for a total of five models. *$p < .05$; **$p < .01$.

Figure 3. Hypothesis Testing Results for Hypothesis 1



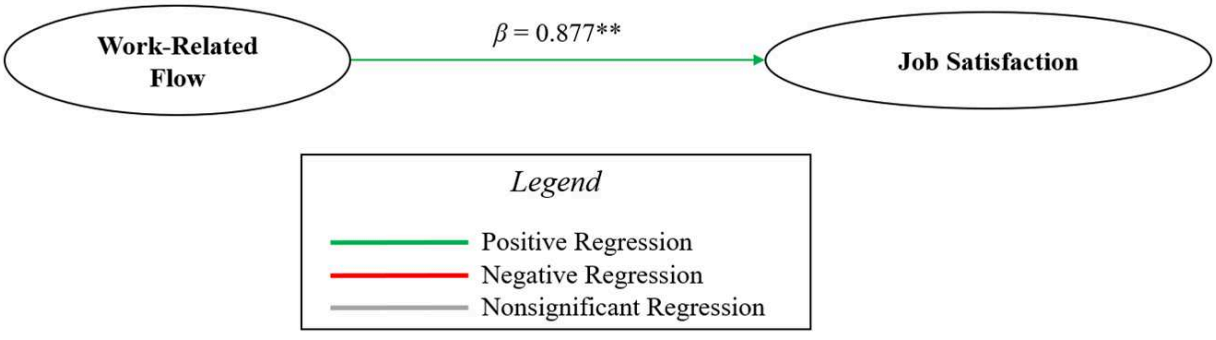
Note: *$p < .05$; **$p < .01$.

Figure 4. Hypothesis Testing Results for Hypothesis 2



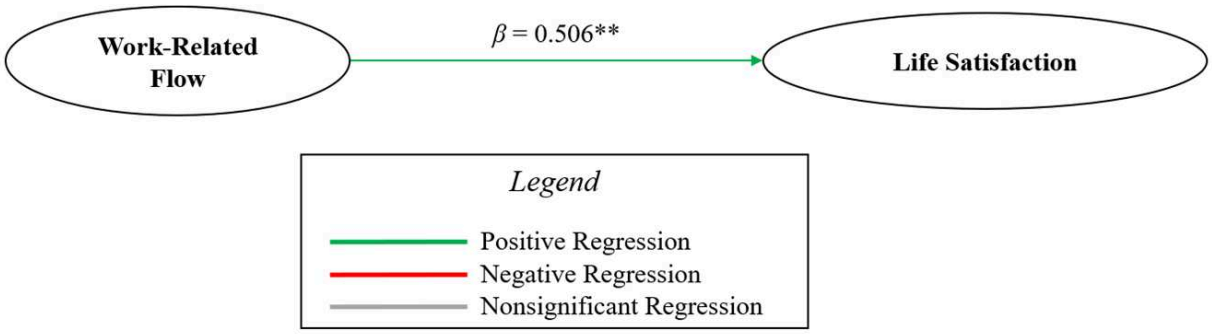
Note: Individual outcomes were run in separate SEMs, for a total of two models. *$p < .05$; **$p < .01$.

Figure 5. Hypothesis Testing Results for Hypothesis 3



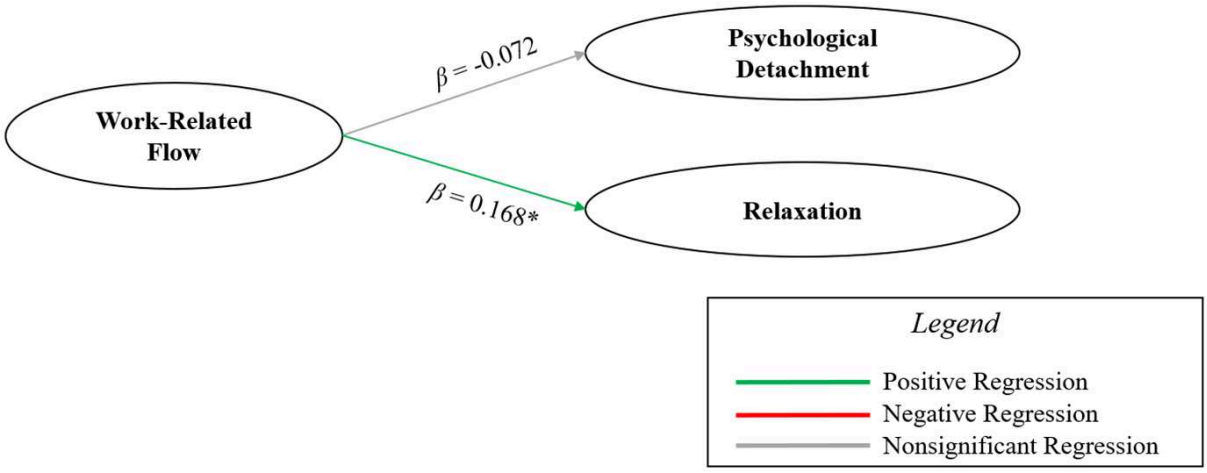
Note: *$p < .05$; **$p < .01$.

Figure 6. Hypothesis Testing Results for Hypothesis 4



Note: *$p < .05$; **$p < .01$.

Figure 7. Hypothesis Testing Results for Hypothesis 5



Note: Individual outcomes were run in separate SEMs, for a total of two models. *$p < .05$; **$p < .01$.

Figure 8. Hypothesis Testing Results for Hypothesis 6

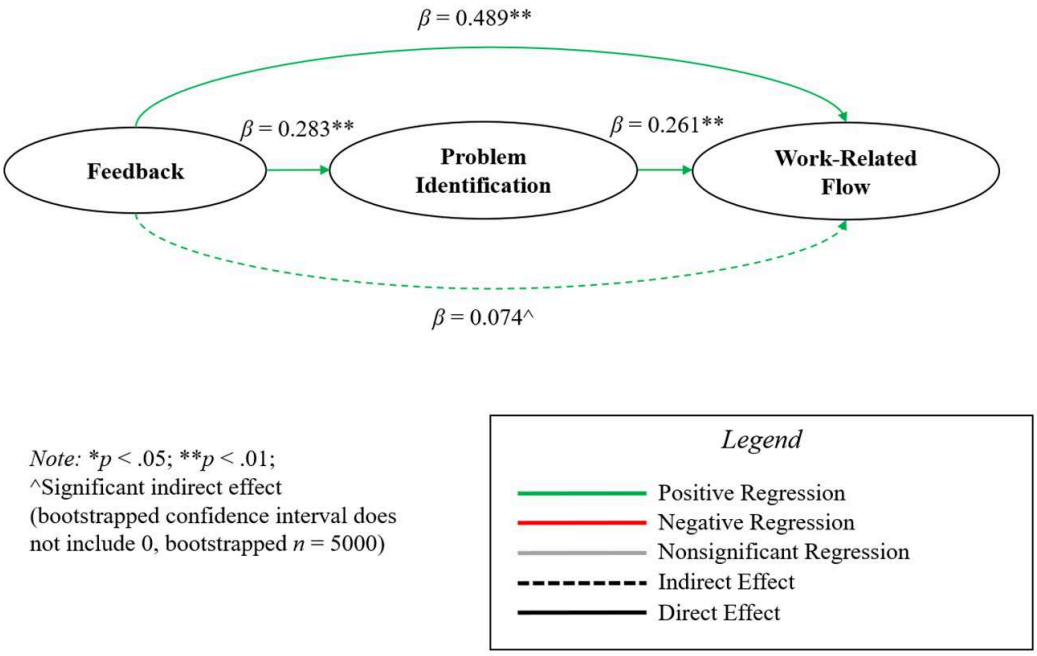


Figure 9.1. Hypothesis Testing Results for Hypothesis 7 (Feedback, Problem Identification, Work-Related Flow)

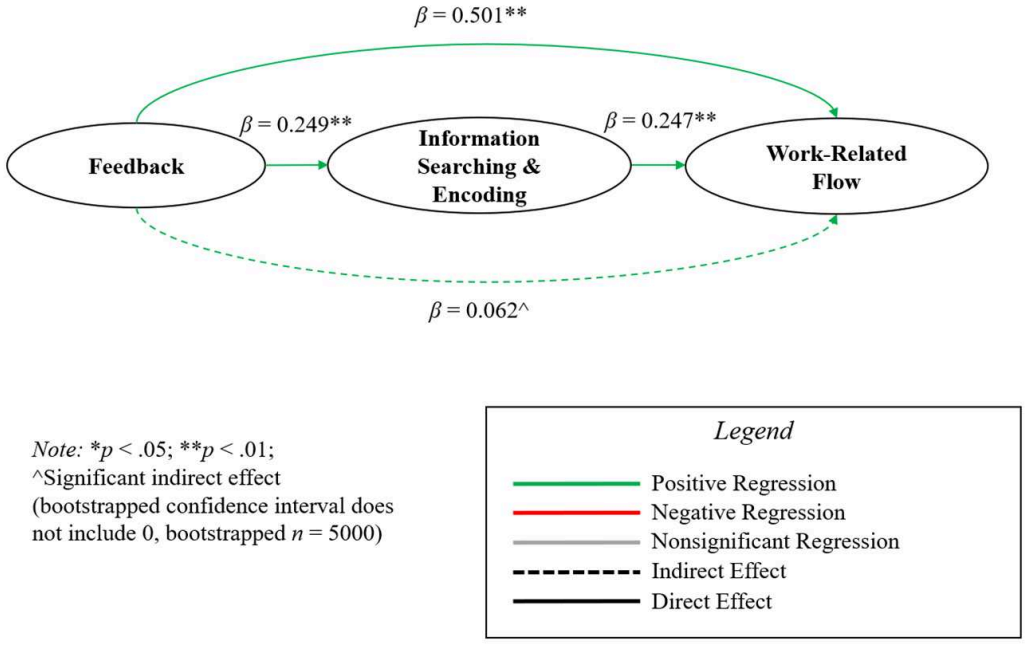


Figure 9.2. Hypothesis Testing Results for Hypothesis 7 (Feedback, Information Searching & Encoding, Work-Related Flow)

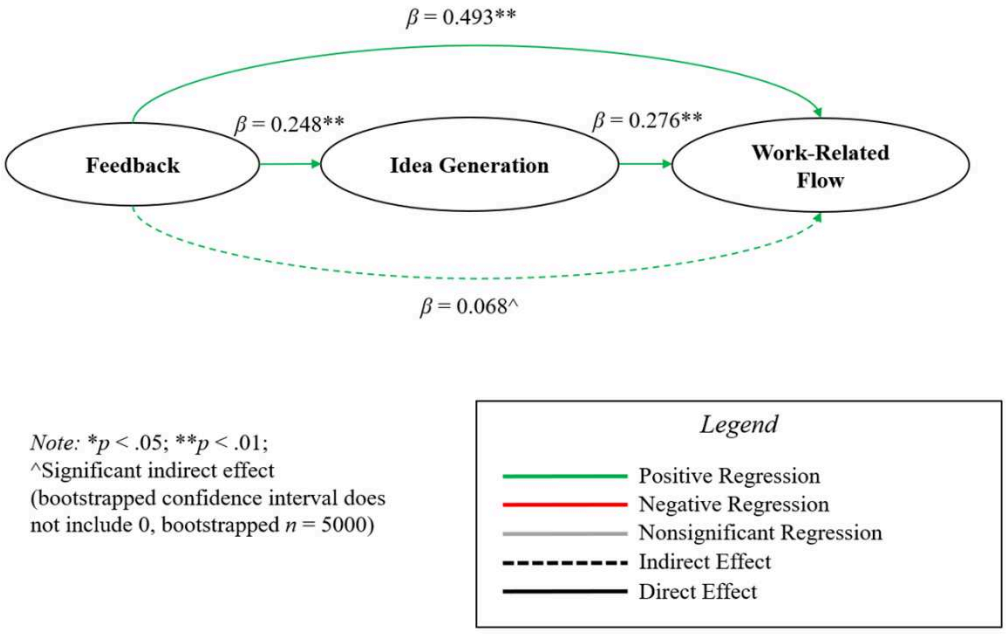


Figure 9.3. Hypothesis Testing Results for Hypothesis 7 (Feedback, Idea Generation, Work-Related Flow)

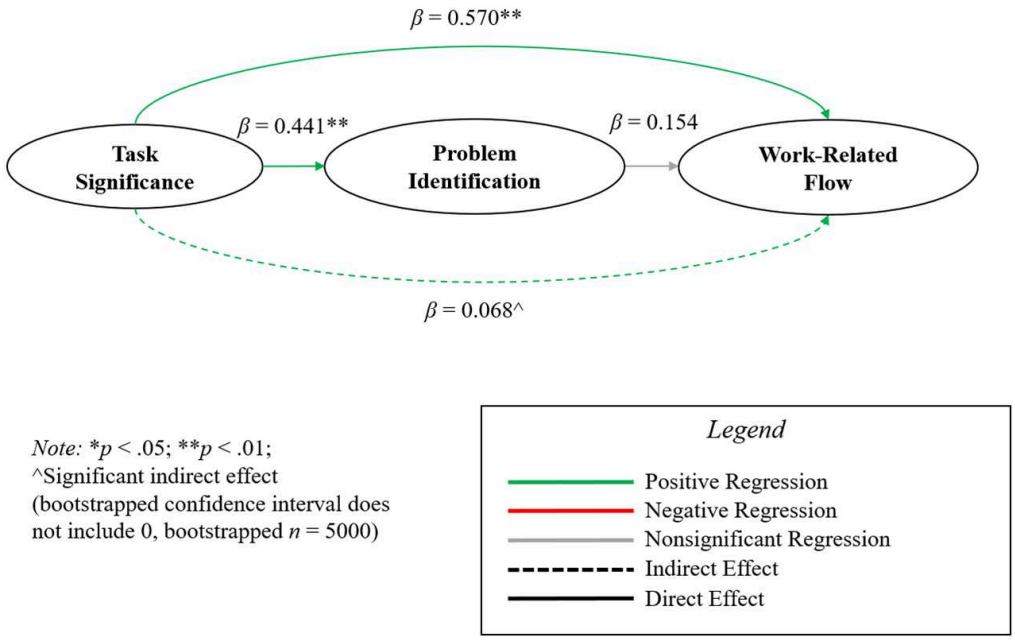


Figure 9.4. Hypothesis Testing Results for Hypothesis 7 (Task Significance, Problem Identification, Work-Related Flow)

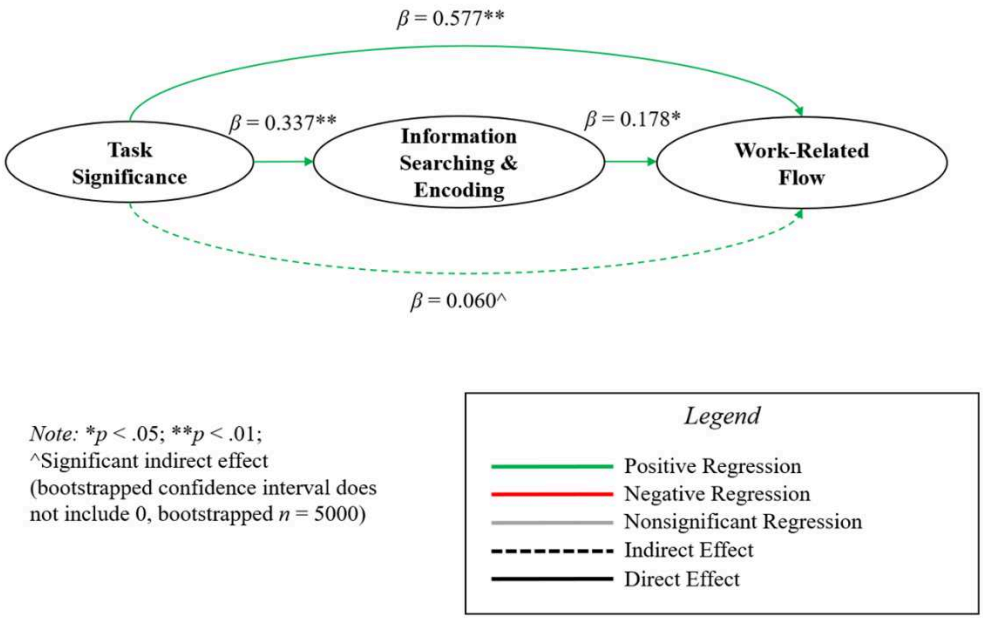


Figure 9.5. Hypothesis Testing Results for Hypothesis 7 (Task Significance, Information Searching & Encoding, Work-Related Flow)

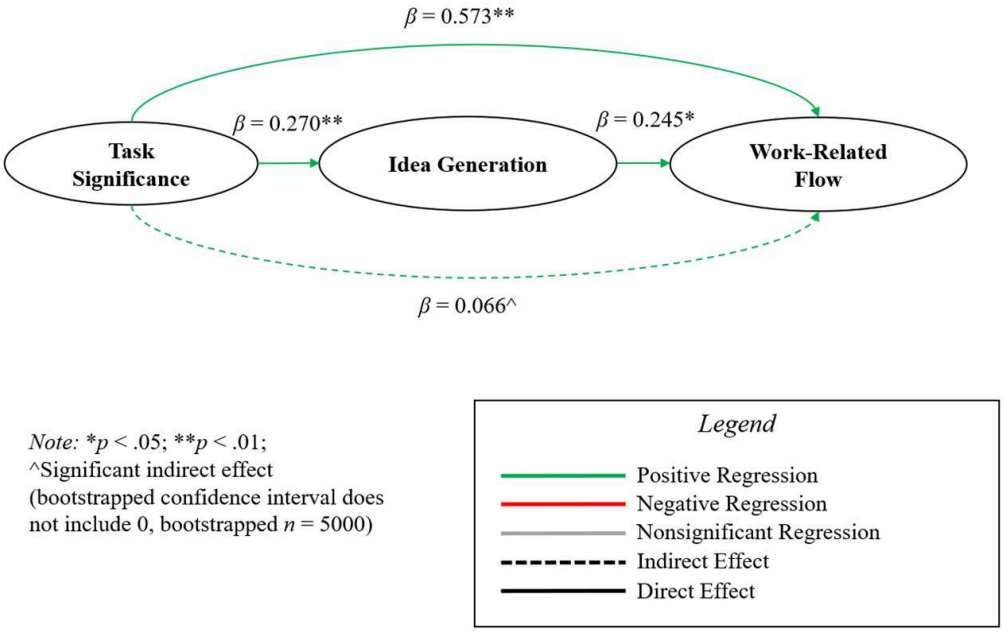


Figure 9.6. Hypothesis Testing Results for Hypothesis 7 (Task Significance, Idea Generation, Work-Related Flow)

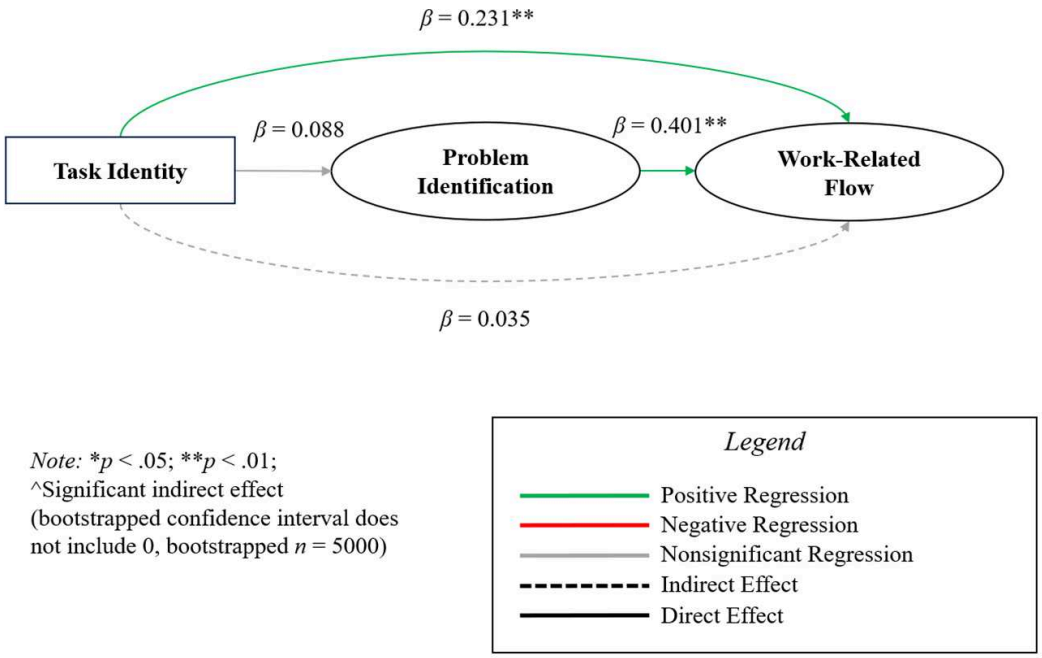


Figure 9.7. Hypothesis Testing Results for Hypothesis 7 (Task Identity, Problem Identification, Work-Related Flow)

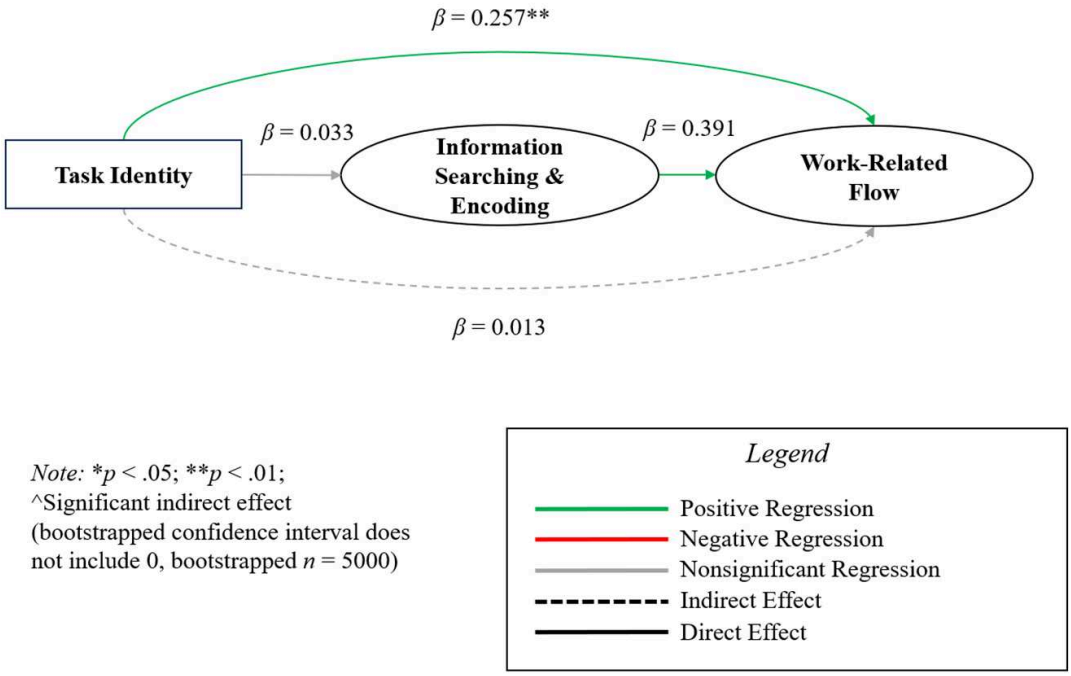


Figure 9.8. Hypothesis Testing Results for Hypothesis 7 (Task Identity, Information Searching & Encoding, Work-Related Flow)

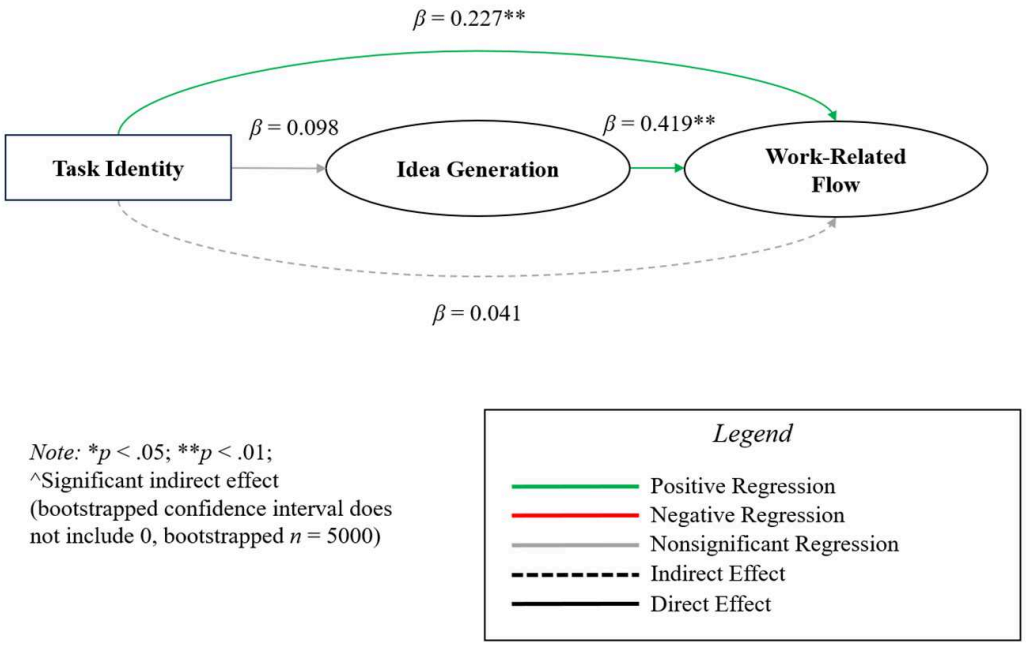


Figure 9.9. Hypothesis Testing Results for Hypothesis 7 (Task Identity, Idea Generation, Work-Related Flow)

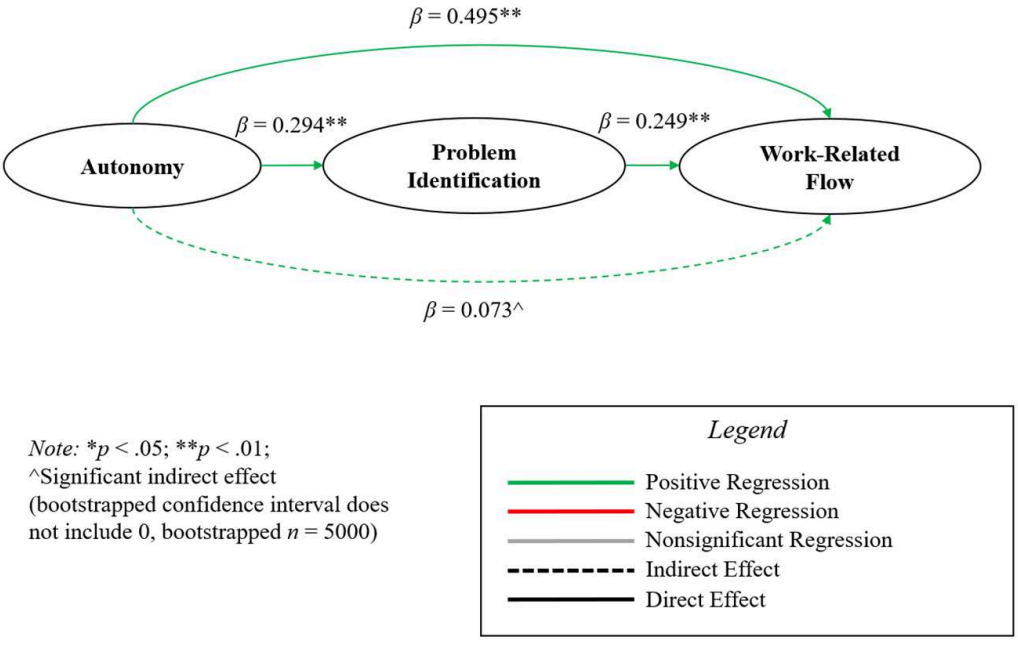


Figure 9.10. Hypothesis Testing Results for Hypothesis 7 (Autonomy, Problem Identification, Work-Related Flow)

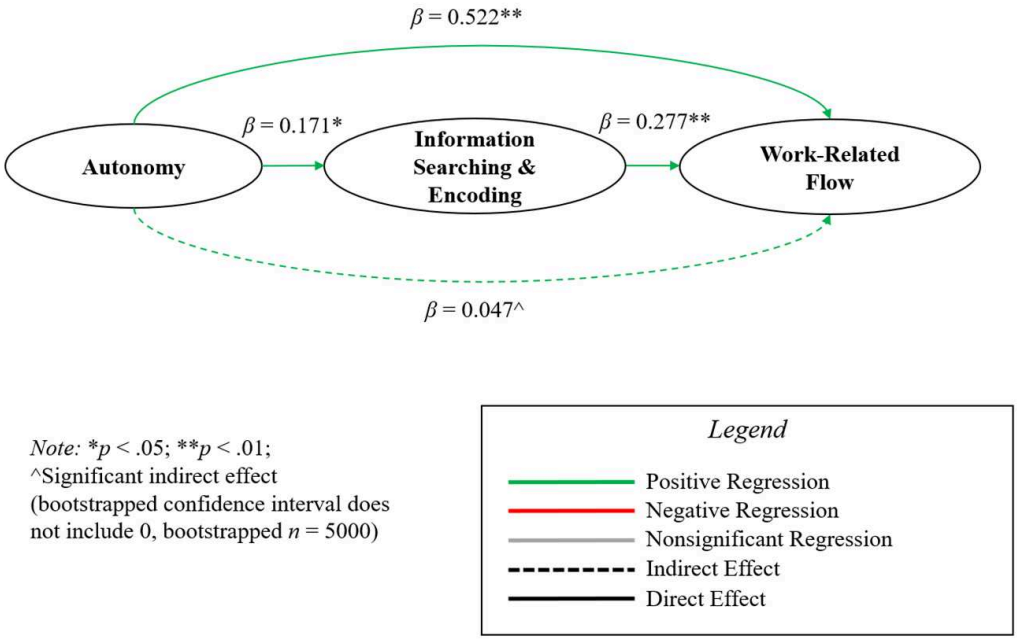


Figure 9.11. Hypothesis Testing Results for Hypothesis 7 (Autonomy, Information Searching & Encoding, Work-Related Flow)

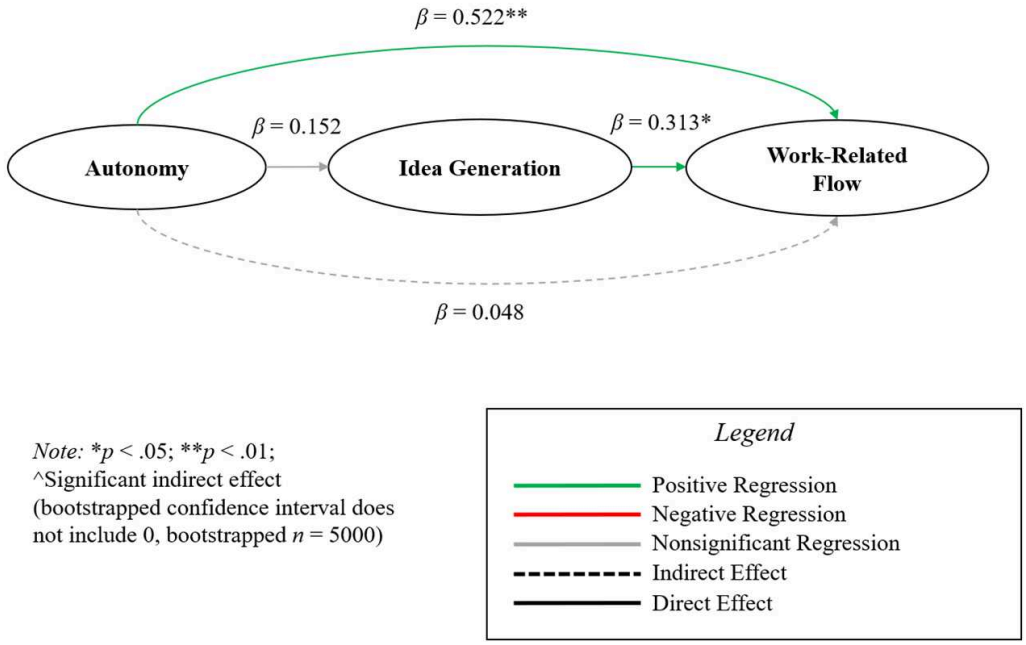


Figure 9.12. Hypothesis Testing Results for Hypothesis 7 (Autonomy, Idea Generation, Work-Related Flow)

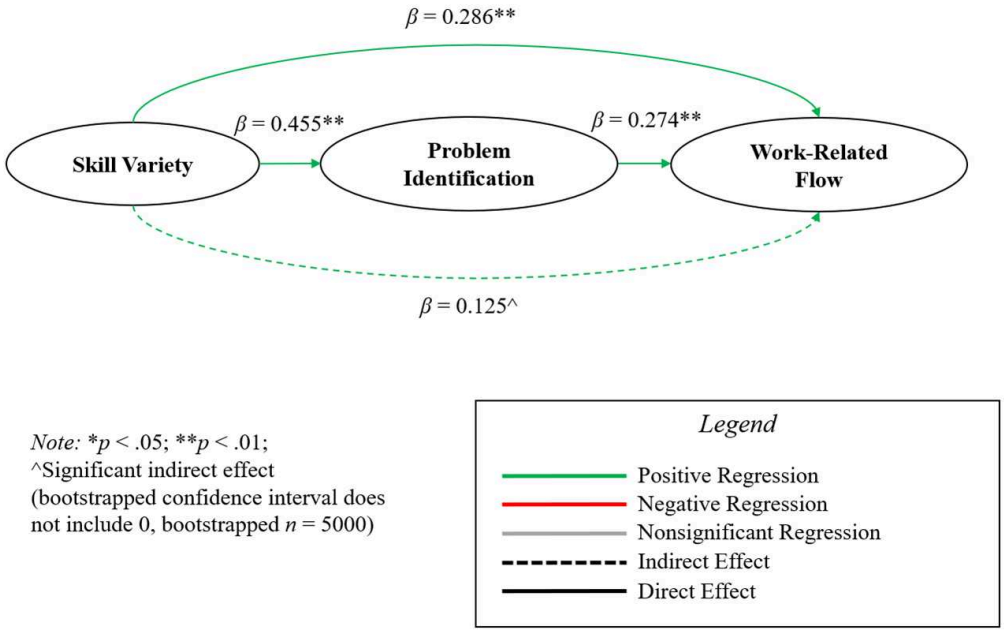


Figure 9.13. Hypothesis Testing Results for Hypothesis 7 (Skill Variety, Problem Identification, Work-Related Flow)

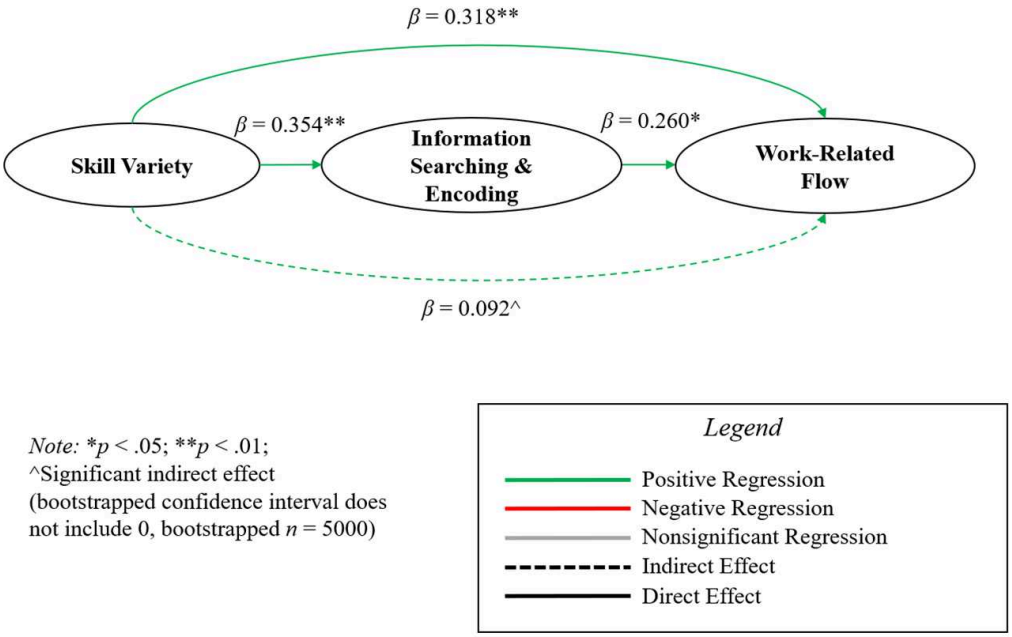


Figure 9.14. Hypothesis Testing Results for Hypothesis 7 (Skill Variety, Information Searching & Encoding, Work-Related Flow)

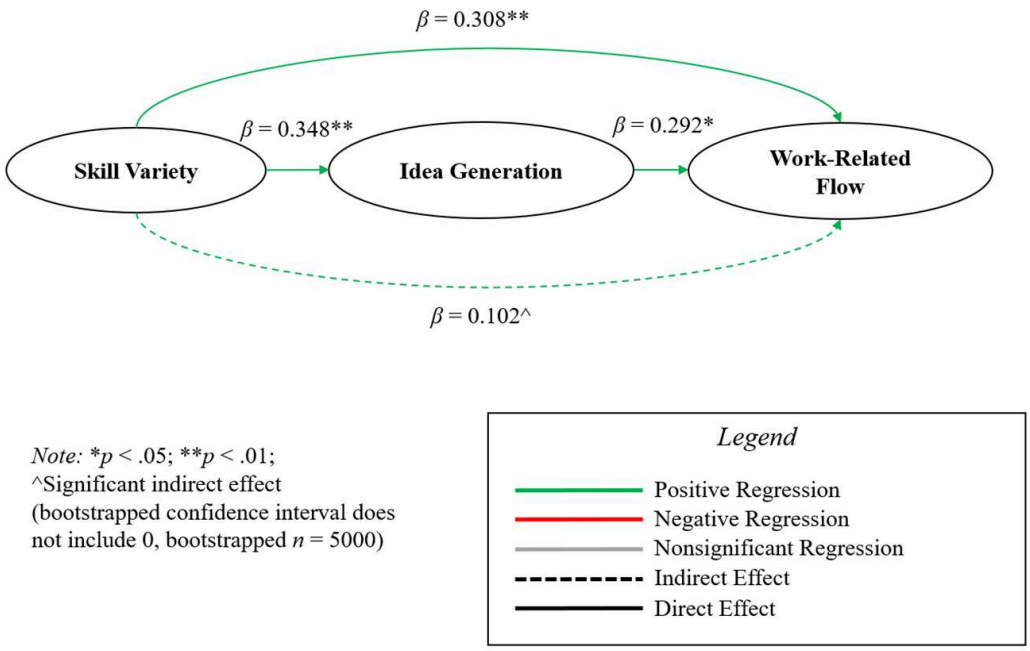


Figure 9.15. Hypothesis Testing Results for Hypothesis 7 (Skill Variety, Idea Generation, Work-Related Flow)

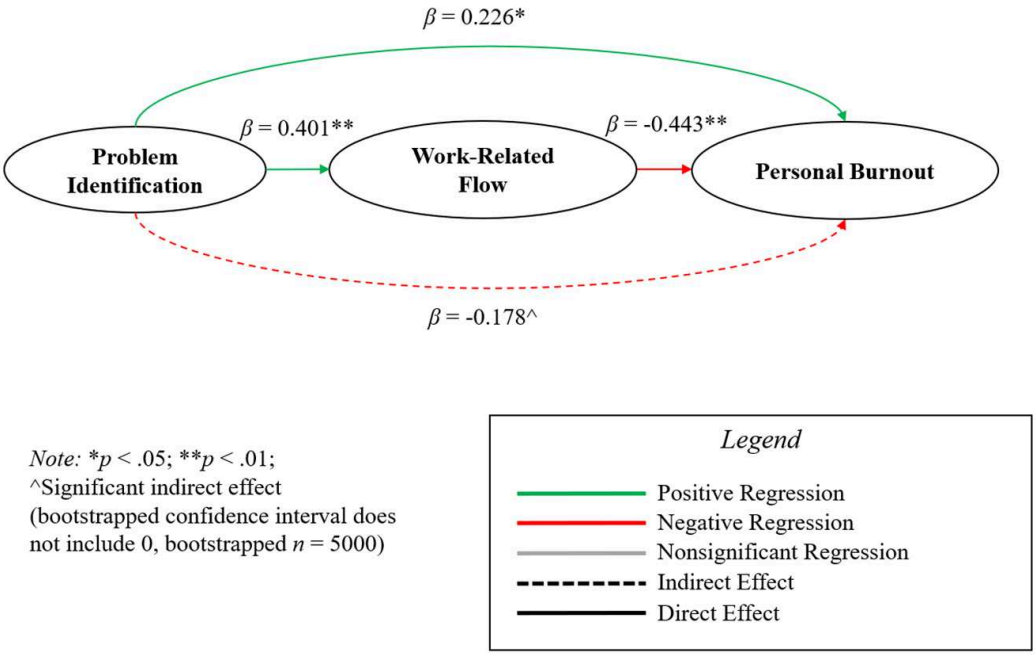


Figure 10.1. Hypothesis Testing Results for Hypothesis 8 (Problem Identification, Work-Related Flow, Personal Burnout)

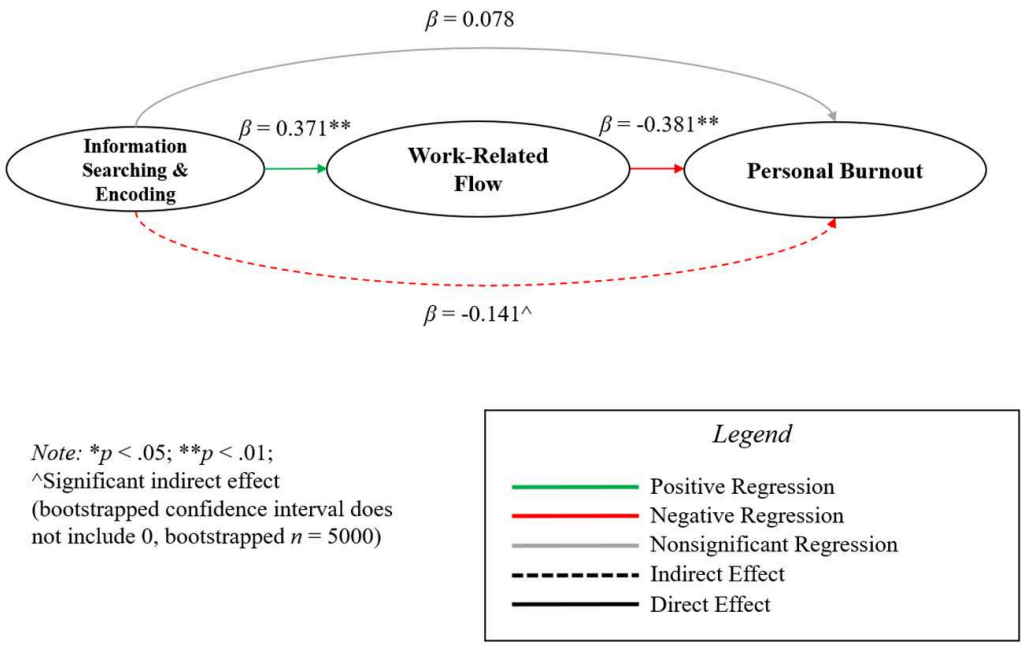


Figure 10.2. Hypothesis Testing Results for Hypothesis 8 (Information Searching & Encoding, Work-Related Flow, Personal Burnout)

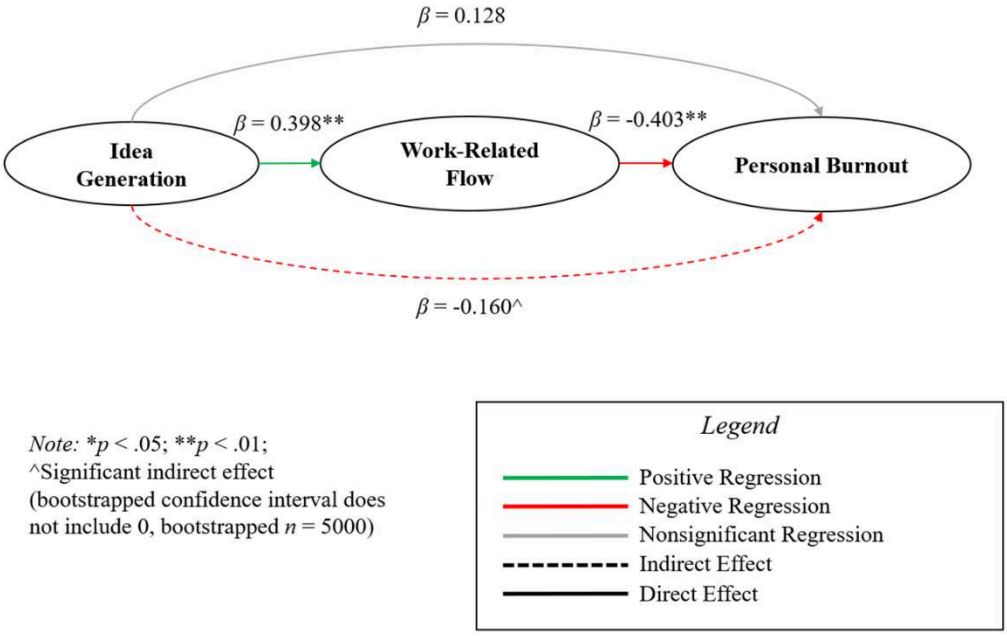


Figure 10.3. Hypothesis Testing Results for Hypothesis 8 (Idea Generation, Work-Related Flow, Personal Burnout)

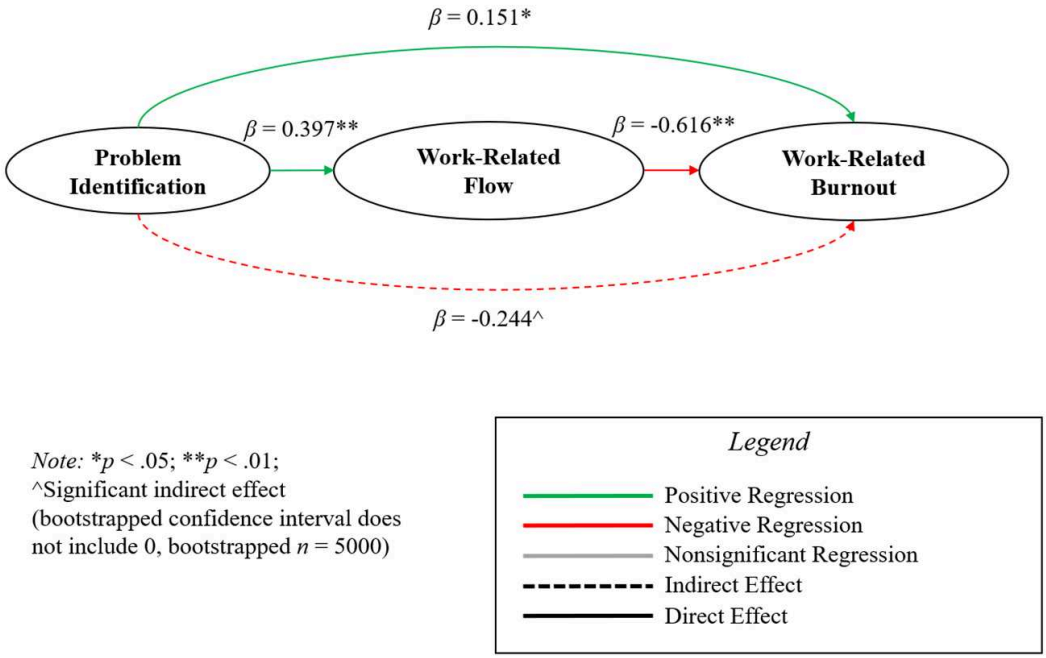


Figure 10.4. Hypothesis Testing Results for Hypothesis 8 (Problem Identification, Work-Related Flow, Work-Related Burnout)

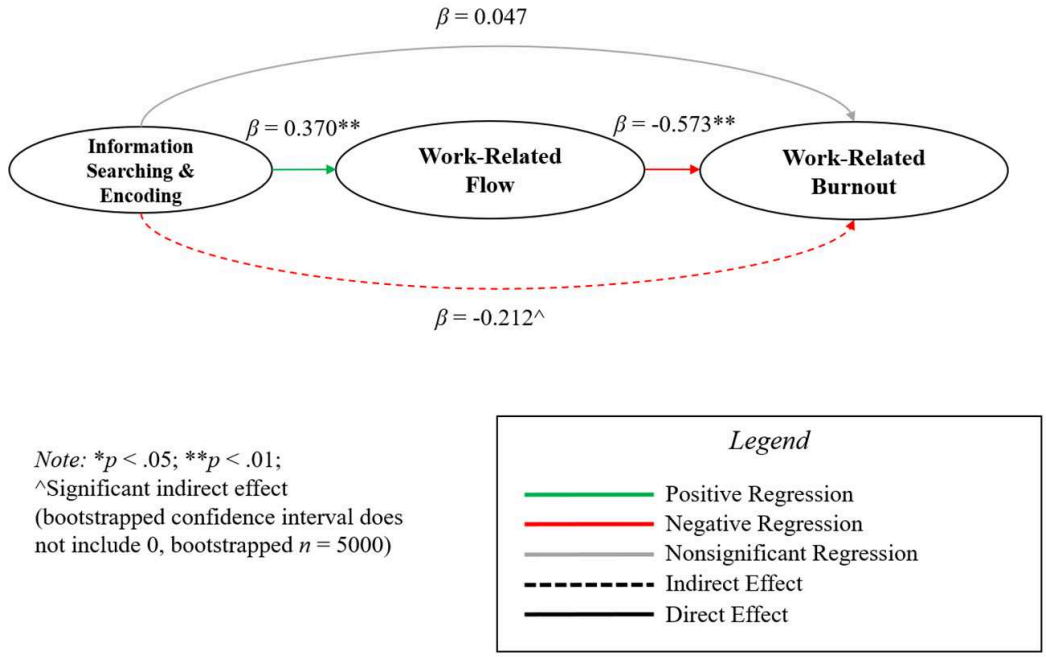


Figure 10.5. Hypothesis Testing Results for Hypothesis 8 (Information Searching & Encoding, Work-Related Flow, Work-Related Burnout)

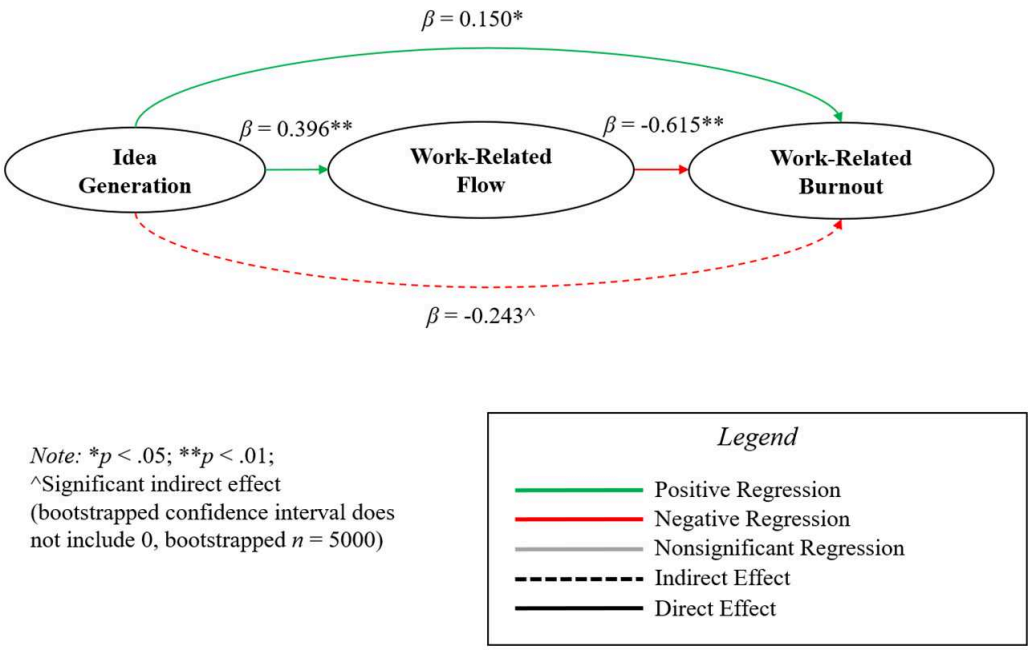


Figure 10.6. Hypothesis Testing Results for Hypothesis 8 (Idea Generation, Work-Related Flow, Work-Related Burnout)

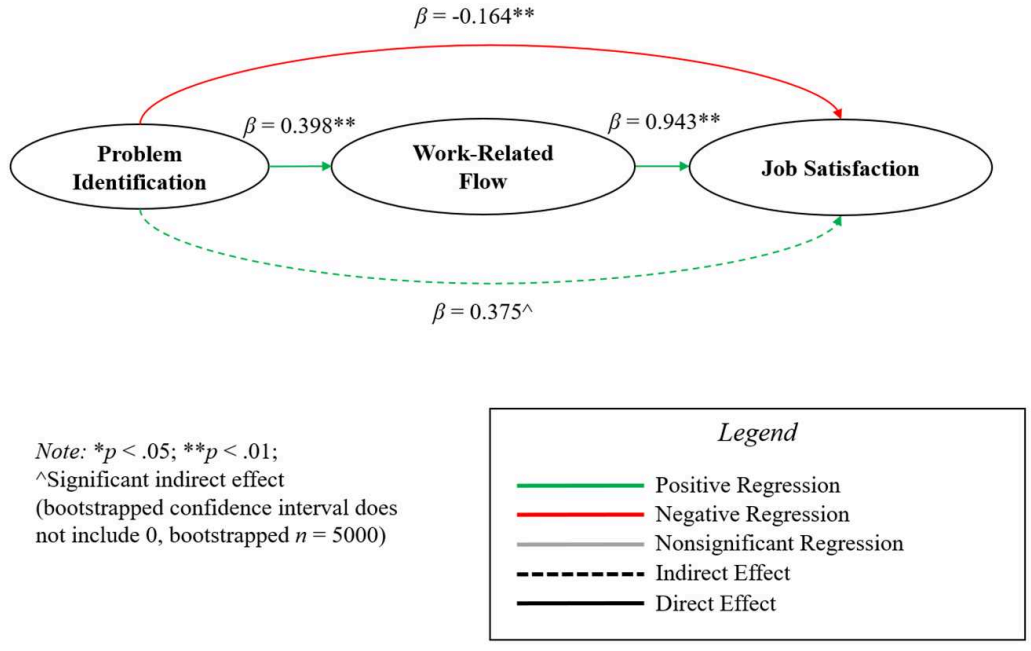


Figure 11.1. Hypothesis Testing Results for Hypothesis 9 (Problem Identification, Work-Related Flow, Job Satisfaction)

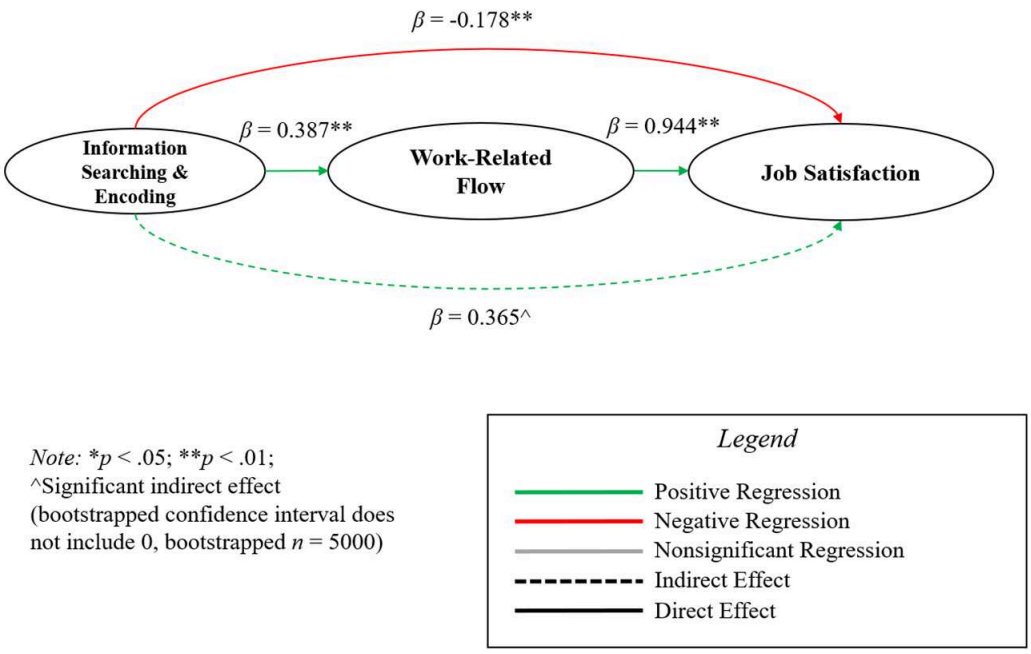


Figure 11.2. Hypothesis Testing Results for Hypothesis 9 (Information Searching & Encoding, Work-Related Flow, Job Satisfaction)

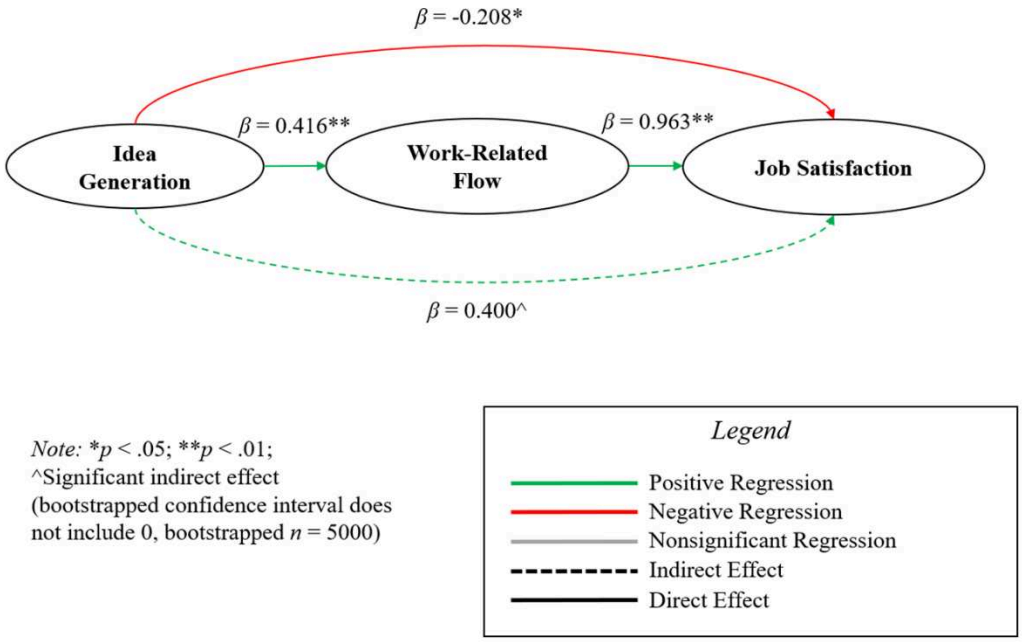


Figure 11.3. Hypothesis Testing Results for Hypothesis 9 (Idea Generation, Work-Related Flow, Job Satisfaction)

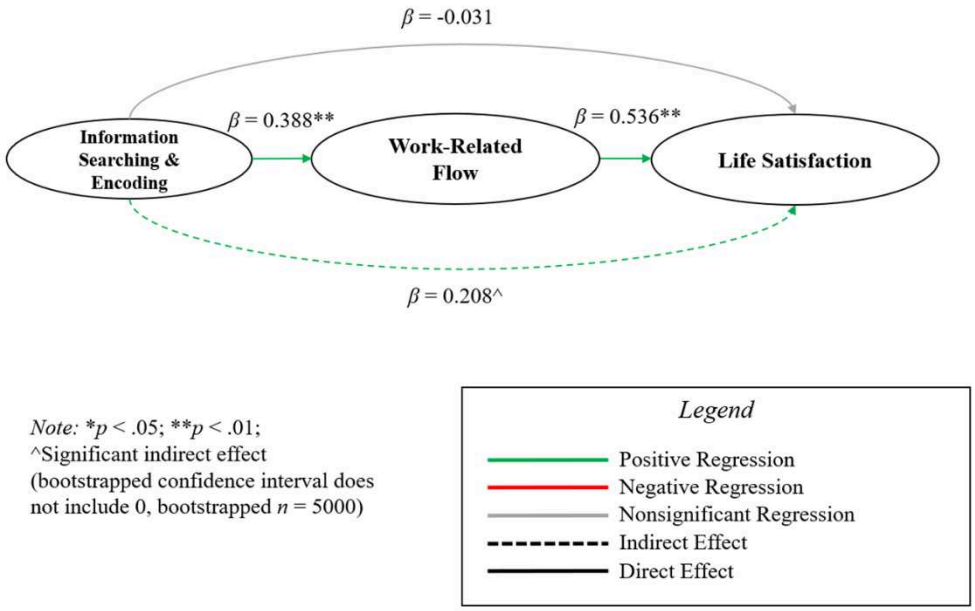


Figure 12.1. Hypothesis Testing Results for Hypothesis 10 (Problem Identification, Work-Related Flow, Life Satisfaction)

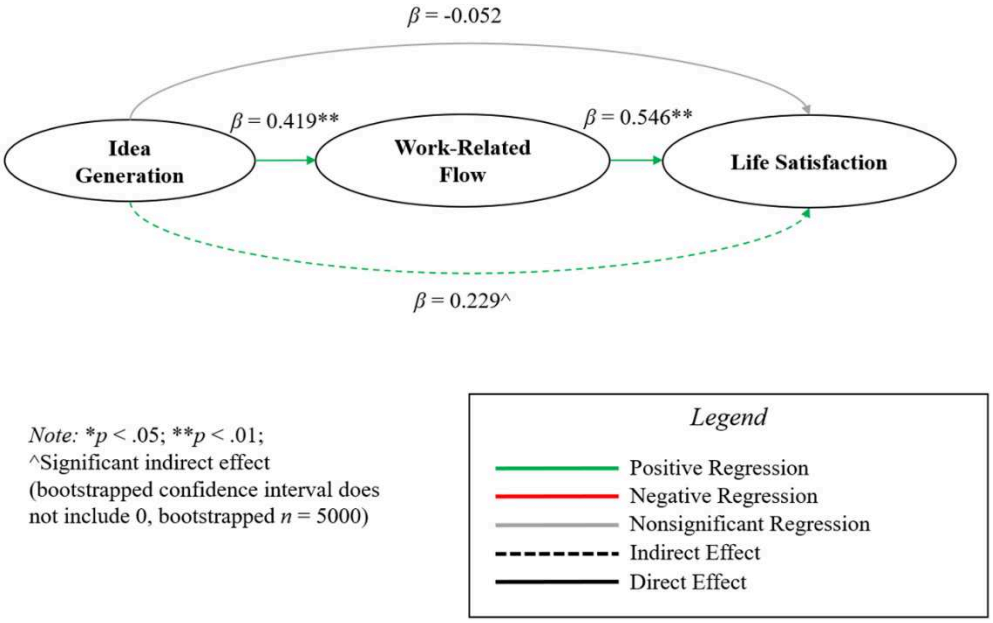


Figure 12.2. Hypothesis Testing Results for Hypothesis 10 (Information Searching & Encoding, Work-Related Flow, Life Satisfaction)

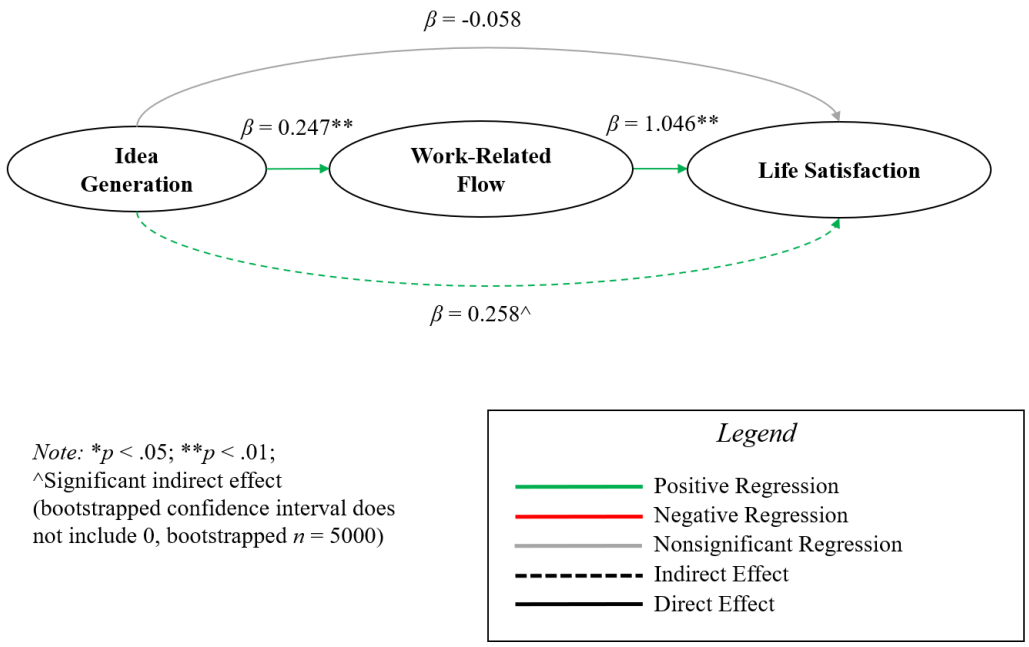


Figure 12.3. Hypothesis Testing Results for Hypothesis 10 (Idea Generation, Work-Related Flow, Life Satisfaction)

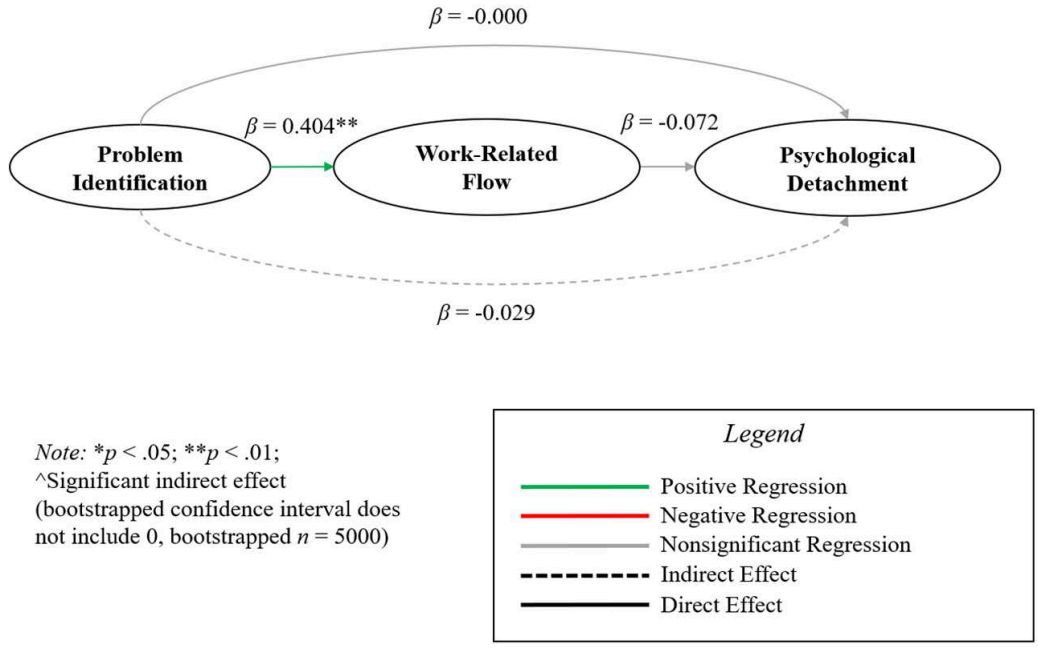


Figure 13.1. Hypothesis Testing Results for Hypothesis 11 (Problem Identification, Work-Related Flow, Psychological Detachment)

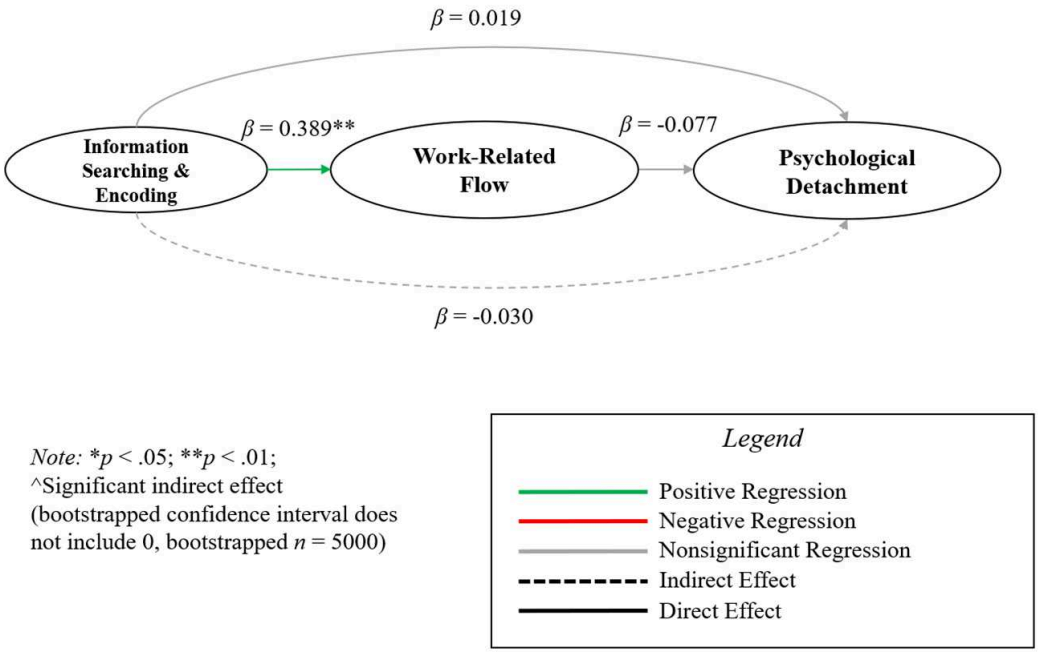


Figure 13.2. Hypothesis Testing Results for Hypothesis 11 (Information Searching & Encoding, Work-Related Flow, Psychological Detachment)

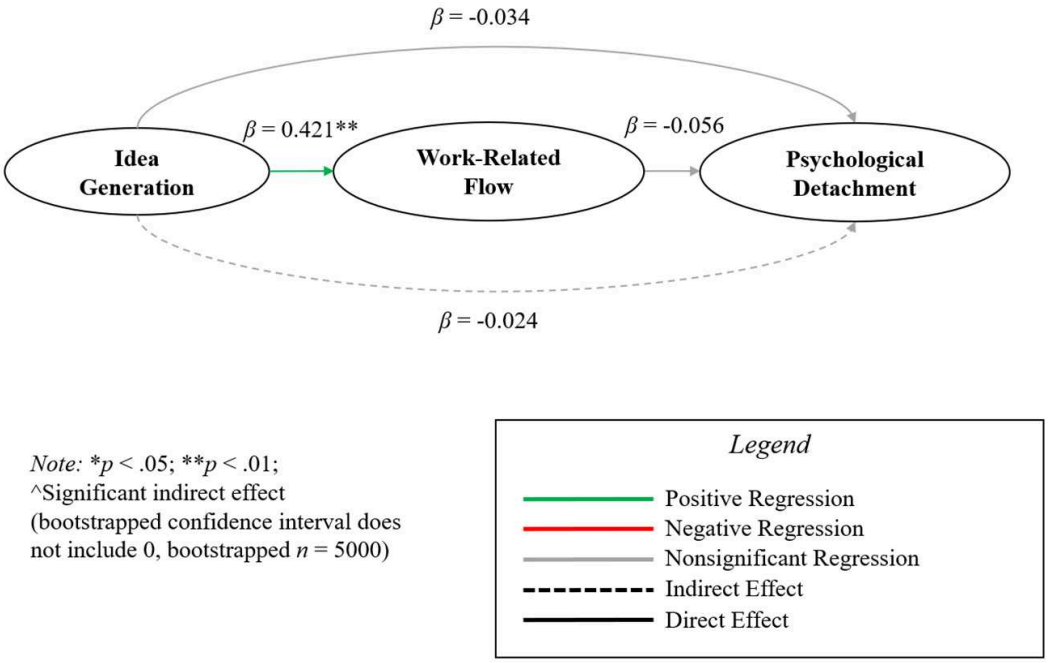


Figure 13.3. Hypothesis Testing Results for Hypothesis 11 (Idea Generation, Work-Related Flow, Psychological Detachment)

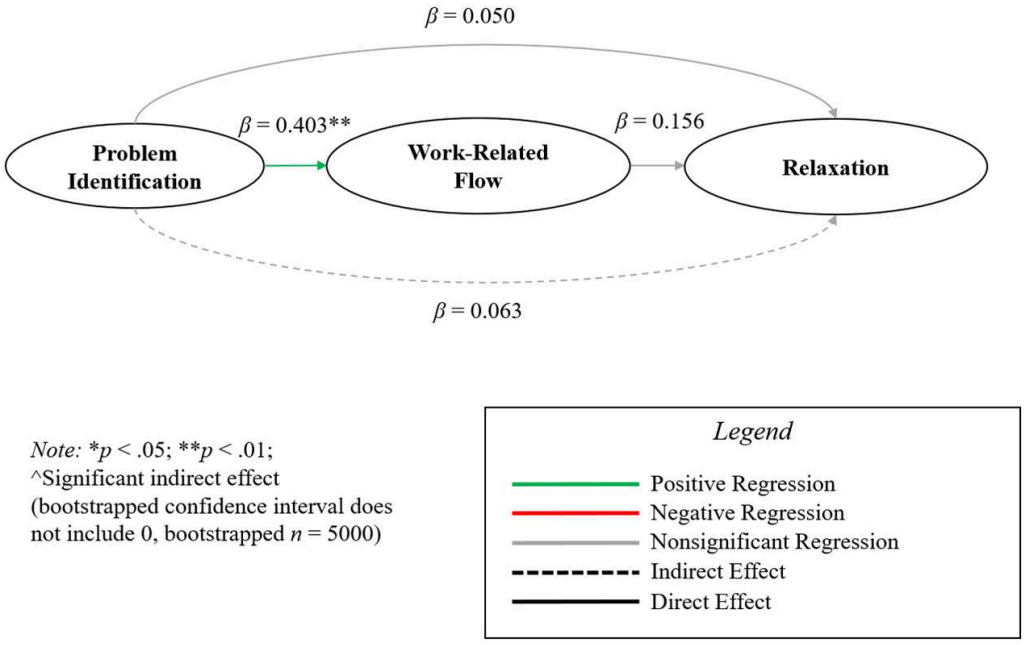


Figure 13.4. Hypothesis Testing Results for Hypothesis 11 (Problem Identification, Work-Related Flow, Relaxation)

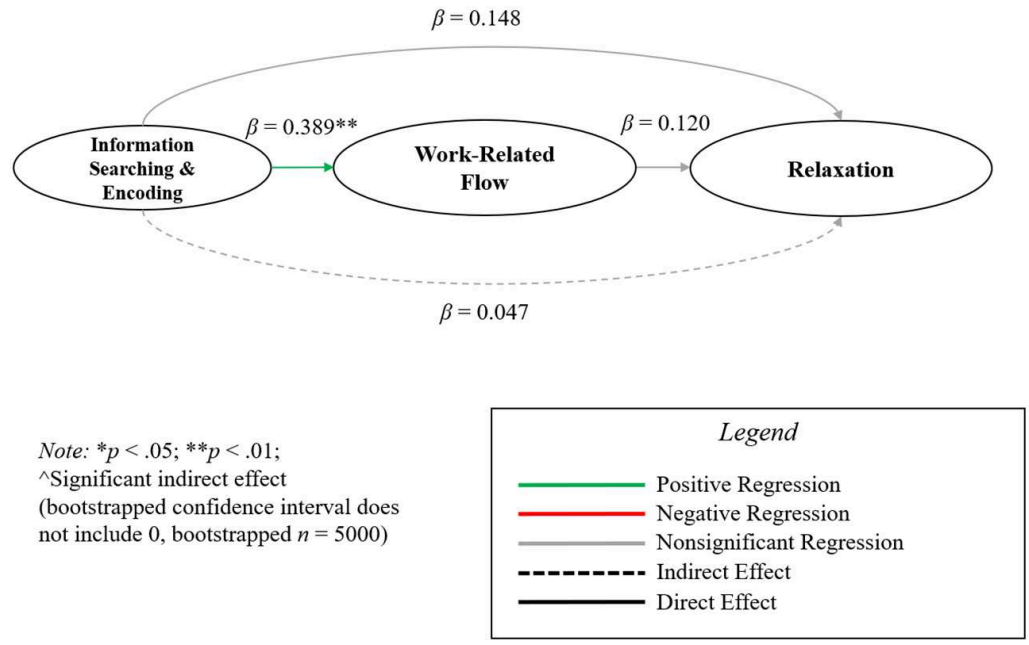


Figure 13.5. Hypothesis Testing Results for Hypothesis 11 (Information Searching & Encoding, Work-Related Flow, Relaxation)

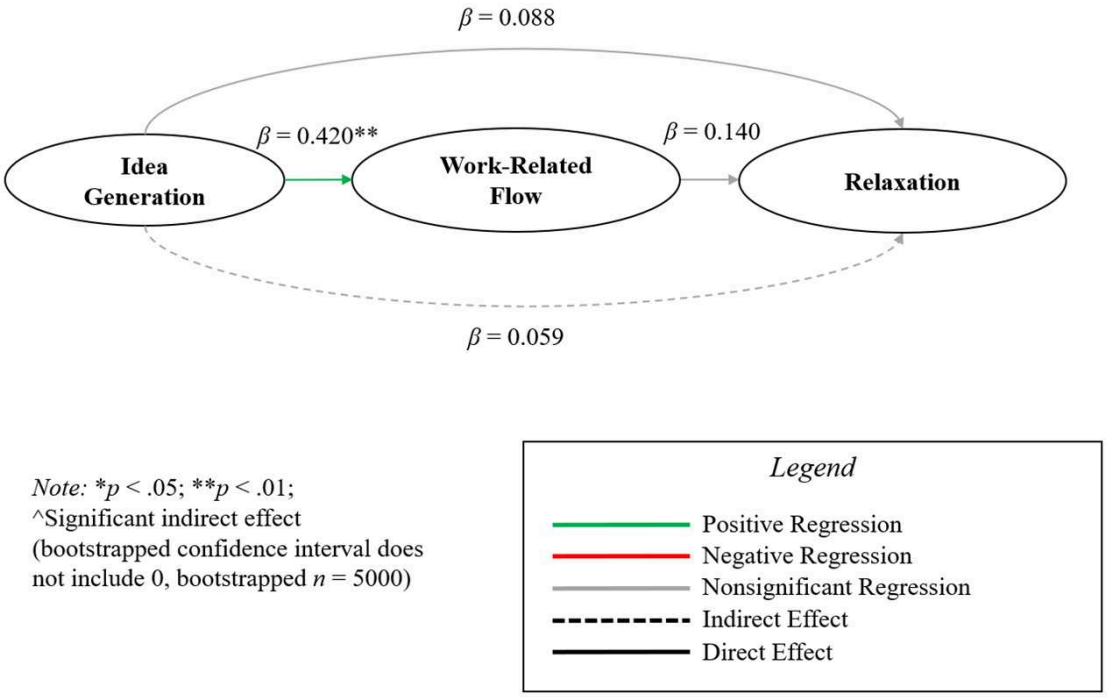


Figure 13.6. Hypothesis Testing Results for Hypothesis 11 (Idea Generation, Work-Related Flow, Relaxation)

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APPENDIX

Survey Measures

- Job Characteristics (from the Job Diagnostic Survey, Hackman & Oldham, 1974)

  Hackman, J. R., & Oldham, G. R. (1974). The Job Diagnostic Survey: An instrument for the diagnosis of jobs and the evaluation of job redesign projects. https://eric.ed.gov/?id=ED099580

  Please rate the degree to which you agree or disagree with the following statements about your work.

  JDS1. I decide on my own how to go about doing the work
  JDS2. I do a "whole" and identifiable piece of work. It is not a small part of the overall piece of work, which is finished by other people or by automatic machines
  JDS3. The job requires me to do many different things, using a variety of my skills and talents
  JDS4. The results of my work significantly affect the lives and well-being of other people.
  JDS5. The actual work itself provides clues about how well I am doing--aside from "feedback" co-workers or supervisors provide
  JDS6. The job requires me to use a number of complex or high- level skills
  JDS7. The job is arranged so that I can do an entire piece of work from beginning to end
  JDS8. Just doing the work required by the job provides many chances for me to figure out how well I am doing
  JDS9. The job requires me to perform a variety of tasks
  JDS10. The job is one where a lot of other people can be affected by how well the work gets done
  JDS11. The job gives me a chance to use my personal initiative or judgment in carrying out the work
  JDS12. The job provides me the chance to completely finish the piece of work I begin
  JDS13. I finish a job, I know whether I performed well
  JDS14. The job gives me considerable opportunity for independence and freedom in how I do the work
  JDS15. The job itself is very significant and important in the broader scheme of things

Strongly disagree	*Disagree*	*Neither agree nor disagree*	*Agree*	*Strongly agree*
1	2	3	4	5

- Creative Process Engagement (from the Creative Process Engagement measure, Zhang & Bartol, 2010)

  Zhang, X., & Bartol, K. M. (2010). Linking empowering leadership and employee creativity: The influence of psychological empowerment, intrinsic motivation, and creative process engagement. *Academy of Management Journal*, *53*(1), 107–128. https://doi.org/10.5465/amj.2010.48037118

  In your job, to what extent do you engage in the follow actions when seeking to accomplish an assignment or solve a problem?

  Factor 1: Problem Identification
  CPE1. I spend considerable time trying to understand the nature of the problem
  CPE2. I think about the problem from multiple perspectives
  CPE3. I decompose a difficult problem/assignment into parts to obtain greater understanding

  Factor 2: Information Searching and Encoding
  CPE4. I consult a wide variety of information
  CPE5. I search for information from multiple sources (e.g., personal memories, others' experience, documentation, Internet, etc.)
  CPE6. I retain large amounts of detailed information in my area of expertise for future use.

  Factor 3: Idea Generation
  CPE7. I consider diverse sources of information in generating new ideas
  CPE8. I look for connections with solutions used in seeming diverse areas
  CPE9. I generate a significant number of alternatives to the same problem before I choose the final solution
  CPE10. I try to devise potential solutions that move away from established ways of doing things
  CPE11. I spend considerable time shifting through information that helps to generate new ideas

Never	*Rarely*	*Sometimes*	*Often*	*Always*
1	2	3	4	5

- Work-Related Flow (from the Work-Related Flow Inventory (WOLF), Bakker, 2008)

  Bakker, A. B. (2008). The work-related flow inventory: Construction and initial validation of the WOLF. *Journal of Vocational Behavior, 72*(3), 400–414. https://doi.org/10.1016/j.jvb.2007.11.007

  Please indicate how frequently you experience the following during work.

  Factor 1: Absorption
  FLOW1. When I am working, I think about nothing else
  FLOW2. I get carried away by my work
  FLOW3. When I am working, I forget everything else around me
  FLOW4. I am totally immersed in my work

  Factor 2: Work Enjoyment
  FLOW5. My work gives me a good feeling
  FLOW6. I do my work with a lot of enjoyment
  FLOW7. I feel happy during my work
  FLOW8. I feel cheerful when I am working

  Factor 3: Intrinsic Work Motivation
  FLOW9. I would still do this work, even if I received less pay
  FLOW10. I find that I also want to work in my free time
  FLOW11. I work because I enjoy it
  FLOW12. When I am working on something, I am doing it for myself
  FLOW13. I get my motivation from the work itself, and not from the reward for it

Never	*Rarely*	*Sometimes*	*Often*	*Always*
1	2	3	4	5

- Personal & Work-Related Burnout (from the Copenhagen Burnout Inventory, Kristensen et al., 2005)

  Kristensen, T. S., Borritz, M., Villadsen, E., & Christensen, K. B. (2005). The Copenhagen Burnout Inventory: A new tool for the assessment of burnout. *Work & Stress, 19*, 192–207. https://doi.org/10.1080/02678370500297720

Scale 1: Personal Burnout
CBI1. How often do you feel tired?
CBI2. How often are you physically exhausted?
CBI3. How often are you emotionally exhausted?
CBI4. How often do you think: "I can't take it anymore"?
CBI5. How often do you feel worn out?
CBI6. How often do you feel weak and susceptible to illness?

Scale 2: Work-Related Burnout
CBI7. How often do you feel worn out at the end of the working day?
CBI8. How often are you exhausted in the morning at the thought of another day at work?
CBI9. How often do you feel that every working hour is tiring for you?
CBI10. How often do you have enough energy for family and friends during leisure time? (R)
CBI11. How often is your work emotionally exhausting?
CBI12. How often does your work frustrate you?
CBI13. How often do you feel burnt out because of your work?

Never	*Rarely*	*Sometimes*	*Often*	*Always*
1	2	3	4	5

- Job Satisfaction measure (3 items selected from the Michigan Organizational Assessment Questionnaire, Cammann et al. 1983; validated by Gibbons & Fisher, 2023)

Please rate the degree to which you agree or disagree with the following statements.

JS1. All in all, I am satisfied with my job
JS2. In general, I don't like my job (R)
JS3. In general, I like working for this job *(wording changed slightly based on pilot test)*

Strongly disagree	*Disagree*	*Neither agree nor disagree*	*Agree*	*=Strongly agree*
1	2	3	4	5

- Life Satisfaction measure (3 items selected from the Satisfaction with Life Scale, Diener et al. 1985; validated by Gibbons & Fisher, 2023)
  Please rate the degree to which you agree or disagree with the following statements.

  LS1. As a whole, I am satisfied with my life
  LS2. In most ways, my life is close to ideal
  LS3. The conditions of my life are excellent

Strongly disagree	*Disagree*	*Neither agree nor disagree*	*Agree*	*Strongly agree*
1	2	3	4	5

- Recovery Experiences (2 factors selected from the Recovery Experience Questionnaire, Sonnentag & Fritz, 2007)

  Sonnentag, S., & Fritz, C. (2007). The Recovery Experience Questionnaire: Development and validation of a measure for assessing recuperation and unwinding from work. *Journal of Occupational Health Psychology, 12*, 204–221. https://doi.org/10.1037/1076-8998.12.3.204

  During non-working hours,...

  Factor 1: Psychological Detachment
  REQ1. I forget about work
  REQ2. I don't think about work at all
  REQ3. I distance myself from my work
  REQ4. I get a break from the demands of work

  Factor 2: Relaxation
  REQ5. I kick back and relax
  REQ6. I do relaxing things
  REQ7. I use the time to relax
  REQ8. I take time for leisure

Strongly disagree	*Disagree*	*Neither agree nor disagree*	*Agree*	*Strongly agree*
1	2	3	4	5