

Neck, Christopher B.; Neck, Christopher P.; Goldsby, Elizabeth A.; Goldsby, Michael G.

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Article

Pushing Down on Me: The Paradoxical Role of Self-Leadership in the Context of Work Pressure

Christopher B. Neck¹, Christopher P. Neck^{2,*} , Elizabeth A. Goldsby³ and Michael G. Goldsby⁴¹ Department of Management, West Virginia University, Morgantown, WV 26506, USA² Department of Management and Entrepreneurship, Arizona State University, Tempe, AZ 85281, USA³ School of Nursing, Ball State University, Muncie, IN 47306, USA; eagoldsby@bsu.edu⁴ Entrepreneurial Leadership Institute, Ball State University, Muncie, IN 47306, USA; mgoldsby@bsu.edu

* Correspondence: christopher.neck@asu.edu

Abstract: One of the most pressing threats to individual employees in today's fast-paced work environment is work pressure. In this paper, the intention is to link the individual influence process of self-leadership to work pressure, representing the first empirical research to do so. Through this linkage, we suggest a means by which the individual worker may deal with the external force of work pressure, thus decoupling the consequences of work pressure from the organizational influence. Through linking self-leadership to work pressure's effects, we examine how the individual may mitigate the negative work pressure-driven outcomes whereas past research has typically focused on what the organization may do to mitigate these effects. Finally, this study aims to disentangle an existing paradox in the self-leadership literature through examining how the various strategies of self-leadership perform differently under the context of work pressure.

Keywords: work pressure; stress; time pressure; occupational stress



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1. Introduction

According to the National Institute of Health (NIH) (National Institute of Health 2017), stress levels are on the rise in our increasingly busy world with the top sources of stress being family, money, and work. Being in a state of stress up to a certain point will improve an individual's performance because it is healthy and useful that one experiences challenges within their lives. However, when the stress becomes chronic or excessive it loses its beneficial effect and becomes harmful. Negative occurrences do not always trigger psychological stress; this arises when imposed demands are perceived to exceed one's ability to cope (Epel et al. 2018). Work-related stress is the response people may have when presented with work demands and pressures that are not matched to their knowledge and abilities and which challenge their ability to cope. Stress occurs in a wide range of work circumstances but is often made worse when employees feel they have little support from supervisors and colleagues, as well as little control over work processes (World Health Organization 2020).

There is often confusion between pressure or challenge and stress, and sometimes this is used to excuse bad management practice. Occupational stress is the stress related to one's job. It can be managed by understanding what the stressful conditions are at work and taking steps to remediate these conditions. Work pressure is the urge to complete work-related tasks within a specific period to appropriate and acceptable levels (Krosel et al. 2022). Work pressure has important repercussions for employees' mental well-being and is linked to a wide range of psychological distress measures including anxiety, and emotional disturbance (Fairris and Brenner 2001; Wichert 2002). Work pressure is enhanced by both the intensity of work demands (both physical and mental) experienced by workers and the degree of work effort demanded in employment (Russell et al. 2009). The stress induced by work pressure is not simply a measure of the demands of work but also comprises individuals'

capability to meet these demands, which will be influenced by their skills and competences (Gallie 2005). According to LeBlanc's (2009) review of the stress–performance relationship literature, there exists a strong relationship between anxiety/stress and decreased performance in which elevated stress levels impede performance, especially on tasks that require divided attention, working memory, retrieval of information from memory, and decision making. This is particularly impactful for those workers likely experiencing high levels of work pressure, as work pressure has been found to be experienced at greater rates among higher earners in high-skilled jobs. As such, managers and professionals have significantly higher work pressure scores than all other occupations (Russell and McGinnity 2014).

We used timed crossword puzzle play as a means to evaluate work pressure. Puzzles can be used as a means of augmenting general information and assuming a facilitative role for problem-solving abilities (Saxena Anurag et al. 2009). Solving puzzles benefits identifying knowledge domains and identifying information gaps and weaknesses. At the same time, when one attains the correct answer, the feeling of confidence in their knowledge increases which then augments their self-sufficiency and gratification. As such, when time controls are in place while engaging in crossword puzzle play, we believe this is correlated to work pressure in the workplace. The relevancy of a timed crossword puzzle game to simulate work pressure is that you cannot solve puzzles without confidence and persistence. The stress of completing a game under a timer allows coinciding feelings of meeting defined timelines and fear of losing.

This paper examines a primary control mechanism by which the individual may attenuate the negative effects of work pressure through their own skills/capabilities—self-leadership. Self-leadership represents the process through which individuals influence themselves to achieve the self-direction and self-motivation necessary to behave and perform in desirable ways (Neck et al. 2019; Neck and Houghton 2006). In the work pressure context, this process of self-influence may provide the individual with the capabilities needed to combat the pressure driven outcomes of stress, negative affect, and reduced performance (Gallie and Zhou 2013; Goldsby et al. 2021) through fostering the skills of specific cognitive and behavioral strategies designed to attenuate these negative outcomes (Knotts et al. 2021). This study makes significant contributions to the extant literature on work pressure and self leadership. It examines how the individual employee may combat work pressure with the individual influence process of self-leadership to work pressure, representing the first empirical research to do so. Through this linkage, the study provides a means by which the individual worker may deal with the external force of work pressure, thus decoupling the consequences of work pressure from the organization's control. Perhaps most importantly, this study disentangles an existing paradox in the self-leadership literature by examining how the various strategies of self-leadership perform differently in the context of high pressure.

2. Theoretical Basis

Self-leadership represents the process by which an individual influences themselves to achieve their self-set, self-direct goals (Goldsby et al. 2021). More specifically, self-leadership represents the process through which individuals influence themselves to achieve the self-direction and self-motivation necessary to behave and perform in desirable ways (Neck et al. 2019; Neck and Houghton 2006). This self-influence process concerns leading oneself to the performance of both naturally motivating tasks as well as managing oneself to complete work that must be done but is not naturally motivating in and of itself (Manz 1986). Accordingly, through the process of self-leadership the individual is able to both influence themselves toward their own objectives through self-set, naturally rewarding goals while also leading themselves to the completion of unpleasant yet required duties (Knotts et al. 2021).

To explain how this influence process facilitates this required behavior, self-leadership draws on Bandura's Social Cognitive Theory (Bandura 1978) which holds that the individual's behavior is a function of a three-way reciprocal determinism between the individual,

the environment, and the behavior itself. In this way, self-leadership advances traditional reinforcement theories of leadership which promote the external environment as the principal reinforcer of the individual's behavior (Luthans and Krietner 1975). Through a self-leadership perspective, the individual is afforded ownership of the outcome of an external event through the active managing of their internal responses to it (Neck and Manz 1996; Neck and Houghton 2006; Goldsby et al. 2021). In this way, the individual may take control over how a negative workplace event/characteristic, such as work pressure, impacts them. As a result, the external event (e.g., work pressure) does not become the focal driver of individual outcomes (e.g., stress, performance reduction) but rather, the individual may influence how this external event impacts them based on their internal reaction to said external stressor and their resulting behaviors (Neck et al. 1995; Neck and Manz 1996).

External events and the self. To describe the manner in which the individual may influence how an external event affects the self, the self-influence process of self-leadership can be divided into three main categories, or strategies: behavior-focused strategies, natural reward strategies, and constructive thought pattern strategies, or thought self-leadership (Goldsby et al. 2021). Each of these cognitive and behavioral strategies offers various approaches for the individual to positively influence how a negative external stressor, such as work pressure, may varyingly affect them. The behavior-focused strategies are focused on increasing an individual's self-awareness in order to facilitate behavioral management (Neck and Houghton 2006). These behavioral self-influence tactics represent the key strategy aimed at facilitating the management of necessary but unpleasant tasks, such as when the individual must perform job tasks in a high-pressure work environment (Russell and McGinnity 2014). Natural reward strategies aim to develop situations in which a person is motivated or rewarded by the inherently intrinsically motivating characteristics of a task (Manz 1986). Constructive thought pattern strategies, or "thought self-leadership", are those methods focused on developing constructive thought patterns (habitual ways of thinking) that can impact performance in a positive manner (Neck and Manz 1992). This thought self-leadership schema serves to replace dysfunctional thinking (such as the stress and negative coping forms described below) that arises within the individual in response to stressful external events (e.g., work pressure) (Neck and Manz 1996; Russell and McGinnity 2014).

Knotts et al.'s (2021) meta-analytic review of self-leadership determined that self-leadership has developed as a construct comprising two types of self-influence strategies: cognitive and behavioral. Accordingly, the present study focuses on these two pertinent strategies in examining how the individual employee may use self-leadership to deal with the pressing external stressor of work pressure. Saliiently, this same meta-analytic review reports an important claim as to the effectiveness of overall self-leadership: the validity of cognitive self-leadership above and beyond behavioral self-leadership (Knotts et al. 2021). More specifically, the authors hold that it is the more advanced cognitive forms of self-leadership which deploy the complex cognitive processes which allow behavior to be shaped by internal, cerebral forces and thus that the baser behavioral strategies will not be as effective on their own. In other words, the behavioral self-management-focused self-leadership methods will not be able to effectively counteract the external threat (e.g., work pressure) as they will not be able to manipulate the individual's internal reaction in the ways required to offset the would-be negative effects of said external stressor (Knotts et al. 2021).

Behavioral-focused strategies. Despite this, the behavior-focused strategies are still quite important as they are specifically designed to manage environmental factors (e.g., self-goal setting, creating external self-reward contingencies) (Knotts et al. 2021) in order to facilitate the completion of necessary yet often unpleasant tasks, such as those encountered during experiences of high work pressure (Alleyne et al. 1996; Gallie 2005; Neck and Houghton 2006). In accordance with this relevance for our study and in the face of this clear prescription of the benefits of the cognitive strategies above and beyond the behavioral strategies of self-leadership, extant psychology-based literature reports findings that present a paradox in the existing body of research. More specifically, the

emotion-focused stress coping strategies, which cognitive self-leadership consists of, seem to have negative relationships with work outcomes characterized by high-stress, high-pressure environments (Saunders et al. 1996; Herman and Tetrick 2009; Morgenstern 2017) based on the manner in which the mind processes these strategic methods of self-influence (Kahneman 2011). In this way, the behavioral strategies of self-leadership may actually perform more effectively in the high-pressure environments in which the cognitive strategies have been purported to have their strongest effect as they are able to be more efficiently cognitively processed (Kahneman 2011). In order to untangle this existing paradox, we present in Figures 1 and 2 two theoretical models we empirically examine in this paper. The first model accounts for self-leadership's negatively moderating effect on work pressure's influence on notable employee outcomes, while the second accounts for the two competing hypotheses accounting for the seemingly paradoxical effect of self-leadership's individual strategies. Simply put, we seek to examine how usage of self-leadership and its various strategies attenuate the negative effects of work pressure on employees in order to unravel a complex paradox between the self-leadership and psychology literatures. We employ more empirical insights into newer findings of self-leadership literature regarding high-pressure situations.

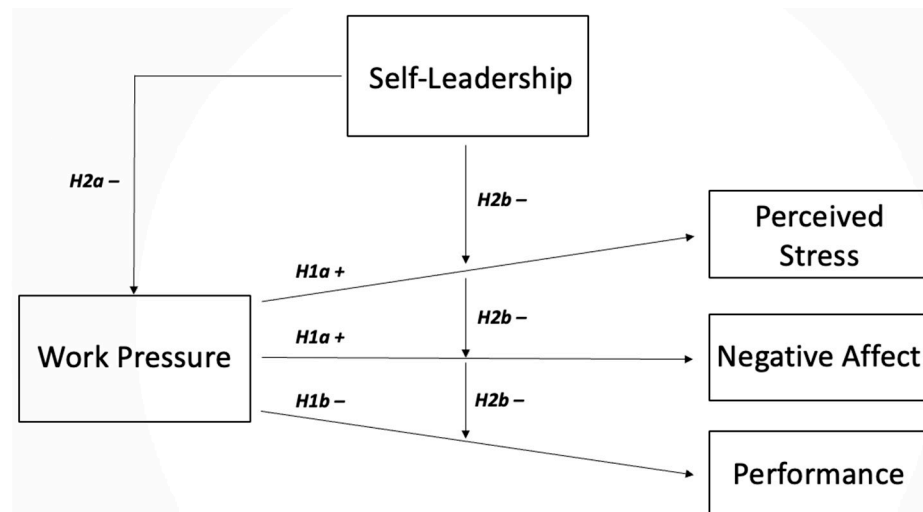


Figure 1. Model of self-leadership influence on work pressure and its outcomes.

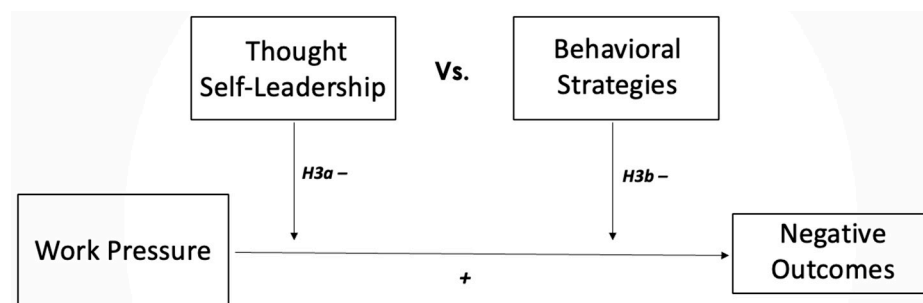


Figure 2. Model presenting the paradoxical effect of cognitive vs. behavioral strategies.

3. Hypotheses Development

3.1. Work Pressure and Stress/High-Pressure Situations

High-pressure tasks are a specific form of unpleasant tasks that warrant deeper study. Work pressure-driven stress impacts results in terms of both an adverse cognitive effect and harmful behavioral effect on the individual employee, and thus the development of negative affect (Montpetit et al. 2010) and the use of maladaptive coping strategies (Daniels and Holtfreter 2019). Negative affect represents the extent to which a person

reports feeling upset or unpleasantly aroused (Watson and Tellegen 1985) and is characterized by the experience of acute emotional states involving anger, sadness, and/or anxiety (Carmody et al. 2007). The repeated experience of daily stress is significantly coupled to negative affect, such that continuous experiences of stress in reaction to external events will develop negative affectual states within the individual (Montpetit et al. 2010). As such, this repeated experience of on the job work pressure will develop a self-feeding cycle of stress, presenting as a state of negative affect in the employee as they continuously encounter stress brought on by feelings of pressure (Montpetit et al. 2010; Russell and McGinnity 2014). Unfortunately, when the individual's workload is such that they do not feel able to complete their required tasks, this negative affectual state will drive them to seek maladaptive coping behaviors to deal with this stress (Machin and Hoare 2008; Daniels and Holtfreter 2019). The self-feeding cycle of stress and maladaptive coping brought on by work pressure has numerous damaging effects on the individual's performance. As such, those employees who experience work pressure most are additionally more likely to have jobs which require them to engage in the tasks whose performance is most strongly affected by stress, thus making work pressure particularly damaging to the performance of those experiencing it most (LeBlanc 2009). Further, Halkos and Bousinakis (2010) report that employee performance reduced by stress is driven by two areas of diminution: reduction in productivity and a lessening of work quality. Therefore, as performance decreases, workload will consequently increase, which thus furthers the perception of work pressure and cements negative affectual states within the individual (Machin and Hoare 2008; Daniels and Holtfreter 2019). As this work pressure-driven stress cycle continues to be fed in this manner, the maladaptive coping engaged in to attenuate the stress will further negatively impact the individual's performance through the facilitation of stress brought on by damaging coping strategies (Matthews et al. 1999; Borkoles et al. 2018). Accordingly, we propose the following:

H1a. *High levels of work pressure enhance stress and negative affect within employees such that higher levels of work pressure will correspond with higher ratings of stress and negative affect.*

H1b. *High levels of work pressure decrease task performance of employees such that higher levels of work pressure will correspond with lower ratings of performance.*

3.2. Self-Leadership and Work Pressure Effect

Work pressure is not solely an external experience driven by job demands; rather, it additionally encompasses individuals' internal capacity to meet those demands based on their various skills and capabilities (Gallie 2005). Saliiently, this suggests that the perception of work pressure can be attenuated or enhanced by the individual experiencing it, such that its effects are contingent upon how the individual reacts to it. In this way, the outcomes of work pressure can be controlled by the individual. Through this lens, the effects of work pressure are based on the three-way interaction between the external work pressure, the individual's internal reaction to said pressure, and the resulting behaviors and emotional states the reaction causes. Therefore, as prescribed by Bandura's Social Cognitive Theory (Bandura 1977, 1986), the external event of work pressure will not have the ability to affect the employee on its own. Rather, how the individual employee reacts to experiencing work pressure and the resulting consequences of this internal reaction work together to shape how this perceived work pressure ultimately influences the individual (Bandura 2005). Therefore, through Bandura's three-way reciprocity social cognitive logic, the simple existence of work pressure is not enough to result in any deleterious outcomes for the individual. As a result, the individual is afforded the opportunity to determine how the perception of work pressure influences them rather than being at the mercy of some external force (e.g., work pressure and its resulting cycle of stress).

Self-leadership and job control. In terms of the skills and capabilities that one may use to bolster their internal capacity to meet the demands of work pressure, the individual's self-leadership becomes key. Self-leadership represents the self-influence process by which individuals control their own behavior, influencing and leading themselves through

the use of specific sets of behavioral and cognitive strategies (Neck and Houghton 2006; Goldsby et al. 2021). As such, through these behavioral and cognitive methods, the individual employee may better combat both the experience of and the resulting effects of work pressure. To this end, usage of self-leadership initially serves to prevent work pressure's effects from "taking hold" in the individual.

According to Andries et al.'s (1996) investigation into the psychological demands of work, "job control" represents a work factor which may serve to either attenuate or exacerbate the feeling of work pressure based on the degree of control an individual believes they hold. Saliiently to the self-leadership context, the authors define this "job control" as "indicators of individual control over work pace, influence on decisions, and opportunities for learning and development of skills" (p. 105). Relatedly, as Manz (1986) explains in his seminal theorization of self-leadership, this self-influence process focuses on providing the individual with the ownership of their own governing standards, giving them control over their work pace through linking objectives to self-generated personal standards, providing influence on decisions through allowing the individual to not only determine the "how" but the "what" and "why" of their work tasks, and allowing for opportunities for learning and skill development through promoting engagement in self-evaluation processes (Manz 1986). In this way, self-leadership usage enhances one's perceived job control through supplementing the degree to which the individual regulates their own behavior (Neck and Houghton 2006) and the extent to which they lead themselves through their own decisions toward the accomplishment of work tasks (Manz 1986; Goldsby et al. 2021). More specifically, because self-leadership encompasses specific strategies that an individual can actively choose to pursue (Knotts et al. 2021), it presents an active form of job control in which the individual can take ownership of their job internally and apart from an organizational hierarchy (Manz 1986). In this way, self-leadership becomes an internally sourced form of "job control" which serves to bolster the overall feeling of control (Knotts et al. 2021) and thus attenuate the perception of work pressure (Andries et al. 1996). More specifically, it is through this facilitation of autonomous performance (Müller and Niessen 2019; van Dorssen-Boog et al. 2020) that self-leadership usage will allow the individual to have heightened perceptions of control in managing the demands of work and therefore reduce work pressure as a result (Gallie 2005). Furthermore, because employees experience some of the most significant increases in work pressure due to job threats and insecurity (Russell and McGinnity 2014), self-leadership additionally serves to prevent these "spikes" in perceived work pressure due to an external threat by bolstering an employee's perceived self-efficacy (Neck and Houghton 2006). To this end, by enhancing one's self-efficacy through its various strategies (Knotts et al. 2021), self-leadership serves to increase both the effort and persistence one expends in pursuing goals and objectives (Bandura 1991) through facilitating higher performance standards and reinforcing performance outcomes (Bandura 1986). Resultingly, self-leadership usage facilitates the individual's confidence in their ability to counteract a threat, as they will feel more secure in their capability to perform in the manner required to reach the desired level of performance their job requires (Manz 1986; Houghton and Neck 2002; Harari et al. 2021). Therefore, it is from this self-efficacy-driven confidence boost that self-leadership further mitigates the perception of work pressure in the face of pressure amplifying threats (Gallie 2005).

Self-leadership and resilience resources. While self-leadership evidently serves to attenuate the perception of work pressure, it additionally works to mitigate the deleterious pressure-driven effects caused by pressure once the perception has occurred within the individual. To this end, self-leadership combats the overall feelings of stress which arise from work pressure by breaking the aforementioned "stress-cycle". Initially, self-leadership disrupts this stress self-feedback loop through both preventing negative affect from forming and replacing it with positive affect (Neck and Manz 1992; Houghton and Neck 2002). Through the cognitive strategies of thought self-leadership, such as self-talk and mental imagery, the individual is able to remove the dysfunctional cognitions which arise in response to work pressure that facilitate negative affect, such as stress and anxiety

(Neck and Manz 1996). This is in line with Montpetit et al.'s (2010) findings on the stress–negative affect relationship which held that interindividual differences in internal “resilience resources” (e.g., self-efficacy/self-leadership) will cause both the strength and nature of the coupling relationship between stress and affect to differ between individuals such that more resources causes the experience of stress to be less associated with negative emotionality. Therefore, these cognitive self-leadership strategies (e.g., self-talk and mental imagery) represent a manner by which the resilience resources of self-leadership (e.g., self-efficacy) are enhanced within the employee and a manner by which the experience of stress is prevented from forming into a negative affectual state (Neck and Manz 1992). Thus, it is through these self-leadership strategies that the individual is able to reduce stress, prevent their well-being from being negatively impacted, and stop the resulting performance reduction caused by work pressure through actively suppressing negative emotions and replacing pessimistic thinking with more constructive cognitions (Neck and Manz 1996; Knotts et al. 2021). Importantly, these self-leadership techniques have been empirically proven through past research to not only reduce negative affect/enhance positive affect but also to increase individual performance as a result (Driskell et al. 1994; Knotts et al. 2021).

Further, once this stress is taken out of the external stressor, the individual is cognitively freed to focus on the required pressing tasks at hand (Sänger et al. 2014). More specifically, the acute stress and resulting negative affectual state developed in the individual in response to work pressure impairs their intention-based attentional allocation, thus causing them to be unable to process and respond to relevant information from their environment (Sänger et al. 2014). Importantly, it is this attentional ability which allows one to best achieve their current behavioral goals through the selection and interpretation of needed information from external stimuli (Desimone and Duncan 1995; Sänger et al. 2014). Thus, through removing this attention impairing stress and negative affect, the cognitive strategies of self-leadership allow the behavioral strategies to further influence the individual toward goal attainment in the face of work pressure. Through enacting specific behavioral strategies, such as self-observation, the individual is able to better interpret information taken in from their external environment in order to process which of their behaviors are effective and which are not (Neck and Manz 2010).

Developing this understanding based on heightened attentional awareness, the individual is then able to set behavior-altering objectives through setting more accurate self-goals (Manz 1986). This process then further serves to significantly increase individual performance (Locke and Latham 1990) as the individual gains an understanding and belief that they can tackle the challenge ahead of them (Bandura 1986). Thus, through energizing the individual's effort toward accomplishing goals in pursuit of necessary, unpleasant work tasks (such as those encountered under work pressure) (Andries et al. 1996), this enhanced information processing brought on by the attentional augmentation of stress removal serves to further prevent work pressure from harming the individual's performance. Therefore, through both preventing stress from creating a negative affectual state within the individual and through facilitating goal attainment in the face of pressured situations, self-leadership breaks the stress-cycle of work pressure by promoting positive, constructive thinking which thus increases information processing in response to the external threat (Neck and Manz 1996; Sänger et al. 2014). Accordingly, through preventing maladaptive coping and replacing it with more positive methods of dealing with stress, self-leadership further breaks the stress-reinforcing cycle of work pressure–stress–negative affect–maladaptive coping–stress. Thus, it further prevents work pressure's deleterious effects on performance (Matthews et al. 1999; Borkoles et al. 2018) through facilitating task focus within the individual through the behavioral strategies of self-leadership (Brown et al. 2005; Neck and Houghton 2006; Knotts et al. 2021). Accordingly, we propose:

H2a. *Self-leadership attenuates employees' perception of work pressure through its promotion of perceived job control and self-efficacy, such that less work pressure will be perceived at higher levels of self-leadership usage.*

H2b. *Self-leadership negatively moderates work pressure's effect on stress, negative affect, and performance. That is, self-leadership attenuates the negative effects of work pressure such that effects are weakened when high levels of self-leadership usage are present. In this way, higher levels of self-leadership usage will be associated with lower levels of perceived stress, lower levels of negative affect, and higher levels of performance.*

3.3. Cognitive and Behavioral Strategies and Work Pressure

In his seminal piece on self-leadership, [Manz \(1986\)](#) holds that “perhaps the ultimate goal of self-leadership practice should be to enhance the effectiveness of [the individual] in managing their own thought patterns” (p. 594). This initial theorization is empirically evidenced by [Knotts et al.'s \(2021\)](#) meta-analysis of the self-leadership literature which reported that the cognitive strategies of self-leadership (thought self-leadership) hold an incremental effect above and beyond the behavioral-focused strategies. Accordingly, it should be expected that the behavioral strategies alone are not enough to combat the harmful effects of work pressure on the individual and that rather, the cognitive-focused methods must be used for the employee to most effectively attenuate the influence of work pressure on stress, negative affect, and performance ([Knotts et al. 2021](#)). The theoretical viewpoint of self-leadership is one which incorporates not only the self-management (e.g., behavioral strategies) driven performance of leader-given goals but also the self-influence (e.g., cognitive strategies) driven performance of naturally rewarding/motivating tasks.

In this way, the individual cannot “effectively manage their own thought patterns” ([Manz 1986](#)) if only the behavioral, self-management focused strategies are enacted. As a result, self-leadership theory holds that it is these cognitive focused strategies (i.e., self-talk and mental imagery) which work on top of the behavioral methods to replace the negative affective state and attenuate the resulting performance consequences of deleterious external work factors ([Neck and Manz 1996](#); [Knotts et al. 2021](#)). Therefore, in the context of work pressure, while behavioral strategies of self-leadership would facilitate the completion of leader-derived goals through the enabling of unpleasant but necessary work tasks (e.g., dealing with pressure) and thus avoid performance consequences ([Manz 1986](#)), they would fail to “fix” the dysfunctional thinking brought on by the work pressure, thus leading to negative emotional consequences which would then lead to the reduced performance they sought to avoid in the first place ([Knotts et al. 2021](#)). Alternatively, when the cognitive self-leadership strategies are used, this dysfunctional thinking (e.g., stress, negative affect) is replaced with more positive thought patterns (e.g., optimism/clear thinking, positive affect), which thus allows one to more effectively pursue their goals ([Neck and Manz 1996](#)) and avoid the negative performance implications of an external threat such as work pressure.

This clear prescription of the augmented effect of cognitive self-leadership strategies over and beyond the behavioral focused methods leads us to our paradox of interest. That is, in the field of psychology, researchers have identified two forms of coping with stress: problem-focused coping and emotion-focused coping ([Carroll 2020](#)). Problem-focused coping represents the form of coping aimed at resolving the stressful situation/event or at altering the source of the stress itself, whereas emotion-focused coping seeks to manage the emotions associated with the situation, rather than changing the situation itself ([Carroll 2020](#)). In this way, problem-focused strategies seek to reduce the stressor that is causing the emotional reaction itself, whereas emotional-focused strategies seek to address the thoughts or feelings that result from the stressor but do not attempt to alter the stressor itself ([Lazarus and Folkman 1984](#); [Herman and Tetrick 2009](#)). Thus, thought self-leadership (i.e., the cognitive self-leadership strategies) represents an emotion-focused stress coping mechanism in which the individual replaces dysfunctional thinking/emotion through manipulating their cognitive processes to better incorporate more rational, positive thinking/emotion in response to an external stressor (i.e., work pressure) ([Neck and Manz 1992, 1996](#)). However, despite [Manz \(1986\)](#) and [Knotts et al.'s \(2021\)](#) clear prescription of the benefits of the cognitive strategies above and beyond the behavioral strategies of self-leadership, this psychology-based literature also reports that emotion-focused stress coping

strategies actually have negative relationships with work outcomes while the problem-focused strategies have positive relationships with these pertinent work-related outcomes (Saunders et al. 1996; Herman and Tetrick 2009; Morgenstern 2017).

Self-leadership and type two thinking. This relationship is explained by Nobel Prize winning professor Dr. Daniel Kahneman's system one vs. system two thinking (Kahneman 2011). System one thinking consists of intuitive, unconscious reasoning that relies on heuristics or mental shortcuts, whereas system two thinking represents conscious, analytic thought. This system two form of thinking is "slow, deliberative, and requires significant effort" (Morgenstern 2017). As such, the cognitive strategies of self-leadership are a form of type two thinking, where the repeated and deliberate use of cognitive strategies such as self-talk and mental imagery can intentionally and actively replace negative forms of dysfunctional thinking (Neck and Manz 1992). Unfortunately, in the stressful environment of jobs characterized by high work pressure, system two thinkings are likely to fail (Kahneman 2011; Morgenstern 2017). This is so because they are simply too slow to process and act in the face of a quickly changing situation (Grossman and Christensen 2004). In these high-pressure, stressful environments, the successful individual relies on type one thinkings, as they turn to heuristical thought-processing to narrow their thought process to ignore non-essential information and focus on only that which is important to the task at hand (Kowalski-Trakofler et al. 2003). Similarly, research in the realm of sports has found no link between self-focus (active interpretation of one's cognition) and performance, while finding a strong positive relationship between "intuitive control" and task performance (Otten 2009). In this manner, implicit knowledge of a skill derived from the self-management of behaviors (e.g., behavioral focused strategies) had greater relation to "work" performance outcomes than the self-regulation of one's focus (e.g., cognitive focused strategies).

The paradox in self-leadership theory is clearly evident: The cognitive strategies are reported to have influence on pertinent external stressor outcomes above and beyond the behavioral strategies, but in the context of the high-stress, high-pressure scenarios where these cognitive methods would be most effective, there does not exist the time for them to be effectively utilized. Thus, it would appear that the behavioral, self-management, focused strategies of self-leadership may be more effective in the pressure characterized scenarios in which the cognitive strategies are expected to thrive. Accordingly, we propose the following competing hypotheses in order to better untangle this existing paradox:

H3a. *The cognitive self-leadership strategies (Thought Self-Leadership:TSL) attenuate work pressure's negative effects above and beyond the behavioral strategies. That is, the negative effects of work pressure are weakened more when high levels of TSL usage are present than when high levels of behavioral strategy usage are present.*

H3b. *The behavioral self-leadership strategies attenuate work pressure's negative effects above and beyond the cognitive strategies (TSL). That is, the negative effects of work pressure are weakened more when high levels of behavioral strategy usage are present than when high levels of TSL usage are present.*

4. Method

The present study sought to examine the effects of work pressure on individuals in a pressure-simulating game (crossword puzzle) while additionally examining how their self-leadership usage may attenuate the various pertinent negative outcomes brought on by the experience of work pressure. A controlled experiment was utilized to explore five primary questions: (1) Do employees experiencing high levels of work pressure experience greater levels of perceived stress and negative affect? (2) Does a high level of work pressure decrease task performance of employees? (3) Does self-leadership usage attenuate employees' perception of work pressure? (4) Does self-leadership usage lessen the negative effects of work pressure on stress, negative affect, and performance? (5) Which

of the self-leadership strategies—behavioral or cognitive—more effectively assuage these deleterious effects?

4.1. Study Design

The online study was a 2 [Work Pressure: low work pressure (characterized by no visible time-limit) or high work pressure (characterized by a visible count-down timer)] × 2 [Self-leadership: behavioral strategy or cognitive strategy] between-subjects design. In all conditions, participants completed a work-task simulating game where they could earn a score of 0–9 based on proper completion of each of the nine prompts.¹ Participants each responded to the same prompts and were given the same hints for each of the nine clues. Participants in the low work pressure condition saw no visible countdown timer whereas participants in the high work pressure condition saw a visible countdown timer above their game window. Participants in the behavioral self-leadership condition were primed to utilize behavioral self-leadership strategies while performing the game tasks, whereas participants in the cognitive self-leadership condition were primed to utilize cognitive self-leadership strategies while performing the game task. The dependent measures were given after the game had been completed or after the time-limit ran out, whichever occurred first.

The task of participating in a timed crossword puzzle is an experimental manipulation in psychology research. The use of crossword puzzles attempts to arrive as close to an actual work experience as possible. As covered in this paper, time pressure due to deadlines is one of the biggest stressors to employees in the workplace. Low work pressure and high work pressure were evaluated with the timing used in the game. Perceived stress, negative affect, and performance within the pressured individual was measured. Hence, we believe the manipulation in this study was an accurate representation of time pressure in the workplace. Low versus high self-leadership using the Revised Self-Leadership Questionnaire (RSLQ) was evaluated in relation to work pressure. Additionally, self-leadership strategy (behavioral vs. cognitive) was measured by the RSLQ (Houghton and Neck 2002).

Crossword puzzles are often used as a cognitive task in research studies and have been shown to be effective at inducing time pressure and stress. In a study published in the journal *Psychophysiology* in 2015, researchers used a crossword puzzle task to induce time pressure and stress in participants. They found that completing a crossword puzzle under time pressure was associated with increased levels of cortisol, a stress hormone, and subjective ratings of stress. The study concluded that the crossword puzzle task was a reliable and valid method for inducing time pressure and stress in research participants (Puig et al. 2015). Another study published in *Cognitive Psychology* in 2010 found that time pressure in a crossword task impaired participants' ability to solve the puzzles accurately and quickly. The researchers suggested that this impairment was due to the increased cognitive load and distraction caused by the time pressure (Jopp and Hertzog 2010). Overall, using a crossword puzzle as a study manipulation involving doing a task under time pressure has been an effective way to induce stress and investigate its effects on cognitive performance and physiological responses.

4.2. Sample and Procedure

The online study was conducted with participants selected from the Amazon mTurk platform in March 2022. Responses from mTurk users have been found to be more reliable and to consistently outperform student samples and samples from professional research panels (Kees et al. 2017; Goodman and Paolacci 2017), thus making them particularly effective for the purpose of our study. In total, 191 adult American workers took place in this experimental study. Cell sizes ranged between 45 and 50. Participants were randomly assigned to one of the four experimental conditions, and all were told the following: "Read the following prompt and complete the game below, keep in mind the strategies Mike used before and during his presentation."

In total, 51 percent of the sample was female with 47 percent male, and 2 percent other. In total, 73 percent of participants identified as White/Caucasian, 13 percent as

Black/African American, 8 percent as Asian, 3 percent as Hispanic, and 3 percent as other. The median age of participants was 35 years and participants had a mean income of between USD 50,000 to USD 69,999 with 91 percent having at least some college and 73 percent having attained at least one college degree. Participants reported having an average experience level equivalent to “manager” with a mean of 29.5 subordinates directly responsible for. In total, 67 percent of respondents indicated working in a for-profit industry in 39 separate states.

4.3. Measures

In conducting this study, we addressed three primary dependent measures: (1) stress; (2) negative affect; and (3) performance. We additionally measured participants’ overall self-leadership strategy used as well as their utilization of behavioral vs. cognitive self-leadership strategies.

4.4. Stress and Negative Affect

Individual’s perceived stress was calculated through the 14-item stress sub-scale ($\alpha = 0.95$) of the depression, anxiety, and stress scale (DASS; Lovibond and Lovibond 1995) which has been found to be empirically valid and reliable by many past studies (Akin and Cetin 2007; Ronk et al. 2013). This sub-scale measured the stress levels of participants in response to the work-pressure simulating game based on a four-point Likert style scale (0—Did not apply to me at all, 3—Applied to me very much, or most of the time). Scores were added together such that higher scores corresponded with increased levels of stress whereas lower scores corresponded with decreased levels of stress. Questions from the stress portion of the DASS include “I found myself getting agitated” and “I found it hard to wind down” in order to measure both perceived anxiety and its direct effects. Negative affect was further measured through a Likert-style scale which used 11 items ($\alpha = 0.95$) to account for 11 various emotions characteristic of negative affectual states (e.g., nervous, sad, fearful, distressed, uneasy, unhappy) as identified by Watson and Tellegen (1985). Respondents answered based on the degree to which they experienced the prompted emotion during and after the game task, ranging from 1—Not at all to 7—A lot. Once again, scores were added together such that higher scores corresponded with an increased negative affectual state whereas lower scores corresponded with a decreased negative affectual state.

4.5. Performance

Performance was assessed based on participants’ completion of the crossword game. Each correctly answered prompt was awarded one point. Respondents could attain up to nine correct answers and thus be awarded up to nine points. Failure to provide the correct answer for all prompts resulted in a zero (0) score.

4.6. Self-Leadership

Both overall self-leadership and self-leadership strategy type were measured based on the Revised Self-Leadership Questionnaire (RSLQ; Houghton and Neck 2002), a 35-item survey ($\alpha = 0.94$) which allows for measurement of the individual dimensions of self-leadership while also providing an aggregate measure of total self-leadership. The RSLQ measures nine different self-leadership strategies. Self-observation is the ability to monitor one’s own behavior, thoughts, and feelings in order to identify patterns and make changes as needed. Self-goal setting involves setting specific, challenging goals for oneself to guide behavior and motivate achievement. Mental imagery is the use of mental images or visualizations to create positive and motivating scenarios or outcomes. Self-talk refers to the use of positive or supportive self-talk to encourage oneself and maintain focus. Self-reward is the process of giving oneself rewards or incentives for achieving goals or making progress towards them, while self-punishment involves applying self-imposed consequences or punishments for failing to achieve goals or deviating from desired behaviors. Constructive

thought patterns entail the ability to reframe negative or unproductive thoughts into more positive and constructive ones. Time management involves managing time effectively and prioritizing tasks to maximize productivity. Lastly, seeking feedback refers to actively seeking feedback from others in order to improve performance and enhance self-awareness.

Participants respond based on their agreement with the given prompt on a five-point Likert-style scale, ranging from 1 (not at all accurate) to 5 (completely accurate). The RSLQ represents a validated measure that has been well-established in the self-leadership literature (Stewart et al. 2011; Panagopoulos and Ogilvie 2015). The aggregate measure of self-leadership was created through adding up the total “score” of each response for the 35 items, such that a higher overall score corresponded with a greater degree of self-leadership usage than a lower overall score. Similarly, the value of each prompt corresponding with behavioral vs. cognitive self-leadership strategy usage was added together to provide for an overall behavioral vs. overall cognitive strategy usage score for each participant. In this way, we were able to determine not only to what degree participants utilized self-leadership, but also what strategy type they most used to do so (e.g., behavioral or cognitive). Example RSLQ questions and their correspondence with behavioral vs. cognitive strategy type can be found in Table 1. Finally, it is important to note here that many published studies have utilized the RSLQ and have shown that individuals are able to access their effectiveness levels regarding the execution of both the behavioral and cognitive self-leadership strategies.

Table 1. Select RSLQ prompts.

RSLQ Question Examples (Houghton and Neck 2002)	
Behavioral	I establish specific goals for my own performance. When I do an assignment especially well, I like to treat myself to some thing or activity I especially enjoy. I tend to get down on myself in my mind when I have performed poorly. I make a point to keep track of how well I am doing at work (school). I use written notes to remind myself of what I need to accomplish. I consciously have goals in mind for my work efforts.
Cognitive	Sometimes I talk to myself (out loud or in my head) to work through difficult situations. I use my imagination to picture myself performing well on important tasks. I visualize myself successfully performing a task before I do it. I try to mentally evaluate the accuracy of my own beliefs about situations I am having problems with. I think about and evaluate the beliefs and assumptions I hold. I purposefully visualize myself overcoming the challenges I face.

5. Results

5.1. Analysis Strategy

Our primary focus of this 2×2 between subjects experimental study centered around examining the *differences* in outcome variables between groups (self-leadership and work pressure). As a result, the appropriate statistical procedure to be used lies in the analysis of variance (ANOVA) family (Hayes 2018). More specifically, here we used a multivariate analysis of variance (MANOVA) in order to examine how the various groups of high vs. low self-leadership usage and high vs. low work pressure participants interacted to produce the three outcomes of stress, negative affect, and performance. The MANOVA is used to determine the relative contribution to group separation of each identified outcome variable and the outcome variables (stress, negative affect, performance) that are not conceptually distinct (Huberty and Morris 1989). Thus, through conducting the MANOVA in SPSS software, we were able to examine the effect of work pressure on various outcomes, the effects of self-leadership on various outcomes, and any interaction between the two. The present study sought to examine the effects of work pressure on individuals in a pressure simulating game while additionally examining how their self-leadership usage may attenuate the various pertinent negative outcomes brought on by the experience of work pressure.

5.2. The Damaging Effect of Work Pressure (Analyses 1 + 2)

Initially, it was hypothesized that high levels of work pressure will enhance stress and negative affectual states within the individual while also decreasing their task performance. Because each of these outcome variables may theoretically influence one another, we accounted for the possible relationship between these distinct, yet not unrelated variables (Deeming and Jones 2013). Additionally, in order to account for the possible attenuating influence of participants' self-leadership usage, we controlled for their overall self-leadership scale rating as measured through the RSLQ and through the use of a MANCOVA. Due to violations of the homogeneity of covariances (Boxes M = 44.31, $p < 0.001$) and variances (Levene's Statistic [Performance] = 31.08, $p < 0.001$), we employed use of Pillai's Trace test statistic, which is more robust to such violations (Finch 2005). Results of the MANCOVA suggested that there was a statistically significant difference between the two groups, low work pressure and high work pressure, on the combined dependent variables when controlling for the influence of self-leadership usage as measured through the RSLQ (Houghton and Neck 2002), $Trace = 0.43$, $F(3, 186) = 47.07$, $p < 0.05$, $\eta_p^2 = 0.43$. Based on these results, evidence was sufficient to conclude that participants significantly differed on the combined measure of stress, negative affect, and performance based on the level of work pressure present. This effect was driven by work pressures' attenuation of performance, $F(1, 188) = 126.18$, $p (< 0.001) < 0.05$, $\eta_p^2 = 0.40$, as there were no significant effects on stress level [$F(1, 188) = 0.94$, $p (0.33) > 0.05$, $\eta_p^2 = 0.01$] or negative affect [$F(1, 188) = 0.41$, $p (0.52) > 0.05$, $\eta_p^2 = 0.002$]. Pairwise comparisons show that those in the low work pressure group scored an average of nearly 3.17 higher in the game than those in the high-pressure group ($MDiff = 3.173$, $p (< 0.001) < 0.05$). This suggests that *Hypothesis 1a was not supported* whereas *Hypothesis 1b was strongly supported*, with a large effect size of work pressure explaining 40 percent of the variance in performance.

Because of the insignificance of the effect of work pressure on stress and negative affect, the controlled-for influence of self-leadership usage became of increased importance. Notably, in the context of work pressure, self-leadership additionally exhibited a significant influence on the combined measure of stress, negative affect, and performance, $Trace = 0.09$, $F(3, 186) = 6.29$, $p (< 0.001) < 0.05$, $\eta_p^2 = 0.09$. This effect was driven by self-leadership's influence on stress [$F(1, 188) = 18.84$, $p (< 0.001) < 0.05$, $\eta_p^2 = 0.09$] and negative affect [$F(1, 188) = 8.89$ ($p = 0.003$) < 0.05 , $\eta_p^2 = 0.05$], although there was no significant effect of self-leadership on performance [$F(1, 188) = 0.30$ ($p = 0.59$) > 0.05 , $\eta_p^2 = 0.002$]. Quite strangely, this suggests that in the context of work pressure, higher levels of self-leadership actually increase perceived stress and negative affect within the pressured individual—the complete opposite of what is theoretically supported. In confirmation of this odd result, a multivariate regression was ran to determine how self-leadership predicted stress and negative affect in the presence of work pressure, finding that greater self-leadership usage does indeed predict higher levels of stress and negative affect in this context (*Stress*: $b = 0.15$, *Bootstrapped SE* = 0.03, *Bootstrapped 95% CI* = [0.09–0.20]; *Negative Affect*: $b = 0.15$, *Bootstrapped SE* = 0.05, *Bootstrapped 95% CI* = [0.06–0.25]²).

5.3. Self-Leadership Attenuation of Work Pressure and Its Effect (Analyses 3 + 4)

Hypothesis 2a sought to examine how self-leadership attenuates employees' perception of work pressure through its promotion of perceived job control and self-efficacy.³ Hypothesis 2b additionally sought to examine how greater utilization of self-leadership may attenuate the deleterious effects of work pressure on stress, negative affect, and performance. Based on the aggregate self-leadership scores obtained from the RSLQ, we performed a median split—as recommended and deemed appropriate in this context by Lacobucci et al. (2015)—to provide two groups for the analysis: a low vs. high self-leadership usage group (based on a self-leadership score of 125). These relationships were examined through a two-way MANOVA employing a factor of work pressure (high vs. low) and self-leadership (high vs. low). Once more due to violations of the homogeneity of covariances (Boxes M = 78.02, $p < 0.001$) and variances (Levene's Statistic [Performance] =

9.53, $p < 0.001$), we employed use of Pillai's Trace test statistic, accounting for its more robust nature (Finch 2005). Overall, work pressure again exhibited a significant effect on outcomes, confirming findings from the first MANVOCA (analysis one), $Trace = 0.44$, $F(3, 185) = 47.48$, $p (< 0.001) < 0.05$, $\eta_p^2 = 0.44$. Additionally, self-leadership usage displayed a significant main effect on the combined measures of stress, negative affect, and performance, $Trace = 0.10$, $F(3, 185) = 7.19$, $p (< 0.001) < 0.05$, $\eta_p^2 = 0.10$. The main effect of work pressure was driven by a significant effect on performance [$F(1, 187) = 129.15$, $p (< 0.001) < 0.05$, $\eta_p^2 = 0.41$] with non-significant influence on stress [1.07 , $p (=0.30) > 0.05$, $\eta_p^2 = 0.01$] and negative affect [$F(1, 187) = 0.46$, $p (=0.50) > 0.05$, $\eta_p^2 = 0.002$]. Examination of pairwise comparisons suggests that participants in the low work pressure group scored an average of nearly 3.19 higher in the game than those in the high-pressure group ($MDiff = 3.191$, $p (< 0.001) < 0.05$), once again confirming results from the MANCOVA (analysis one). Oppositely, the main effect of self-leadership was driven by a significant effect on stress [$F(1, 187) = 21.38$, $p (< 0.001) < 0.05$, $\eta_p^2 = 0.10$] and negative affect [$F(1, 187) = 9.94$, $p (=0.002) < 0.05$, $\eta_p^2 = 0.05$] with a non-significant influence on performance [$F(1, 187) = 2.30$, $p (=0.131) > 0.05$, $\eta_p^2 = 0.01$]. Examination of pairwise comparisons here suggests that participants in the low self-leadership group scored an average of nearly 6.56 lower on the measure of stress (DASS; Lovibond and Lovibond) than did participants in the high self-leadership group ($MDiff = -6.561$, $p (< 0.001) < 0.05$). Additionally, participants in the low self-leadership group scored an average of nearly 6.85 lower on the measure of negative affect than did participants in the high self-leadership group ($MDiff = -6.854$, $p (=0.002) < 0.05$). Further, pairwise comparisons of the interaction between self-leadership level and work pressure show that for the low self-leadership group, high work pressure has a significantly greater negative impact on performance than for the high self-leadership group [low self-leadership + low work pressure vs. low self-leadership + high work pressure $MDiff = 3.50$ in contrast to high self-leadership + low work pressure vs. high self-leadership + high work pressure $MDiff = 2.89$ ($p (< 0.001) < 0.05$)].

These results suggest three crucially important findings in relation to the *Hypothesis 2b*, which was partially supported. First, they suggest evidence for a moderating effect of self-leadership on work pressure's negative influence on performance, such that higher levels of self-leadership cause a lesser reduction in performance as a result of work pressure. In this way, self-leadership appears to buffer the performance-based consequences of work pressure but not the attitudinal-based outcomes. Second, the results of this two-way MANOVA confirm the surprising findings of the first MANCOVA and its follow-up multivariate regression analysis on the impact of self-leadership on the attitudinal-based outcomes. More specifically, in the context of work pressure, higher self-leadership usage appears to actually increase perceptions of stress and negative affect within the pressured individual. Thus, overall and third, these findings seem to evidence that while self-leadership negatively moderates the damaging effects of work pressure on performance-based outcomes, such that higher usage of self-leadership attenuates the performance reduction brought on by pressure, it also enhances the consequences of attitudinal-based outcomes, such that higher usage of self-leadership actually increases perceptions of stress and negative affect in the context of work pressure.

5.4. The Paradoxical Competing Hypothesis (Analyses 5 + 6)

To untangle these rather confusing findings and attempt to both evidence the existence of and explain the paradox seemingly existing within the self-leadership and psychology literatures, we performed an additional two-way MANOVA between factors of self-leadership (behavioral vs. cognitive strategy) and work pressure (high vs. low). Importantly, Hypotheses 3a and 3b represent competing hypotheses attempting to untangle an existing paradox among the self-leadership literature and psychology literature: the cognitive self-leadership strategies are reported to have influence on pertinent external stressor outcomes above and beyond the behavioral strategies, but in the context of the high stress, high-pressure scenarios where these cognitive methods would be most effective, there does not exist the

time for them to be effectively utilized. Thus, H3a and H3b represent a test of which self-leadership strategy is more effective in dampening the deleterious effects of work pressure on the pertinent outcome variables (stress, negative affect, performance). The MANOVA is appropriate here at analyzing differences in cognitive appraisals and resulting reactions and matching it with an analysis of the cognitive strategies vs. behavioral strategies of self-leadership. Additionally, here, once again the focus is on determining the difference in the relative contribution to group separation of each identified non-conceptually distinct outcome variable in order to determine which self-leadership strategy most effectively attenuated work pressure's effects. Thus, multiple ANOVAs are not appropriate due to the relation between outcome variables (Huberty and Morris 1989). As a result, through using the two-way MANOVA the focus was on the effect of work pressure on various outcomes, the effects of each self-leadership strategy on various outcomes, and most importantly, the interaction between the two.

Due to violations of the homogeneity of covariances (Boxes M = 50.57, $p < 0.001$) and variances (Levene's Statistic [Performance] = 9.80, $p < 0.001$), we employed use of Pillai's Trace test statistic, due to its robust standing against said violations (Finch 2005). Work pressure displayed a significant main effect on the combined measure of stress, negative affect, and performance [$Trace = 0.32$, $F(3, 185) = 29.52$, $p (<0.001) < 0.10$, $\eta_p^2 = 0.32$] and self-leadership strategy additionally had a significant main effect on this measure [$Trace = 0.03$, $F(3, 185) = 1.83$, $p (=0.14) > 0.10$, $\eta_p^2 = 0.03$].⁴ Notably here, the significant influence of both work pressure and self-leadership strategy type was driven by their effect on performance [$F(1, 187) = 129.15$, $p (<0.001) < 0.10$, $\eta_p^2 = 0.41$] and [$F(1, 187) = 2.79$, $p (=0.10) = 0.10$, $\eta_p^2 = 0.02$], respectively, with insignificant results for both attitudinal-based outcomes.⁵ In terms of work pressure, examination of pairwise comparisons suggested that participants in the low work pressure group scored an average of nearly 2.85 higher in the game than those in the high-pressure group ($MDiff = 2.853$, $p (<0.001) < 0.10$), thus further backing the results of analyses one and four. For the self-leadership strategy type, pairwise comparisons show that participants in the behavioral strategy group scored an average of nearly 0.54 higher in the game than those in the cognitive strategy group ($MDiff = 0.542$, $p = 0.10$).

Importantly, a significant interaction effect between work pressure and self-leadership strategy type was also found [$Trace = 0.04$, $F(3, 185) = 2.39$, $p (0.07) < 0.10$, $\eta_p^2 = 0.04$], driven by a significant effect on performance [$F(1, 187) = 3.94$, $p (=0.05) < 0.10$, $\eta_p^2 = 0.02$]. As shown in Figure 3, the pairwise comparisons of this interaction effect show that for the behavioral strategy self-leadership group, high work pressure has a significantly greater negative impact on performance than for the cognitive self-leadership group (behavioral self-leadership + low work pressure vs. behavioral self-leadership + high work pressure, $MDiff = 3.50$ vs. cognitive self-leadership + low work pressure vs. cognitive self-leadership + high work pressure, $MDiff = 2.21$ ($p (<0.001) < 0.10$).

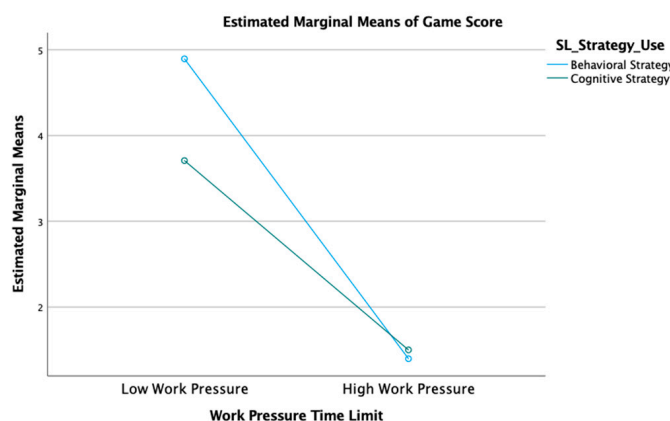


Figure 3. Interaction effect of self-leadership strategy type and work pressure on performance.

Based on this interaction effect, a two-way ANOVA was performed for further clarification of the paradox. This analysis was based on two factors, work pressure (high vs. low) and self-leadership strategy use (behavioral vs. cognitive) in order to examine the influence on overall self-leadership usage as measured by the RSLQ. All assumptions were met and in accordance with analysis five and past self-leadership literature, significance was tested against a 0.10α (Furtner et al. 2011). There were no significant main effects; however, a significant interaction effect was found, $F(1, 190) = 2.80, p(0.10) = 0.10, \eta_p^2 = 0.02$. As depicted in Figure 4, pairwise comparisons of the interaction between self-leadership strategy use and work pressure indicated that for those using the cognitive strategies, high work pressure significantly decreases one's overall usage of self-leadership ($MDiff = -8.522, p(=0.05) < 0.10$), whereas no such significant effect exists for the behavioral strategies. These complex findings lend support to the existence of the paradox within the self-leadership/psychology literatures and partial support to both of our competing hypotheses of 3a and 3b. This is further unpacked and explored in the following section.

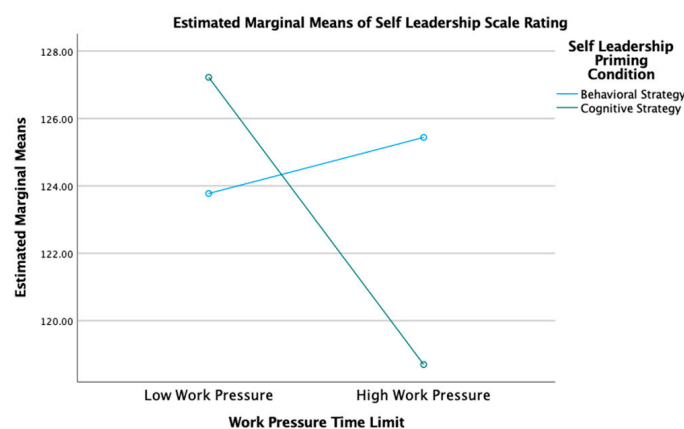


Figure 4. Interaction effect of self-leadership strategy use and work pressure on overall self-leadership usage.

6. Discussion

The above analyses appear to initially purport that individuals relying on the behavioral self-leadership strategies have significantly higher performance than those relying on the cognitive strategies. However, during high-work pressure, those relying on the behavioral strategies experienced the greatest negative effect on performance. That is, work pressure was more damaging to the performance of those using behavioral strategies of self-leadership than it was to those using cognitive strategies of self-leadership. This suggests that although behavioral regulation strategies may be more effective at task-based performance outcomes, work pressure represents such a damaging effect/significant barrier to achievement that the higher-level cognitive strategies of self-leadership (Knotts et al. 2021) are required to be used to overcome it. Unfortunately, those individuals who rely on cognitive strategies to use self-leadership seem to be unable to fully utilize their full “repertoire” of self-leadership tactics when high work pressure is present. Interestingly, this is in line with our above theorization that the cognitive strategies of self-leadership, as an emotion-focused coping strategy, will have a negative relationship with work performance (Saunders et al. 1996; Herman and Tetrick 2009; Morgenstern 2017) as these strategies represent a slowly processed cognitive schema (type two system thinking) which fails in high-pressure, stressful environments (Kahneman 2011; Morgenstern 2017). It follows then that the results do in fact suggest that high work pressure prevents cognitive strategy using individuals from fully utilizing their self-leadership, thus causing significant decreases in performance for those using the cognitive strategies as their basis of self-leadership. As a result, even though behavioral strategies are in fact more effective for task-based performance, work pressure represents such an impactful barrier to success that it requires the more advanced, higher-level cognitive strategies of self-leadership to be used to counteract

its negative performance effects. However, these cognitive strategies are unable to be effectively utilized in high-pressure situations where they are most effective (Kahneman 2011). In this way, the behavioral strategies of self-leadership must be relied on during times of high work pressure, even though they are not as effective on their own in comparison to the cognitive strategies (Knotts et al. 2021). Accordingly, support for Hypotheses 3a and 3b is mixed—the cognitive self-leadership strategies attenuate work pressure's negative effects above and beyond the behavioral strategies; however, these cognitive strategies are unable to be most effectively utilized in scenarios of high work pressure, thus causing the behavioral strategies to be relied on more in these times. Both extremely impactful and perhaps quite frustrating as well, these findings, while illuminating, seem to further evidence the existence of the paradox in/between the self-leadership and psychology literatures.

It should be noted that the study in this paper is an experimental manipulation. Our study was not a training study. The study's purpose was to access the level of self-leadership an individual engages in under pressure. The goal is to get the manipulation as close to an actual work experience as possible. As we mention in this paper, time pressure due to deadlines is one of the biggest stressors to employees in the workplace. Hence, we feel our manipulation was an accurate representation of time pressure in the workplace. Given this contention that our study was not a training study, however, this suggests one important limitation of our study. In other words, training of the self-leadership behavioral and cognitive strategies discussed in this paper could indeed improve one's ability to practice self-leadership as evidenced by Neck and Manz's 1996 training study. Future studies could include training of such cognitive and behavioral self-leadership strategies and assess how such training impacts one's ability to cope with time pressure.

7. Conclusions

In its exploration of the self-leadership strategy paradox through an examination of work pressure and self-leadership's effect on stress, negative affect, and performance, this study has reported the behavioral strategies of self-leadership to be more effective for task-based performance outcomes, yet has also discovered that work pressure has a more damaging effect on performance for those using behavioral strategies than those using cognitive strategies. This would seem to suggest that the more advanced cognitive self-leadership strategies are needed to combat/be more effective in attenuating the consequences of work pressure. However, those utilizing the cognitive strategies as the basis for their self-leadership seem to be unable to fully engage in self-leadership during times of high work pressure, as the high pressure prevents them from utilizing the more in-depth strategies of the cognitive side of self-leadership (Kahneman 2011). As a result, the cognitive strategies are unable to be effectively utilized in the high-pressure situations where they are most effective (Neck and Manz 1996; Kahneman 2011; Knotts et al. 2021). This may explain the counterintuitive findings on self-leadership's relation to the attitudinal outcomes of stress and negative affect: because their cognitive strategies could not be utilized during times of high pressure, those high in self-leadership ratings actually became more stressed and experience more negative emotions as they became fed-up and frustrated at their lack of ability to utilize their previously successful cognitive-based self-leadership strategies. In this way, stress and negativity from strategy failure, compounded with stress and negativity from work pressure, cause the individual to feel worse overall despite using high levels of self-leadership as is characteristic of those high in cognitive strategies (Neck and Manz 1992; Morgenstern 2017; Knotts et al. 2021). Accordingly, even though the cognitive strategies are more effective in dealing with the highly damaging performance barrier of work pressure, the behavioral strategies are used more in scenarios characterized by high pressure, as they are easier to do so (Manz 1986; Morgenstern 2017). Therefore, although work pressure decreases behavioral-strategy-driven performance to a greater degree than cognitive-strategy-driven performance, behavioral strategies are able to be used more effectively in times of high pressure. In this way, the paradox of strategies is both simultaneously explained and made more complex—the cognitive strategies are more

effective for performance-based outcomes, but they cannot be as effectively utilized as the behavioral strategies where they are needed most, during times of performance reducing high pressure. Additionally, due to a compounding of strategy failure with work pressure, those individuals who rely on cognitive strategies as the basis of their self-leadership usage may actually experience *more* deleterious attitudinal effects (e.g., stress, negative affect) than those using the behavioral strategies, a finding in complete opposition to the established theory on cognitive vs. behavioral self-leadership strategies (Knotts et al. 2021). This presents both a crucial question and a major opportunity for self-leadership theory: *how may individuals better utilize the more advanced cognitive techniques in the times they are needed most?* Future research would do well to investigate this salient issue further in pursuit of further untangling this complex paradox which we have uncovered in the present study.

Importantly, the present paper is not without its limitations. First, as an experimental study, it fails to capture longitudinal aspects of how work pressure and self-leadership may interact to produce various outcomes. Accordingly, future research may investigate how self-leadership usage effects the experience of work-pressure and its consequences over time in the work environment. Additionally, past thought self-leadership research has often relied on direct training interventions to bolster participants' thought self-leadership usage (Neck and Manz 1996), which this investigation did not use, as it was beyond its scope. More specifically, the training of the self-leadership behavioral and cognitive strategies discussed in this paper could indeed improve one's ability to practice self-leadership as evidenced by Neck and Manz's (1996) training study. Future studies could include training of such cognitive and behavioral self-leadership strategies and assess how such training impacts one's ability to cope with time pressure.

Further research attempting to untangle the evidenced paradox may utilize this direct training to provide a more in-depth understanding of the cognitive processes that play out within it. Another potential limitation of this study in hindsight is that some people may be very experienced and good at solving crossword puzzles, which might lead to some differences in performance and reaction to the pressure situation. Still, whether a person was a habitual crossword solver or not, time pressure would still be experienced to some degree. Future research could examine the role experience of a specific challenge plays in handling work pressure, in that some people may handle challenges differently regardless of experience based on self-leadership skills. Consider the difference between athletes in practice versus game situations, for example.

Despite these limitations, the present study makes many notable contributions to the self-leadership and work pressure literatures. First, it fills a troubling research gap through investigating how individuals may best face one of the largest current threats to their well-being, work pressure (Russell et al. 2009), through the utilization of self-leadership and its various strategies. In doing so, it additionally represents the first empirical research to link the individual-driven influence process of self-leadership to work pressure, providing a new and effective tool for the pressured employee to combat the many deleterious effects of work pressure. Lastly, and most significantly, this study both evidences the existence of and takes the first steps in explaining the paradox among the self-leadership strategies through examining how and why the distinct strategies perform to different degrees of effectiveness in the context of work pressure. From this, the paper provides a concrete foundation for future research to build upon in order to answer the crucial question uncovered through this investigation: *How may individuals enable themselves to utilize the cognitive strategies of self-leadership with work pressure where they are most effective?*

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Notes

- 1 The game consisted of a crossword puzzle with nine prompts; each participant performed the same game and answered the same prompts; the prompts centered around general knowledge and were based on [USA Today \(2022\)](#) Crossword prompts.
- 2 1000 bootstrapped samples were utilized in calculations.
- 3 This hypothesis will either be examined through text analysis at a later date once I have gained greater experience with this procedure or excluded from the final manuscript.
- 4 For this analysis, significance was tested against a 0.10 α , which has been deemed appropriate in past self-leadership studies ([Furtner et al. 2011](#)).
- 5 Work Pressure: Stress— $F(1, 187) = 1.07, p (=0.30) > 0.10, \eta_p^2 = 0.01$ (small effect size); Negative Affect— $F(1, 187) = 0.46, p (=0.50) > 0.10, \eta_p^2 = 0.002$ (no effect size). Self-leadership Type: Stress— $F(1, 187) = 0.12, p (=0.75) > 0.10, \eta_p^2 = 0.001$ (no effect size); Negative Affect— $F(1, 187) = 1.07, p (=0.30) > 0.10, \eta_p^2 = 0.01$ (small effect size).

References

- Akin, Ahmet, and Bayram Cetin. 2007. The Depression Anxiety and Stress Scale (DASS): The Study of Validity and Reliability. *Educational Sciences: Theory & Practice* 7: 260–68.
- Alleyne, Sylvan, David Reiss, Kimberly Jefferies Leonard, Jocelyn Turner-Musa, Barry Wagner, Sam Simmens, Barbara Holder, Paul L. Kimmel, Sidney Kobrin, and Illuminado Cruz. 1996. Staff Security and Work Pressure: Contrasting Patterns of Stability and Change Across Five Dialysis Units. *Social Science & Medicine* 43: 525–35.
- Andries, Frank, Michiel A. J. Kompier, and Peter G. W. Smulders. 1996. Do You Think That your Health or Safety Are at Risk Because of Your Work? A Large European Study on Psychological and Physical Work Demands. *Work & Stress* 10: 104–18.
- Bandura, Albert. 1977. *Social Learning Theory*. Hoboken: Prentice-Hall.
- Bandura, Albert. 1978. Reflections on Self-Efficacy. *Advances in Behaviour Research and Therapy* 1: 237–69. [[CrossRef](#)]
- Bandura, Albert. 1986. *Social Foundations of Thought and Action: A Social Cognitive Theory*. Hoboken: Prentice-Hall.
- Bandura, Albert. 1991. Social Cognitive Theory of Self-Regulation. *Organizational Behavior and Human Decision Processes* 50: 248–87. [[CrossRef](#)]
- Bandura, Albert. 2005. The Evolution of Social Cognitive Theory. In *Great Minds in Management*. Edited by Ken G. Smith and Michael A. Hitt. Oxford: Oxford University Press, pp. 9–35.
- Borkoles, Erika, Mariana Kaiseler, Andrew Evans, Chantal F. Ski, David R. Thompson, and Remco C. J. Polman. 2018. Type D Personality, Stress, Coping and Performance on a Novel Sport Task. *PLoS ONE* 13: e0196692. [[CrossRef](#)]
- Brown, Steven P., Robert A. Westbrook, and Goutam Challagalla. 2005. Good Cope, Bad Cope: Adaptive and Maladaptive Coping Strategies Following a Critical Negative Work Event. *Journal of Applied Psychology* 90: 792–98. [[CrossRef](#)]
- Carmody, Timothy P., Cassandra Vieten, and John A. Astin. 2007. Negative Affect, Emotional Acceptance, and Smoking Cessation. *Journal of Psychoactive Drugs* 39: 499–508. [[CrossRef](#)]
- Carroll, Linda. 2020. Problem-Focused Coping. In *Encyclopedia of Behavioral Medicine*. Edited by Marc D. Gellman. Cham: Springer. [[CrossRef](#)]
- Daniels, Ana Z., and Kristy Holtfreter. 2019. Moving Beyond Anger and Depression: The Effects of Anxiety and Envy on Maladaptive Coping. *Deviant Behavior* 40: 334–52. [[CrossRef](#)]
- Deeming, Christopher, and Kelvyn Jones. 2013. Social Policy and Economic development in Europe: Investigating the Macro Determinants of Individual Health and Well-being in a Multilevel Multivariate Analysis of Thirty European Nations. *International Journal of Sociology* 45. [[CrossRef](#)]
- Desimone, Robert, and John Duncan. 1995. Neural Mechanisms of Selective Visual Attention. *Annual Review of Neuroscience* 18: 193–222. [[CrossRef](#)]
- Driskell, James E., Carolyn Copper, and Aiden Moran. 1994. Does Mental Practice Enhance performance? *Journal of Applied Psychology* 79: 481–92. [[CrossRef](#)]
- Epel, Elissa S., Alexandra D. Crosswell, Stefanie E. Mayer, Aric A. Prather, George M. Slavich, Eli Puterman, and Wendy Berry Mendes. 2018. More Than a Feeling: A Unified View of Stress Measurement for Population Science. *Frontiers in Neuroendocrinology* 49: 146–69. [[CrossRef](#)] [[PubMed](#)]
- Fairris, David, and Mark Brenner. 2001. Workplace Transformation and the Rise in Cumulative Trauma Disorders: Is There a Connection? *Journal of Labor Research* 22: 15–28. [[CrossRef](#)]
- Finch, Holmes. 2005. Comparison of the Performance of Nonparametric and Parametric MANOVA Test Statistics When Assumptions are Violated. *Methodology* 1: 27–38. [[CrossRef](#)]
- Furtner, Marco R., John F. Rauthmann, and Pierre Sachse. 2011. The self-loving self-leader: An examination of the relationship between self-leadership and the dark triad. *Social Behavior and Personality: An International Journal* 39: 369–79. [[CrossRef](#)]

- Gallie, Duncan, and Ying Zhou. 2013. Job Control, Work Intensity, and Work Stress. In *Economic Crisis, Quality of Work and Social Integration: The European Experience*. Edited by Duncan Gallie. Oxford: Oxford University Press, pp. 115–41.
- Gallie, Duncan. 2005. Work Pressure in Europe 1996–2001: Trends and Determinants. *British Journal of Industrial Relations* 43: 351–75. [CrossRef]
- Goldsby, Michael G., Elizabeth A. Goldsby, Christopher B. Neck, Christopher P. Neck, and Rob Mathews. 2021. Self-Leadership: A Four Decade Review of the Literature and Trainings. *Administrative Sciences* 11: 25. [CrossRef]
- Goodman, Joseph K., and Gabriele Paolacci. 2017. Crowdsourcing Consumer Research. *Journal of Consumer Research* 44: 196–210. [CrossRef]
- Grossman, David, and Loren W. Christensen. 2004. *On Combat: The Psychology and Physiology of Combat*. Columbia: PPCT Research Publications. ISBN 10 0964920514.
- Halkos, George, and Dimitrios Bousinakis. 2010. The effect of Stress and Satisfaction on Productivity. *International Journal of Productivity and Performance Management* 59: 415–31. [CrossRef]
- Harari, Michael B., Ethlyn A. Williams, Stephanie L. Castro, and Katarina K. Brant. 2021. Self-Leadership: A Meta-Analysis of Over Two Decades of Research. *Journal of Occupational and Organizational Psychology* 94: 890–923. [CrossRef]
- Hayes, Andrew F. 2018. Using SPSS: A Little Syntax Guide. Unpublished Manuscript. Available online: https://haskayne.ucalgary.ca/sites/default/files/CCRAM/CCRAM_TR_022_01.pdf (accessed on 20 October 2022).
- Herman, Jeffery L., and Lois E. Tetrick. 2009. Problem-Focused Versus Emotion-Focused Coping Strategies and Repatriation Adjustment. *Human Resource Management* 48: 69–88. [CrossRef]
- Houghton, Jeffery D., and Christopher P. Neck. 2002. The Revised Self-Leadership Questionnaire: Testing a Hierarchical Factor Structure for Self-Leadership. *Journal of Managerial Psychology* 17: 672–91. [CrossRef]
- Huberty, C. J., and J. D. Morris. 1989. Multivariate analysis versus multiple univariate analyses. *Psychological Bulletin* 105: 302–8. [CrossRef]
- Jopp, Daniela, and Christopher Hertzog. 2010. Crossword Puzzle Use and Cognition in Older Adulthood: An Exploratory Study. *Educational Gerontology* 36: 1084–100.
- Kahneman, Daniel. 2011. *Thinking, Fast and Slow*. New York: Macmillan. ISBN 9780374533557.
- Kees, Jeremy, Christopher Berry, Scott Burton, and Kim Sheehan. 2017. An Analysis of Data Quality: Professional Panels, Student Subject pools, and Amazon's Mechanical Turk. *Journal of Advertising* 46: 141–55. [CrossRef]
- Knotts, Kevin, Jeffery D. Houghton, Craig L. Pearce, Huaizhong Chen, Greg L. Stewart, and Charles C. Manz. 2021. Leading From the Inside Out: A Meta-Analysis of How, When, and Why Self-Leadership Affects Individual Outcomes. *European Journal of Work and Organizational Psychology* 31: 1–19. [CrossRef]
- Kowalski-Trakofler, Kathleen M., Charles Vaught, and Ted Scharf. 2003. Judgment and Decision Making Under Stress: An Overview for Emergency Managers. *International Journal of Emergency Management* 1: 278–89. [CrossRef]
- Krosel, Amber, Arlene Helbert, Audrey Eads, Catherine Sherman, Jamie Birt, Jane Kellogg Murray, Jennifer Alpeche, Jennifer Herrity, Lauren Frazer, Russ Garcia, and et al. 2022. Understanding Work Pressure. Available online: <https://uk.indeed.com/career-advice/career-development/work-pressure> (accessed on 21 March 2023).
- Lacobucci, Dawn, Steven S. Posavac, Frank R. Kardes, Matthew J. Schneider, and Deidre L. Popovich. 2015. The median split: Robust, refined, and revived. *Journal of Consumer Psychology* 25: 690–704. [CrossRef]
- Lazarus, Richard S., and Susie Folkman. 1984. *Stress, Appraisal, and Coping*. New York: Springer Publishing Company.
- LeBlanc, Vicki R. 2009. The Effects of Acute Stress on Performance: Implications for Health Professions Education. *Academic Medicine* 84: 25–33. [CrossRef]
- Locke, Edwin A., and Gary P. Latham. 1990. A Theory of Goal Setting & Task Performance. *The Academy of Management Review* 16: 480–83. [CrossRef]
- Lovibond, Peter F., and Syd Lovibond. 1995. The Structure of Negative Emotional States: Comparison of the Depression Anxiety Stress Scales (DASS) with the Beck Depression and Anxiety Inventories. *Behaviour Research and Therapy* 33: 335–43. [CrossRef]
- Luthans, Fred, and Robert Krietner. 1975. *Organizational Behavior Modified*. Glenview: Scott Foresman.
- Machin, Anthony, and Nancey P. Hoare. 2008. The Role of Workload and Driver Coping Styles in Predicting Bus Drivers' Need for Recovery, Positive and Negative Affect, and Physical Symptoms. *Anxiety, Stress, & Coping* 21: 359–75. [CrossRef]
- Manz, Charles C. 1986. Self-Leadership: Toward an Expanded Theory of Self-Influence Processes in Organizations. *Academy of Management Review* 11: 585–600. [CrossRef]
- Mathews, Gerald, Emma J. Hillyard, and Sian E. Campbell. 1999. Metacognition and Maladaptive Coping as Components of Test Anxiety. *Clinical Psychology & Psychotherapy: An International Journal of Theory & Practice* 6: 111–25. [CrossRef]
- Montpetit, Mignon A., Cindy S. Bergeman, Pascal R. Deboeck, Stacey S. Tiberio, and Steven M. Boker. 2010. Resilience-as-Process: Negative Affect, Stress, and Coupled Dynamical Systems. *Psychology and Aging* 25: 631–40. [CrossRef]
- Morgenstern, Justin. 2017. Performance Under Pressure First10EM. Available online: <https://first10em.com/performance-under-pressure/> (accessed on 27 March 2023).
- Müller, Teresa, and Cornelia Niessen. 2019. Self-Leadership in the Context of Part-time Teleworking. *Journal of Organizational Behavior* 40: 883–98. [CrossRef]

- National Institute of Health. 2017. A Nation under Pressure: The Public Health Consequences of Stress in America. Available online: <https://www.nccih.nih.gov/news/events/a-nation-under-pressure-the-public-health-consequences-of-stress-in-america> (accessed on 28 February 2023).
- Neck, Christopher P., and Charles C. Manz. 1992. Thought Self-Leadership: The Impact of Self-talk and Mental Imagery on Performance. *Journal of Organizational Behavior* 13: 681–99. [CrossRef]
- Neck, Christopher P., and Charles C. Manz. 1996. Thought Self-Leadership: The Impact of Mental Strategies Training on Employee Cognition, Behavior, and Affect. *Journal of Organizational Behavior* 17: 445–67. [CrossRef]
- Neck, Christopher P., and Charles C. Manz. 2010. *Mastering Self-Leadership: Empowering Yourself for Personal Excellence*. Upper Saddle River: Pearson.
- Neck, Christopher P., and Jeffery D. Houghton. 2006. Two Decades of Self-Leadership Theory and Research: Past Developments, Present Trends, and Future Possibilities. *Journal of Managerial Psychology* 21: 270–95. [CrossRef]
- Neck, Christopher P., Charles C. Manz, and Jeffery D. Houghton. 2019. *Self-Leadership: The Definitive Guide to Personal Excellence*. Thousand Oaks: Sage Publications.
- Neck, Christopher P., Greg L. Stewart, and Charles C. Manz. 1995. Thought Self-Leadership as a Framework for Enhancing the Performance of Performance Appraisers. *The Journal of Applied Behavioral Science* 31: 278–302. [CrossRef]
- Otten, Mark P. 2009. Choking vs. Clutch Performance: A Study of Sport Performance Under Pressure. *Journal of Sport and Exercise Psychology* 5: 583–601. [CrossRef] [PubMed]
- Panagopoulos, Nikolaos G., and Jessica Ogilvie. 2015. Can Salespeople Lead Themselves? Thought Self-Leadership Strategies and Their Influence on Sales Performance. *Industrial Marketing Management* 47: 190–203. [CrossRef]
- Puig, M. Victoria, Jonas Rose, Robert Schmidt, and Nigel Freundlieb. 2015. Single-Trial Event-Related Potentials and Time-Frequency Analysis Reveal Facial Emotion and Verbal Content Processing Differences between Young and Older Adults. *Frontiers in Aging Neuroscience* 7: 101. [CrossRef]
- Ronk, Fiona R., James R. Korman, Geoffrey R. Hooke, and Andrew C. Page. 2013. Assessing Clinical Significance of Treatment Outcomes Using the DASS-21. *Psychological Assessment* 25: 1103–10. [CrossRef]
- Russell, Helen, and Frances McGinnity. 2014. Under Pressure: The Impact of Recession on Employees in Ireland. *British Journal of Industrial Relations* 52: 286–307. [CrossRef]
- Russell, Helen, Philip J. O’Connell, and Frances McGinnity. 2009. The Impact of Flexible Working Arrangements on Work–Life Conflict and Work Pressure in Ireland. *Gender, Work & Organization* 16: 73–97. [CrossRef]
- Sänger, Jessica, Laura Bechtold, Daniela Schoofs, Meinolf Blaszkewicz, and Edmund Wascher. 2014. The Influence of Acute Stress on Attention Mechanisms and its Electrophysiological Correlates. *Frontiers in Behavioral Neuroscience* 8: 353. [CrossRef]
- Saunders, Teri, James E. Driskell, Joan Hall Johnston, and Eduardo Salas. 1996. The Effect of Stress Inoculation Training on Anxiety and Performance. *Journal of Occupational Health Psychology* 1: 170. [CrossRef] [PubMed]
- Saxena Anurag, Raenelle Nesbitt, Punam Pahwa, and Mills Sheryl. 2009. Crossword Puzzles: Active Learning in Undergraduate Pathology and Medical Education. *Archives of Pathology & Laboratory Medicine* 133: 1457–62.
- Stewart, Greg L., Stephen H. Courtright, and Charles C. Manz. 2011. Self-Leadership: A Multilevel Review. *Journal of Management* 37: 185–222. [CrossRef]
- USA Today. 2022. Crosswords Archives. April 22. Available online: <https://puzzles.usatoday.com/crosswords-archive> (accessed on 18 October 2022).
- van Dorssen-Boog, Pauline, Jeroen de Jong, Monique Veld, and Tinka Van Vuuren. 2020. Self-Leadership Among Healthcare Workers: A Mediator for the Effects of Job Autonomy on Work engagement and Health. *Frontiers in Psychology* 11: 1420. [CrossRef] [PubMed]
- Watson, David, and Auke Tellegen. 1985. Toward a Consensual Structure of Mood. *Psychological Bulletin* 98: 219–35. [CrossRef] [PubMed]
- Wichert, Ines. 2002. Job Insecurity and Work Intensification: The Effects on Health and Well-being. In *Job Insecurity and Work Intensification*. Edited by Brendan Burchell, David Ladipo and Frank Wilkinson. London and New York: Routledge, pp. 92–111.
- World Health Organization. 2020. Occupational Health: Stress at the Workplace. Available online: <https://www.who.int/news-room/questions-and-answers/item/ccupational-health-stress-at-the-workplace> (accessed on 21 March 2023).

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