Perseveration as a Motivational Factor in Behavior

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Introduction

The study of motivation and emotion presents an opportunity to advance both academic understanding and applied knowledge to practical situations. Motivation theorists have made remarkable progress in offering a straightforward hypothetical understanding of numerous types of motivations, such as hunger, sexual desire, achievement striving, hunger, and hostility. Baumaster (2016) suggests that motivation is a state in which a biological organism desires some type of change in self and/or environment. For purposes of this topic, it is important to consider that motivation consists of emotion, cognition, agency, and other psychological processes. For example, addiction may be one type of motivation; arguably, so is perseveration. Definitionally, perseveration can be described as a continually repetitive and continual behavior, thought, or speech that happens because of deviations in cognitive skills such as attention, memory, and mental plasticity (Hauser, 1999, p. 214). Perseveration is often a subset of stress and specifically worry, although after reviewing the literature, there are other considerations. Concerning motivation, worry demonstrates the benefits of acting in order to stop an unwanted outcome and safeguard that suitable action is taken (Sweeny & Dooly, 2017). The purpose of this paper is to review cognitive, emotional, and motivational aspects of perseveration. Personal factors, environmental influences and sociocultural components will be identified, explored and discussed. Recommendations for therapy and treatment will be offered. Conclusions will be drawn.

Background on Perseveration

Disorder Types

Kim et al. (2020) described perseveration as an inappropriate repetitive behavior in patients with dementia or other prefrontal conditions, such as Parkinson's disease (Mendez et al., 2008; Varanese et al., 2010; Raaphorst et al., 2012; Lillo et al., 2011; Radakovic et al., 2015; Wooley et al., 2010). Developmental disorders such as autism spectrum disorder and Fragile X also have perseverate features (Martin et al., 2012). Williams and Grisham (2013) pointed out that people with obsessive compulsive disorder demonstrate higher levels of perseveration. Sombric and Torres-Oviedo (2021) describe

perseveration as the difficulty to effectively switch between tasks or actions. In older people, rapid task switching is a common cause of perseveration in both cognitive and motor tasks (p. 1; Bock, 2004). Leyro et al. (2011) suggest that perseveration is the tendency to participate in a specific type of behavior even after the behavior is no longer useful and results in potentially undesirable consequences (Serpell et al., 2009). Serpell et al. (2009) point out that perseveration overlaps with personality paradigms of persistence and perfectionism although too much of this type of perseveration can lead to eating disorders.

Perseveration and Worry

Hawksley and Davey (2010) conjecture that perseveration was more widely studied in terms of panic psychopathology or panic attacks and may intensify negative mood states that could lead to hypervigilance, safety-seeking, phobic anxiety, or other somatization symptoms (Salkovskis et al., 1996; Serpell et al., 2009). In fact, Meeten et al. (2016) suggest that uncontrollable and excessive goal-directed worry is a defining feature of generalized anxiety disorder (GAD), and perseveration is a key behavioral component of catastrophic worrying (Davey et al., 2005). Worry can be considered as uncontrollable thought patterns, fear about the future, and obsessively repetitive thought patterns are key components of perseverative worry (Borkovek et al., 1998; Szkodny & Newman, 2019).

Other Features of Perseveration

Dash et al. (2015) propose that most anxiety disorders are characterized by perseveration and catastrophically misinterpret ambiguous bodily sensations especially when the subject is experiencing a negative mood (Taylor et al., 1991). Much remains to be discovered about neural processes that govern age-related motor switching processes, and healthy aging causes increased perseveration in cognitive tasks (Haaland et al., 1987; Albergaria et al., 2018).

Section Summary

Additional research needs to be done on this topic in order to develop understanding and understand the neurological mechanisms that lead to perseverations. Research tends to support the notion that perseverative activities vary in terms of intrusiveness, self-concept, perceived function, and temporal location (Szkodny & Newman, 2019). In terms of worry, rumination, and obsessive patterns studies vary

in terms of controllability and intrusion (Rachman, 1985; Turner et al., 1992). Perseveration would be considered as a cognition because the phenomenon refers to thoughts, attributions, and ways of thinking (Reeve, 2018, p. 8).

Cognitive & Biological, Emotional, and Motional Factors in Perseveration

Biological and Cognitive Factors

Biological drives critical aspects of perseveration (Izard, 1991, 2007; Tomkins, 1962, 1963). Look no further than the brain and the medial prefrontal cortex (mPFC) in better understanding perseveration behavior and cognitive factors in perseverative behavior (Grossman, 2013). Yes, the prefrontal cortex plays a critical role in supporting flexible behavior and in reducing perseveration. Impaired prefrontal functioning often leads to perseverative behaviors that are present in multiple disorders (Miller & Cohen, 2001; Miyake & Shah, 1999; O'Reilly et al., 1999; Roberts & Pennington, 1996; Stuss & Benson, 1984; Munakata, 2016).

Neurotransmitters

According to Cools et al. (2010), the neurotransmitter dopamine is involved in motivation, cognition, and movement. Serotonin has clinical and functional roles that are implicated in depression, impulsivity, and pain (p. 98). Research indicates that perseverative behaviors occur when there are imbalances in serotonin and dopamine, and while selective serotonin reuptake inhibitors are used widely to ameliorate anxiety and depression in many cases in which perseveration occurs, psychopharmacological medications should be used carefully, especially in children (Vasa et al., 2014, 2020; Thorkelson et al., 2019). Self-awareness, attention, and inhibitory problems typically result in perseverative behaviors which occur because of executive system errors after the individual is unable to regulate particular theoretical or conceptual paradigm shifts (Hauser, 1999, p. 214).

Other Considerations

There is still much more research to be done on this topic, and findings suggest a general gap in the literature on the cognitive aspects of perseveration. Although Hallion et al. (2022) propose a five-factor model of perseveration that is worth considering. Szkodny and Newman (2019) also highly key

elements of the emotional aspects related to perseveration including the relationship to mood, worry, and the self-driven nature of the behaviors that occur due to the intrusive nature of perseveration.

Emotional Factors

Emotions are internally experienced and tend to generate brief, attentional outputs of feeling, arousal, purpose-driven, and expressive reactivity to external events (Reeve, 2018, p. 8). Perseveration tendencies impact individuals with prefrontal brain conditions, which include people diagnosed with Parkinson's disease, autism spectrum disorder, some forms of dementia, and generalized anxiety disorder. Individuals with autism spectrum disorder, generalized anxiety disorder, and posttraumatic stress disorder experience intense emotional anxiety and prolonged worry episodes (King, 2002; Mendez et al., 2008; Varanese et al., 2010; Lillo et al., 2011; Martin et al., 2012; Raaphorst et al., 2012; Radakovic et al., 2016; Wooley et al., 2011; Kibler, 2019).

Researchers found that two kinds of emotional responses account for individual variances in trait affect: 1) a disposition that increases whether one is emotionally reactive and displays positive or negative emotions, and 2) a disposition to have emotional perseveration, which is an extended emotional reaction (Boyes et al., 2017). Psychological distress or other types of stress are intensified by perseverative thinking because people with those aforementioned conditions emotionally respond to stress or psychological distress, persist in a state of autonomic nervous system hyperarousal (Kibler, 2019), and respond to stress beyond an isolated, stressful event that can potently continue over long durations of time (Birk et al., 2019).

Hypothetically, increased perseveration is associated with higher prolonged stress levels, and a downside to perseveration and prolonged stress points to poor health conditions including worsened cardiovascular health, high blood pressure, hypertension, and other physiological conditions, such as psychodermatologic disorders (Edmonson et al., 2018; Hall et al., 2012). Given the physiological ramifications of real-world stressors, perseverative thoughts may harmfully affect BP even in cases when a specific stressor occurred only once, a long time ago, or even in situations with a comparatively minor severity (Glynn, 2002). Suppositionally, in people with other exacerbating anxiety conditions, such as

autism spectrum disorder or posttraumatic stress disorder, the health risks are worse, the prolonged state is more detrimental, and the physiological conditions are aggravated (Kibler, 2018).

Psychological trauma motivates fight-or-flight and activates harmful physiological responses. Physiologically, stress triggers the sympathetic nervous system and hypothalamus-pituitary-adrenal (HPA) axis. Elements from those systems, such as cortisol, catecholamines, and neuropeptides excite the immune system (Hall, 2012). Under these negative stress conditions, perseverative-based motivations lead to fear, psychological stress, and physiological responses, such as unhealthy immune responses, nervous system disorders, and adverse endocrine responses (Dhabhar & Mcewen, 1997; Dhabhar, 2006). These are downsides to perseveration.

Motivational Factors

Grit may be a positive motivational upside to perseverative attention in specific types of situations. Bandura (1978, 1989) suggests that perceptions and evaluation can influence motivation, self-efficacy, and agency. Self-efficacy is the acceptance that people use to guide their ability to effectively control their external environment or circumstances (Bandura, 1989). For example, the intrinsic motivations of grit, determination, and conscientiousness can be interpreted as outputs of perseveration when negative psychological factors such as anxiety, depression, and stress are managed effectively (Saunders-Scott et al., 2017).

Grit is characterized by continuing concentration and perseverance in the quest of achieving long-term objectives (Duckworth et al., 2007). As Duckworth et al. (2007) proposes, grit is a positive motivation factor characterized by persistence and enduring passion in goal achievement (Vainio & Daukantaitė, 2015). Two components of grit include Grit-Consistency and Grit-Perseverance. Grit-Consistency is established by maintaining a continuous focus and dedication for a long period of time. Grit-Perseverance is the predisposition to persevere despite impediments such as failures or challenges that disrupt the goal-achievement process (Duckworth & Quinn, 2009). Each of these components should be considered distinctly because Silvia et al. (2013) suggests that Grit-Perseverance engages the sympathetic and parasympathetic nervous systems which means that higher levels of effort need to be

exerted to complete a desired task. Grit-Consistency requires less effort because of a decrease in sympathetic activity, which requires less intrinsic motivation. Hence, people with higher Grit-Perseverance are more likely to remain focused on completing the task contrasted with Grit-Consistency because of decreased motivation toward goal-completion (Silvia et al., 2013). Grit-Consistency and Grit-Perseverance are associated with positive outcomes in goal achievement (Duckworth et al., 2007) and well-being (Kleiman et al., 2013). Credé (2018) proposes that grit may be a valued attribute that leads to resilience in confronting challenging and difficult situations. Resilience is the aptitude to "bounce back" from negative or stressful emotional experiences. Both grit and resilience are factors in handling mental health burdens and are significant concepts to better understand ways to improve at-risk students' likelihoods of academic success and personal well-being (Stoffel & Cain, 2018).

Attention Factors

Researchers suggest that perseveration may be a type of hyperfocus involving periods of intense concentration during the pursuit of interesting tasks and suggest that there is a relationship between concentrated focus, cognitive flexibility, and attention switching (Ayers-Glassey & MacIntyre, 2021; Ashinoff & Abu-Akel, 2021; Harrop et al.; 2019). Ashinoff and Abu-Akel (2021) propose that hyperfocus occurs when an individual is completely absorbed in a task to the exclusion of any other stimuli. Hyperfocus remains understudied, but there are four features of hyperfocus that are generally mentioned, including that hyperfocus manifests as an intensive focus state. Moreover, individuals engaged in hyperfocus tend to have diminished environmental perception, and engage in the task out of intrinsic motivation. Finally, during the hyperfocused state, task performance improves.

Nakamura and Csikszentmihalyi (2009) referred to this state as "flow" (pp. 195-196). Weber et al. (2009) suggest that flow states occur as a result of synchronicity between reward networks and attentional networks and the state of synchronization can occur because there are fewer metabolic demands on the brain than non-synchronous brain activity. Non-demand activities include movies and video games, which might explain why some people with autism perseverate on movie characters, and other make-believe characters (Castellar et al., 2019, p. 9). Certainly, people with ASD engage in

repetitive activities, have a strong attachment or unusual interest in particular topics or behaviors, and are hyperfocused in ways that are considered unusual and highly restricted (APA, 2017). It should be noted that types of perseverations differ in autism, ADHD, and schizophrenia than in other conditions (Ashinoff & Abu-Akel, 2021, p. 14). Age-related changes in unified neural processes typically lead to higher levels of perseveration in an aging population (Sombric & Torres-Oviedo, 2021, p. 1).

Harrop et al. (2019) suggest that circumscribed interests (CI) are characterized by an intensely focused interest on a narrow range of topics (p. 63). Some people tend to focus their attention on a rigid range of focus (Klin et al., 2007; South et al., 2005). For example, boys with autism tend to perseverate on computers, automotive objects, and Legos (South et al., 2005). For people with restrictive social interests and more limited academic concentration, CIs have been shown to be a motivational portal that can be considered *islands of abilities.* Integrating CIs into intervention and learning activities leads to expanded engagement and participatory opportunities that can foster increased reward value, external reinforcement for intrinsic interests, shared enjoyment, and increased self-efficacy (Baker et al., 1998; Mercier et al., 2000; Grove et al., 2018).

Personality Factors

According to Boyes et al. (2020) the Emotional Reactivity Intensity and Perseveration Scale (ERIPS) assesses traits of reactivity, intensity, and perseveration. Reactivity, intensity, and perseveration are related with depression, anxiety, and stress, signifying the relationship between trait affect and abnormal psychology (Ripper et al., 2018). To test whether people with perseverative tendencies respond differently to emotion-creating stimuli, 214 participants were shown movie clips to determine emotional reactivity. Boyes et al. (2020) found that increased levels of perseveration of trait negative and positive affect relate to slowed decreases in sadness and amusement evaluations over time of the stimulus. However, attentional biases might favor how negative or positive information is processed, and these biases relate to trait negative and positive affect that shows variability in terms of whether participants responded to the movie stimuli consistently (Grafton et al., 2012; MacLeod et al., 2002).

Perseveration and Personality Traits

Eysenck and Eysenck (1946) identified the need to consider personality and rigidity as a topic that was understudied and needed more in-depth analysis. The research on the relationship between rigidity and perseveration needs additional study (Schultz & Searleman 2002; Van Hiel et al., 2016). Early theorists considered rigidity as a subset of anxiety (Rubenowitz, 1963, p. 37). In terms of Eysenck's Personality Profile, rigidity is a dysthymic trait and correlates positively with Neuroticism and Introversion (Eysenck and Eysenck, 1962; Paunonen & Jackson, 2000). Costa and McCrae (1992) indicate a positive relationship between personality rigidity and Conscientiousness. Oreg (2003) discovered a connection between introversion and neuroticism to focus, routine-seeking, risk aversion, intolerance to ambiguity, and a strong emotional response to change. Routine seeking and strong emotional reactions to change were minimally correlated with Neuroticism and Extraversion. Nijenhuis et al. (2003) suggest that rigidity should be included as another personality dimension with Introversion and Perseveration that should include an inventory composed of seven scales. These scales should be characterized by 1. Difficulties in dismissing emotional experience, 2. Holding tightly to ideals, ethics, and principles, 3. Continually striving for order, punctuality, and precision, 4. Having a strong orientation toward achievement, 5. The need for social adaptation to the external world, 6. Variation need towards exploring the outside world, and 7. Test attitude (Nijenhuis et al., 2003). In order to more fully understand this topic, additional research needs to be done because there are so many gaps in exploration, including age factors, gender, disability, or other mental disorders (Boyes et al., 2017, 2020).

Personal Epoch and Application

I was clinically diagnosed with autism spectrum disorder, formerly Asperger's disorder (APA, 2000). As a child, I had impairments with eye gaze, and nonverbal social clues. I never had close peer relationships, although lately I have developed an age-appropriate friendship with another female, who also self-reports as being highly perseverative due to anxiety. I tend to lack spontaneous enjoyment, which was much more pronounced when I was a child. My childhood was marked by trauma. I do not lack social or emotional reciprocity. I have a marked restrictive and repetitive pattern of interests and

activities that continue from childhood, although my interests have expanded over the course of my lifespan. I perseverate most of the time, and have an encompassing preoccupation with areas of intense focus, especially in the areas of thought and learning. The disturbance has caused me moderate impairment.

I was not clinically significant delayed in language, and in fact, in terms of cognitive development, I spoke early, taught myself to read when I was 4-years-old, and I read the entire compendium of encyclopedias when I was 6-years-old. I remember perseverating on the plastic overlays that separated the diagrams, and I still remember the sensory appeal of running my fingers over the etched drawings. I chose the topic of Perseveration due to intrinsic motivation because I wanted to better understand how to help my son, who has autism spectrum disorder, and my husband, who has Asperger's disorder. All three of us are on the autism spectrum, and we all perseverate.

In fact, I recently self-administered the Perseverative Cognitions Questionnaire (Szkodny & Newman, 2019). Both my husband and I ranked as moderately perseverative. I ranked 4/5 in terms of Lack of Controllability, 4/5 in Preparing for the Future, 4/5 in Expecting the Worst, 4/5 in Searching for Causes/Meaning, 5/5 in Dwelling on the Past, and .07 in Thinking Discordant with Ideal Self, which rules out psychosis, or a personality disorder.

As a moderately perseverative person, I experience high levels worry, anxiety, sleeplessness, and my social relationships are negatively impacted due to impaired trust. As a child, I was abandoned; my father was hit by a train when I was a teenager. These were significant issues that contributed to my perseverative challenges. I am unable to properly prioritize feelings of worry or anticipation of negative events. The negative aspect of perseveration is constantly waiting for another "shoe to drop."

From a positive perspective, Perseveration has had many upsides. I have high levels of resilience. I finish everything I set goals to complete. I am highly educated. My autistic son lives independently. The few relationships that I do have are productive and positive. I am a very good student. I have grit and self-determination. I am intrinsically motivated. I have always been an eager learner, and I have learned to

mostly control the unpleasant aspects of perseveration even though perseverating does cause me some distress especially when I am reliving a trauma, or having an upsetting dream.

Sociocultural Factors

Researchers project that perseverative cognition is the intermediary of adverse effects from stressors on both psychological and physiological health (Brosschot et al., 2006; Brosschot et al., 2010). In psychopathology, perseverative cognition is often referred to as automatic vigilance or 'cognitive bias' (Verkuil et al., 2010). Perseveration is also linked to the duration of exposure (Borkovec et al., 1983, p. 10). Perseverative cognition is also related to subjective and potentially somatic health complaints (Broschott & Van der Doef, 2006; Jellesma et al., 2009). Perseveration increases when there are conditions of acute stress exposure and instances when there is no change observed in cognitive flexibility under acute stress conditions (Knauft, 2021).

Factors involved in cognitive flexibility include parental education, malnutrition, chronic stress, language development, physical environment, and other socioeconomic considerations (Legare et al., 2018). Children in Western cultures tend to have higher levels of education, wealth, and industrialization (Henrich et al., 2010). Children in Western cultures tend to be educated from an earlier age and hypothetically learn to become more cognitively flexible from a younger age (Deák & Wiseheart, 2015). Both children and adults in other countries, especially poor countries and war-torn countries experience increased anxiety, higher levels of stress and worry, and lower access to wealth. Suppositionally, people from other sociodynamic factors can be perceived as having less cognitive flexibility. Prior research demonstrates that children do not readily or equally rule switch and cognitive switching is based on conceptual or semantic content.

After testing two groups of children from ages 3 to 5 from the United States and South Africa, results show that cognitive flexibility is not a singular cognitive trait. In this particular investigation, South African children were compared with children from the U.S. children and performed similarly in verbal recall and word-learning flexibility, but not in terms of rule-switching flexibility (Legare et al., 2018). Results do not support claims that children from the United States are more cognitively flexible

than children from other cultural or language backgrounds. However, this study is only one investigation and does not consider people in other age groups or specific circumstances such as war-related circumstances, or other trauma. Hypothetically, one might assume that if people have more to worry about; people will worry more and not be able to focus on other phenomena or cognitively switch from their present concerns.

Recommendations for Possible Treatment

There are varying degrees of perseveration, and depending on the psychological or physiological causes of perseveration, treatment requires a comprehensive evaluation from a neuropsychologist and possible prescribed medications from a psychiatrist. According to Chu and Wadhwa (2022) selective serotonin reuptake inhibitors (SSRIs) are commonly prescribed to treat anxiety and major depression disorder. They are also used widely to treat eating disorders, panic disorders, generalized anxiety disorder, major depressive disorders, and posttraumatic stress disorder. SSRIs impede the serotonin transporter (SERT) at the presynaptic axon terminal, which increases the amount of serotonin (5-hydroxytryptamine or 5HT) that remains in the synaptic cleft and stimulates postsynaptic receptors for a longer time (Xue et al., 2016). There are other medications available as treatment options, and this paper is not meant to diagnose or treat any clinical condition.

Other forms of treatment can include group therapy or cognitive behavioral therapy depending on the cause for the perseveration condition. These recommended treatments vary according to the person's diagnosed condition. Given these parameters, CBT can offer alternative goal-directed behaviors to help clients develop better understanding of their particular type of perseveration and generate a possible sequence of actions to prioritize goals, start the goal-directed process, and identify potential factors that could prevent goal-completion (Weisholtz et al., 2017).

Discussion

The general purpose of this paper was to perseverate on the topic of perseveration as a factor in motivation. It's important to note that perseveration does vary, and implications from this paper suggest that perseveration could be viewed as a spectrum condition, depending on the cause of the perseveration.

For example, patients with Parkinson's disease may have different types of perseverations than chronic worriers. People with generalized anxiety disorder are likely more inclined to persistently worry or have fear of the future. Overall, there is a lack of solid foundational literature that supports the assertion that perseveration is a spectrum-based condition, so this finding is a hypothetical perspective.

Research also indicated that there are possible upsides and downsides to perseveration. For example, if a runner only thinks about winning a race and perseverates on running to win, then this response could be considered as a positive perseveration. There was evidence presented that perseveration is a foundational quality of grit. Self-determination theory is essential to grit, and this theory is a tremendous aspect of motivation (Deci et al., 1989). A possible downside to perseveration is when the condition is caused by a brain injury or frontal lobe damage. Additional research should be conducted to determine causes and potential positive or negative factors of causation.

Finally, personality factors weigh heavily into perseveration. Prior to researching this topic, I hypothesized that people with high levels of Introversion, Neuroticism, and Conscientiousness were more likely to perseverate. The research done on this topic lacked convincing evidence, but suggests that this issue was likely the case. More research needs to be done on this topic, as well. It would be interesting to determine if there are other personality factors in determining perseveration, as well.

Conclusion

The purpose of this paper was to evaluate cognitive, emotional, and motivational aspects of perseveration. Personal factors, environmental influences and sociocultural components were identified and explored. Recommendations for therapy and treatment were presented. For purposes of this topic, it was important to recognize that motivation consists of emotion, cognition, agency, and other psychological processes. This paper viewed perseveration as a type of intrinsic motivation, which stems from psychological, biological, and sociocultural factors. Perseveration is often a subset of stress and specifically worry, although after reviewing the literature, there are other considerations. These considerations were examined more fully. Finally, the paper examines downsides and upsides of perseveration as a motivational construct of grit, goal-achievement and anxiety.

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