PERFECT PEOPLE, PERFECT ENVIRONMENT: APPLYING PERSON-ENVIRONMENT INTERACTION THEORY TO EXAMINE THE IMPACT OF INSTAGRAM USE ON HEALTH-RELATED PSYCHOLOGICAL OUTCOMES AMONG PERFECTIONISTS

by

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A dissertation submitted to the faculty of
The University of North Carolina at Charlotte
in partial fulfillment of the requirements
for the degree of Doctor of Philosophy in
Health Psychology

Charlotte

2020

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ABSTRACT

KIMBERLY PAPAY ROGERS. Perfect people, perfect environment: Applying person-environment interaction theory to examine the impact of Instagram use on health-related psychological outcomes among perfectionists. (Under the direction of DR. CHARLIE L. REEVE)

Perfectionism was once thought to be a detrimental personality trait that impacts health and psychological outcomes in negative ways. However, modern conceptualizations demonstrate that this trait is multidimensional and that impacts on outcomes are complex. Additionally, person-environment interaction (PEX) theories stipulate that personality traits are only triggered and expressed in environments that are relevant for that trait, that individuals are drawn to environments that "fit" with their underlying personality traits, and that personality traits can interact with environmental conditions in unique ways. Thus, the present study was designed to apply this perspective and examine the impact of perfectionism on psychological outcomes in the context of one particularly perfection-focused environment: the social networking site of Instagram. Secondary analysis of an existing data set was undertaken to address three research questions: (1) Are perfectionists drawn to the social media environment of Instagram? (2) Does perfectionism impact specific aspects of Instagram use? and (3) Is Instagram a more detrimental environment for perfectionists than non-perfectionists? An overall pattern of findings across 70 regression analyses provided preliminary answers to these questions. Results demonstrate that individuals high in one dimension of perfectionism, evaluative concerns perfectionism (ECP), are more likely to use Instagram and that these individuals tend to engage in active and problematic Instagram behaviors. Additionally, results demonstrate that these specific Instagram behaviors exacerbate the detrimental impact of ECP on psychological outcomes. Results of this

study shed new light on both perfectionism and Instagram use, as well as highlight the importance of contextualizing both person-level and environment-level determinants of health-related psychological outcomes in general. Empirical and applied implications are discussed.

DEDICATION

For my husband, Kevin, who had no idea what he was getting into when he married someone who was working toward a Ph.D. Thank you for accepting my journey as your own, and for being there for me in every way possible. And for our son, Thomas, whose very existence is a constant reminder of what truly matters in life.

ACKNOWLEDGEMENTS

This project would not have been possible without the support of a multitude of people, many of whom I wish to thank here. First and foremost, I would like to thank my chair and mentor, Dr. Charlie Reeve. For the past 6.5 years, you have been teaching me, inspiring me, and supporting every aspect of my growth both as a professional and as a person. I feel truly honored and forever grateful to have had the opportunity to work with such an intellectual giant. I could not have asked for a more passionate, compassionate, or brilliant teacher and mentor. Thank you.

I also wish to express my heartfelt thanks to Drs. Jennifer Webb, Erika Montanaro, and Lisa Rasmussen. Your unwavering support, enthusiasm for this project, and insightful feedback were truly invaluable. Additionally, I wish to thank the UNCC Health Psychology Ph.D. Program for providing the funding necessary for this project to take place.

Finally, I wish to thank all of the incredible colleagues, friends, and family members who supported me in countless intangible ways as I worked toward this point. Your love, support, and unwavering belief in me and my work made this journey a truly enjoyable one. Thank you.

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CHAPTER 1: INTRODUCTION

The advent and rapid proliferation of social media has created a truly unique environment in which people communicate with and, perhaps more notably, evaluate, judge, and compare virtually unlimited numbers of people. It has been suggested that social media platforms such as Facebook, Instagram, and Snapchat are contributing to the development of a society obsessed with perfection (Messinger, 2019). Day after day, social media provides users with highly edited or fabricated images of "perfect-looking" people living the "perfect life," and, as a result, many people often strive (albeit in vain) for perfection in various areas of their own lives, whether it be as the perfect romantic partner, the perfect parent, the perfect athlete, the perfect employee, or the perfect student. This striving for perfection can lead to mental loops of competition and comparison; individuals compare themselves to their own self-imposed standards, to standards they believe others hold for them, and to the images of perfection they are bombarded with on social media.

This striving for perfection promulgated in part by social media has garnered the attention of social scientists from two perspectives. First, health psychologists, among others, have examined the psychosocial implications of social media use with a particular focus on its detrimental effects on psychological outcomes. Second, social and personality researchers have begun to examine the construct of perfectionism in more detail over the last decade. This literature has also focused primarily on how individual differences in perfectionism influence psychological outcomes.

Both of these literatures have made important strides in conceptualizing the constructs, refining measures, and accumulating an empirical basis of relations.

However, both of these literatures share a problem: namely, seemingly mixed findings with respect to the nature of the effects on psychological health outcomes. For example, some research has indicated that social media use is a risk factor for depression (Woods & Scott, 2016), whereas other studies have indicated that social media use can have a buffering effect on depression (Ang & Chen, 2019). Similarly, some research has indicated that perfectionism is a beneficial attribute, with links to positive affect and life satisfaction (Chang et al., 2004) as well as beneficial personality characteristics such as conscientiousness and psychological endurance (Stumpf & Parker, 2000), whereas other studies have indicated detrimental effects of this personality trait, including depression (Argus & Thompson, 2008; Black & Reynolds, 2013; Hamachek, 1978; Hewitt & Dyck, 1986), anxiety (Burgess & DiBartolo, 2016; Flett et al., 1989, 1994), and stress (Childs & Stoeber, 2012; Rice et al., 2006; Rice & Van Arsdale, 2010).

While some of these conflicting findings can be partially explained by differences in construct conceptualization and operationalization, another potential explanation is that important differences in the context in which these relationships occur have not been considered. For example, it is possible that social media use can be both beneficial and detrimental for psychological outcomes, but that this use may have a greater or lesser effect depending on certain personality characteristics of the individual using it. Likewise, it is possible that the impact of certain personality traits on health and wellbeing outcomes also depends on the larger social context in which those traits are expressed.

Therefore, the purpose of this dissertation is to propose and test a theoretical solution to this problem while uniting these largely disparate literatures. By utilizing a

person-environment interaction (PEX) framework to examine how perfectionist tendencies interact with a social media environment, I will highlight the importance of contextualizing person-level and environment-level determinants of health-related psychological outcomes.

CHAPTER 2: LITERATURE REVIEW

Person-Environment Interaction (PEX)

Psychologists have long examined the determinants of human behavior, health, and psychological wellbeing. Historically, these researchers followed one of two disciplines of scientific thought (Cronbach, 1957): differentialism, which emphasized the study of *natural* variation in physical and psychological characteristics across individuals (e.g., Galton, Pearson, Spearman), or experimentalism, which examined *artificial* variation through careful manipulation of the environment (e.g., Ebbinghaus, Skinner, Watson). Those ascribing to the former view generally argued that stable individual differences in psychological factors (e.g., intellectual, personality, conative, etc.) and physical factors (e.g., size, strength, genetic risk factors) were the driving force behind differences in behavior and psychological outcomes. On the other hand, researchers ascribing to the latter view generally held the perspective that situational or environmental factors (e.g., cultural values, situational reinforcers, the socio-contextual environment, etc.) were the driving force behind differential behavior (French et al., 1982).

In contrast to seeing these as competing perspectives, an alternative view bridges these views based on the idea that "trait and situation form two sides of a coin that cannot be separated from each other" (Eysenck & Eysenck, 1985, p. 39). This interactional perspective, more formally known as person-environment interaction (PEX), is the notion that the effect of person-level factors on outcomes depends on, or interacts with, features of the environment, and, conversely, that the effect of environmental factors on outcomes differs between individuals based on person-level factors such as personality. Thus, PEX

"takes a middle ground between the trait and situational model, stressing that behavior is a function of the continuous interaction between the person and the situation" (Ford & Oswald, 2003, p. 231), or, as Lewin (1936) phrased it, B = *f*(P,E).

PEX-based theories and models are seen across various subfields of psychology. For example, within Industrial-Organizational Psychology, "person-environment fit" theory (Kristof-Brown & Guay, 2011; Saks & Ashforth, 1997; Schneider, 2001) stipulates that work-related behavioral outcomes (e.g., performance, attendance, citizenship behaviors) will be best when an individual possesses the skills and character traits suited to the demands of an environment, and that psychological outcomes (e.g., job satisfaction, work-life balance, fulfillment, lack of stress, etc.) will be enhanced when the environment fulfills one's psychological needs (Dawis & Lofquist, 1984). In other words, the "fit" between the person and the environment plays a key role for both behavioral and psychological outcomes. Of course, the reverse is generally thought to be true when "misfit" between a person and an environment occurs. While there are numerous specific ways in which one might conceptualize the environment (e.g., culture, organization, team, job, task) as well as the person (e.g., abilities, skills, knowledge, personality characteristics, values, motives) for any given study, the underlying premise that person-level and situation-level factors interact to impact behavior, health, and psychological outcomes is sound and can be see in numerous instantiations.

For example, it is well accepted that individual perception plays a key role in how situational factors impact an individual's behavior, and these perceptions differ based on individual differences (e.g., personality characteristics) across the perceivers (Mischel, 1968; Tett & Guterman, 2000). Thus, the same situation or environmental circumstances

can lead to different behavioral outcomes for individuals because of differences in how that situation is perceived. This idea is mirrored in the biopsychosocial model of challenge and threat (Blascovich & Tomaka, 1996), which states that any given stressor can be perceived as either a challenging situation or a threatening situation, leading to differential stress-related health outcomes.

Likewise, it is well known that "individuals are not passive to situations but can actively choose which situations" or environments to engage in (Ford & Oswald, 2003, p. 231). Individuals can select in and out of, influence, or modify their environments, and differences in the "fit" between an individual's person-level characteristics and the environment determines the degree to which people do this. Given that people have a basic psychological need to express their natural traits and tendencies (Tett et al., 2013), they tend to be drawn to situations in which they will have ample opportunities to express them. Additionally, people are drawn to situations in which the expression of their natural traits and tendencies is valued and extrinsically rewarded. In other words, to put it simply, people actively pursue environments in which they are likely to be "rewarded for being themselves" (Tett et al., 2013, p. 73). This often results in similar individuals seeking out similar environments, which then creates environmental niches of like-minded individuals (for further reading on the "niche building" theory, see Scarr & McCartney, 1983).

Thus, a full and complete understanding of human behavior demands that we consider both personal characteristics and situational factors simultaneously. This is especially true when outcomes related to health and wellbeing are of interest. For example, within the field of Health Psychology, identifying risk factors for health

problems and promotive factors for wellness has been a primary concern from both an individual and a community health perspective. However, attempts to categorize specific personality characteristics and situational or environmental factors as either beneficial or detrimental to one's health and wellbeing often result in oversimplified conclusions with limited ecological validity, as these factors do not exist in isolation in the real world. Instead of attempting to place value-laden labels on certain traits (e.g., "conscientiousness is good"), it is far more advantageous to recognize that the reality is nuanced, and the benefit or detriment of any given personality characteristic may depend on the environment in which it exists. Similarly, it is crucial to consider that specific environments or situations do not necessarily offer an inherent benefit or detriment, but that the impact of them depends on person-level characteristics of the actors involved. Thus, it is crucial to take this person-environment interaction into account when examining predictive relationships of differential outcomes.

The Person: Individual Differences

As previously mentioned, person-level individual differences within the PEX perspective can include biological aspects, personal values, goals, abilities, and psychological characteristics such as intellect, personality, and affect. The current dissertation examines the person-level construct of perfectionism, which has been most soundly conceptualized as a personality disposition.

Personality. Personality refers to individual differences in characteristic patterns of thoughts, feelings, and behaviors, or "latent propensities to behave in certain ways," (Tett & Burnett, 2003, p. 502), though it should be noted that "behave" indicates more than just outward, observable behavior and can also refer to internal psychological

processes. Though specific definitions differ somewhat, there is a common thread across conceptualizations demonstrating that personality-based behavior reflects individual differences in these latent propensities that interact with enviornmental demands and affordances. For example, Tett and Burnett (2003, p. 502) describe personality traits as "intraindividual consistencies and interindividual uniqueness in propensities to behave in identifiable ways in light of situational demands." Similarly, Larsen and Buss (2010, p. 4) describe personality as "the set of psychological traits and mechanisms within the individual that are organized and relatively enduring and that influence his or her interactions with, and adaptions to, the intrapsychic, physical, and social environments."

There are a wide variety of theoretical perspectives from which one can study personality. For example, type theories focus on the description of personality types via taxonomies and classification systems (e.g., Friedman and Rosenman's (1959) Type A and Type B personality theory). Social cognitive personality theories (e.g., Bandura, 1977) and psychoanalytic theories focus primarily on the development of personality traits and emphasize situational aspects as key influencers in personality development. Alternatively, biopsychological personality theories focus on biological underpinnings of personality traits, such as Gray's Reinforcement Sensitivity Theory (Gray & McNaughton, 2000; Gray, 1970), which proposed a link between an individual's personality and their biological sensitivity to reward and punishment. While many biopsychological theories of personality focus on the "nature" level of influence (as opposed to psychoanalytic theories, which focus heavily on the "nurture" side), some biopsychological theories emphasize that biology alone is not enough to influence personality. For example, genetics-based personality theories focus on the interaction of

genetic predispositions toward certain traits and on surrounding environmental factors that influence the activation and expression of those genes.

Most pertinent to the current dissertation, the differential, or trait, perspective focuses primarily on the empirical discovery, measurement, and classification of specific personality traits. Differentialists examine the correspondence in individual differences in behavior to aide in conceptualization and nomological network development of psychological constructs. Theorists in this perspective tend to use factor analytic approaches to develop specific empirical models of personality. Some differentialists have developed empirically-driven models of broad or fundamental traits (e.g., Eysenck's model of Extraversion/Introversion, Neuroticism/Emotional Stability, and Psychoticism, Cattell's 16 Factor Theory, McCrae & Costa's Big Five Model) that aim to provide the most parsimonous model of human personality possible by focusing on "broad, non-overlapping traits that are relevant to most people most of the time" (Stoeber et al., 2018, p. 70). However, other differentialists focus on more nuanced, compound traits, such as thrill-seeking, religiosity, and perfectionism, that are not included in these broader models.

Personality and Health. The long-standing notion that personality is linked with health outcomes has evolved over time, ranging from an early belief in personality-related humors (blood, black bile, yellow bile, and phlegm) in the time of the ancient Greeks to the more modern notion of certain personality "types" being linked to coronary heart disease (Mommersteeg et al., 2012; Sapolsky, 2004; Stanton & Revenson, 2011; Turiano et al., 2012). It is important to note that the link between personality characteristics and health outcomes is neither a simple nor a direct one, but rather

involves many psychological and behavioral mediators. For example, the link between neuroticism (characterized by anxiety, depression, and anger/hostility) and cardiovascular damage is thought to be partially due to the fact that individuals high in neuroticism are more likely to interpret events in a highly negative manner, which results in more negative appraisals of situations, resulting in higher stress (Stanton & Revenson, 2011). Similarly, the link between pessimism and poor health outcomes may be partially explained by the tendency for pessimistic individuals to engage in detrimental health behaviors such as avoiding treatment when physical health issues arise (Peterson et al., 1988). However, despite an underlying indication that situational factors matter in the relationship between personality and health outcomes, these relationships have rarely been explicitly explored from a PEX perspective.

The Environment: Situational Differences

Just as person-level factors can be operationalized in different ways, environment-level factors within the PEX perspective can be examined from various points of view. One common way an environmental factor can be conceptualized is in determining where it falls on the micro-macro level spectrum. For example, in considering environments within an education setting, a classroom may represent a more micro-level factor, whereas the larger culture in which that classroom is situated could be considered a more macro-level factor. However, given the comparative nature of this classification method, another, perhaps more empirically useful means of conceptualizting environment-level factors within the PEX perspecitve is by assessing the degree to which a given environment "primes," "triggers," or "requires" a given person-level trait of interest. This is known as "trait relevancy."

Trait Relevancy. Trait relevancy is based on the notion that "traits are expressed behaviorally to the degree the situation offers opportunities for their expression" (Tett et al., 2013, p. 74). In other words, "traits influence behavior only in relevant situations" (Kenrick & Funder, 1988, p. 29) because situational cues are required to trigger and elicit behaviors related to those tendencies. The stronger a situation is (i.e, the more it demands a given trait), the more likely it will trigger behavioral expression of that trait (i.e., the more likely that differences in phenotypic expression of the trait will account for large portions of variance in behavior). This notion is similar to how test items can differentiate underlying abilities in people. For example, "2 + 2 = ?" calls forth mathematical ability, but so does a complicated calculus equation. However, it is evident that one of them "demands" much more mathematical ability than the other in order to complete the problem and would allow for clearer differentiation in underlying mathematical ability.

It is worth noting that trait-relevance as a generic concept is not an inherent property of any given situation; it is dependent on the actual trait being considered, as a given situation may be trait-relevant for one particular trait but not another. For example, it would be unlikely for any individual, whether or not they are high in anxiety, to exhibit anxious behavior while relaxing on the couch watching TV, because anxious individuals only demonstrate anxious behaviors in situations that they find threatening (Kenrick & Funder, 1988). Therefore, while a relaxing afternoon watching TV might not be considered a trait-relevant situation for anxiety (for most people), having to give a public speech to an audience is likely a more "anxiety-relevant" situation and, thus, we are likely to better see the expression of differences in latent anxiety.

The Purpose of the Current Study

Explicit use of PEX-based theories in Health Psychology is limited (see Slaug et al., 2019, and Hill et. al., 2010, for two examples of its application in predicting health outcomes), though empirical examples of person-environment interactions influencing health and psychological outcomes abound. For example, researchers have examined person-environment interactions predicting alcohol abuse and dependence (Hill et al., 2010), gerontological wellness (Wahl et al., 2012), and mental distress (Lyons et al., 2019). Additionally, there are multiple instances of person-level factors serving as moderators in environment-health relationships, demonstrating an interaction. For example, Lai (2009) found that optimism serves as a buffer for the relationship between environmental daily hassles and stress in Chinese students. Similarly, Fry (1995) found that the person-level characteristics of humor and optimism buffer the negative impact of environmental hassles on health outcomes and that the person-level trait of perfectionism exacerbated the link between environmental hassles and physical illness.

Thus, as argued above, it is not sufficient to simply ask the questions, "Is trait X beneficial or detrimental for health and psychological outcomes?" or, "Is situation Y beneficial or detrimental for health and psychological outcomes?" Instead, it is crucial to examine person-level factors within the context of trait-relevant situations, resulting in the more nuanced questions of, "*Under what conditions* is trait X beneficial or detrimental to health and psychological outcomes?" and "*For whom* is situation Y beneficial or detrimental?" Thus, these are the questions the current study seeks to explore. More specifically, the purpose of this dissertation was to examine how perfectionist tendencies interact with social media use to impact health-related

psychological outcomes. Through this empirical example, I will highlight the importance of explicitly conceptualizing person-level and environment-level determinants of psychological health from a PEX perspective.

Perfectionism

While perfectionism has been a concept of interest in both clinical and academic fields for almost a century, we have witnessed an exponential increase in empirical research on this topic over the past two decades. For example, results from a *PsycInfo* keyword search for perfectionism have increased from just 689 hits in 2000 to 4,265 in 2020[1]. In addition to this scholarly work, the rapid expansion of interest on this topic can be seen in publications designed for the general public as well. Popular self-help books on the topic include *When Perfect Isn't Good Enough: Strategies for Coping with Perfectionism* (Antony & Swinson, 2009), *The Gifts of Imperfection: Let Go of Who You Think You're Supposed to Be and Embrace Who You Are* (B. Brown, 2010), and *Present Perfect: A Mindfulness Approach to Letting Go of Perfectionism and the Need for Control* (Somov, 2010). Additionally, a TedTalk titled "Our dangerous obsession with perfectionism is getting worse" by social psychologist Thomas Curran (2018) currently has over 2.5 million views online, and *The Travel Yogi*, the self-described "original yoga adventure company," offers a week-long "Perfectionist Rehab" retreat for individuals struggling with perfectionism. These examples clearly illustrate the public's growing interest in perfectionism and recognition of it as a potentially negative, unhealthy, and even dangerous trait, as well as a growing desire to find ways to cope with it. All of this

[1] As of February 12, 2020.

begs the question, what exactly does it mean to be a perfectionist? Additionally, is it always problematic, or is it ever beneficial?

Early Definitions

Early definitions of perfectionism were limited and tended to be based in a clinical or disordered perspective. For example, in the 1950s, Branfman and Bergler (1955) conceptualized perfectionism as a type of obsessive-compulsive psychiatric disorder, while *A Comprehensive Dictionary of Psychological and Psychoanalytic Terms* (English & English, 1958) defined perfectionism as "the practice of demanding of oneself or others a higher quality of performance than is required by the situation." A decade later, Hollender (1965) expanded on this psychiatric perspective, claiming that "perfectionism is said to exist when the person *himself* characterizes his mode of performing as perfectionistic and when, in all likelihood, most psychiatrists would agree with this judgment" (Missildine, 1963, p. 94).

Even among early theorists, the recognition of perfectionism's innate bipartite nature set it apart from other psychological and psychiatric constructs. For example, Missildine (1963) conceptualized two distinct types of perfectionism, a "normal" perfectionism in which goal striving led to a sense of satisfaction, enhanced self-esteem, and a sense of pride and accomplishment, and a "neurotic" perfectionism in which a focus on unachievable goals and personal shortcomings led to detrimental outcomes. Expanding on this perspective, Hamachek (1978) maintained the clinical perspective of the time but defined perfectionism as describing both a behavioral pattern and a cognitive pattern. He, like Missildine, clearly distinguished "normal perfectionists" from "neurotic perfectionists," defining the former as individuals "who derive a very real sense of

pleasure from the labors of a painstaking effort and who feel free to be less precise as the situation permits" (p.27). "Neurotic perfectionists," on the other hand, were defined as "demand[ing] of themselves a higher level of performance than is usually possible to attain" and "whose efforts- even their best ones- never seem quite good enough, at least in their own eyes" (p.27). Hamachek further postulated on outcomes likely to be associated with each type, stating that "normal" perfectionism was likely to result in enhanced self-esteem, celebration, and appreciation, whereas "neurotic" perfectionism was likely to result in an inability to feel satisfaction. This distinction allowed for a conceptual explanation of both positive and detrimental outcomes of these behavioral and cognitive patterns, setting the stage for future 2-factor models of perfectionism that would come to dominate the literature.

Despite this early 2-dimensional view of perfectionism, the dominant view through the 1980s was that perfectionism was problematic, dysfunctional, and consistently resulted in psychopathology (Burns, 1980; Pacht, 1984). The construct remained almost exclusively examined from a clinical perspective within the context of "neurotic" behavior (Hamachek, 1978), obsessive disorders (Frost et al., 1990a; Reed, 1985), "dysfunctional attitudes" (Burns, 1980), and "irrational beliefs" (Jones, 1968). Early hypotheses attempting to explain the origins and development of this characteristic claimed that the "disorder of perfectionism" arose from early childhood interactions with parents whose love and approval was conditionally provided based upon the performance of the child (Burns, 1980). However, it is worth noting that these early explanatory hypotheses were based in personal and clinical anecdotal observations as opposed to

empirical data, as there were no psychometrically derived standard measures with which to assess the construct at the time.

The Burns Perfectionism Scale (BPS; Burns, 1980), the first quantitative self-report survey aimed at capturing variance in perfectionistic tendencies, opened the gates for empirical analysis of this construct. Burns defined perfectionists as people "whose standards are high beyond reach or reason… who strain compulsively and unremittingly toward impossible goals and who measure their own worth entirely in terms of productivity and accomplishment" (a definition in line with Hamacheck's "neurotic" perfectionists) and made it clear that he was not including "the healthy pursuit of excellence by men and women who take genuine pleasure in striving to meet high standards" (i.e., "normal" perfectionists) in his conceptualization or in his system of measurement. Thus, the BPS was designed to only assess the "neurotic" type of perfectionism (Broday & Sedlacek, 1988) that dominated clinical literature at that time.

One reason for the continuation of a disordered view of perfectionism is that the Burns Perfectionism Scale served as a foundation for all future perfectionism scales, with many of its individual items still present in more modern systems of measurement. However, its validity as a measure of perfectionism, or, more specifically, "neurotic" perfectionism, remains in question to this day, even by its own author:

> "*At the time, I did not have expertise in scale development, but later did some evaluations, and I believe the reliability was in the high eighties, and there may have been two factors. But I later decided that the scale had validity problems, since I later realized that many people cannot or do not distinguish compulsive perfectionism from the healthy pursuit of excellence. So there was a healthy dimension in the scale that was mixed in with the unhealthy dimension*" (D. Burns, personal communication, April 5, 2018).

The Emergence of Multidimensional Models

Ten years after the Burns Perfectionism Scale was published, two separate research teams simultaneously tackled the construct conceptualization of perfectionism head-on, each focusing on delineating the underlying components of the construct, each yielding their own standard system of measurement, and each unfortunately using the same title for their scale, the Multidimensional Perfectionism Scale. However, while each team took a data-driven, multidimensional approach to the construct, their final conclusions regarding its underlying dimensions were drastically different.

The Six-Factor Model. Frost et al. (1990) took issue with the conceptualization of perfectionism as the setting of excessively high personal standards of performance, claiming that this simple definition did not allow for an important distinction between individuals who were actually perfectionistic from individuals who were appropriately competent and successful. They argued that whereas the setting of high standards may be present for both "normal" and "neurotic" perfectionists, it is the accompanying tendency for excessive concerns or self-doubts that distinguishes the two dimensions. Frost et al. also proposed that two additional characteristics of perfectionism were common, namely, a perception of high parental expectations and a preference for maintaining order and organization.

Thus, these 5 characteristics or dimensions of perfectionism (Personal Standards, Concern over Mistakes, Doubts about Actions, Parental Expectations, and Organization) formed the basis of Frost et al.'s (1990) initial construct conceptualization and multidimensional measurement approach. Frost et al's Multidimensional Perfectionism Scale (FMPS) was designed to tap into each of these 5 dimensions, though factor analysis

lead to a revision of this conceptualization and the inclusion of a 6th factor, Parental Criticism.[2]

The Tripartite Model. While Frost et al. conceptualized perfectionism primarily from developmental and cognitive perspectives, the second research team to develop a Multidimensional Perfectionism Scale (Hewitt & Flett, 1990) approached this construct from a broader perspective encompassing cognitive, affective, behavioral, interpersonal, and motivational aspects. They proposed that while perfectionistic behaviors may manifest similarly across dimensions, the target of perfectionistic expectations (self versus other) and the origin of perfectionistic beliefs (self-derived versus society-imposed) differed. Thus, like Frost's team, Hewitt and Flett conceptualized perfectionism as multidimensional, but instead of breaking perfectionism down into its characteristic components, they proposed different perfectionistic orientations: having perfectionistic attitudes toward one's self (self-oriented perfectionism), having perfectionistic expectations toward others (other-oriented perfectionism), and having the belief that other people hold perfectionistic expectations toward one's self (socially prescribed perfectionism).

Each of these orientations consisted of specific beliefs and behaviors. Self-oriented perfectionism "includes behaviors such as setting exacting standards for oneself and stringently evaluating and censuring one's own behavior" (Hewitt & Flett, 1991, p. 457). In other words, self-oriented perfectionists hold an internally motivated belief that striving for perfection is important in and of itself, and they hold themselves to an

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[2] While factor analyses indicated that Organization was only minimally related to the other factors, Frost and colleagues decided to keep this factor as part of the theoretical definition but to remove it from measurement of the construct as a whole.

expectation of perfection. Other-oriented perfectionists hold "unrealistic standards for significant others, place importance on other people being perfect, and stringently evaluate others' performance" (p. 457). In other words, other-oriented perfectionists hold an internally motivated belief that it is important for others to strive for perfection, and, thus, they expect others to be perfect. Socially-prescribed perfectionists, on the other hand, hold "beliefs or perceptions that significant others have unrealistic standards for them, evaluate them stringently, and exert pressure on them to be perfect" (p. 457). In other words, socially prescribed perfectionists hold an externally motivated belief that striving for perfection and being perfect is important to others, and these perfectionists believe that others expect them to be perfect. It is important to note that one key aspect of Hewitt and Flett's tripartite model of perfectionism that differs from all other multidimensional conceptualizations is that each type of perfectionism, self-oriented, other-oriented, and socially-prescribed, is considered to be detrimental; there is no positive, adaptive, or functional dimension of perfectionism within this conceptualization.

The Two-Factor Model. In an attempt to parsimoniously merge Frost et al.'s six-factor model and Hewitt and Flett's three-factor model, Frost, Heimberg, Holt, Mattia, and Neubauer (1993) conducted a direct empirical analysis of the two Multidimensional Perfectionism Scales. Factor analysis indicated that when all 6 of Frost's subscale and all 3 of Hewitt and Flett's subscales were combined into a single analysis, 2 overarching factors emerged. One factor, consisting of Socially-Prescribed Perfectionism, Concern Over Mistakes, Parental Expectations, Parental Criticism, and Doubs About Actions, seemed to reflect "negative" preoccupations with impression management and evaluative concerns, including "personal concerns over mistakes and

failure, and concerns about other people's evaluative concern" (Frost et al., 1993, p. 125). Because of this, Frost and colleagues called this factor "Maladaptive Evaluative Concerns." The second factor, consisting of Self-Oriented Perfectionism, Other-Oriented Perfectionism, Personal Standards, and Organization, seemed to reflect "positive" and "adaptive" aspects of perfectionism, leading Frost and colleagues to coin the term "Positive Strivings." Further supporting this maladaptive/adaptive delineation was the fact that the Maladaptive Evaluative Concerns factor was correlated with negative affect, whereas the Positive Strivings factor was correlated with positive affect. Taken together, this overall pattern of correlations and factor analyses provided strong evidence for a two-factor conceptualization of perfectionism, one of which was positive/beneficial, and one of which was negative/detrimental.

Evolution of the Two-Factor Model. The conclusion that perfectionism should be conceptualized as a 2-factor trait set the stage for decades of research expanding on this construct from that perspective, though there remains some disagreement as to the exact labeling and defining of each factor. While some researchers refer to the two factors (or "types," or "dimensions") of perfectionism as "healthy" and "unhealthy," (Bieling et al., 2004; Stoeber et al., 2007; Stumpf & Parker, 2000), "positive" and "negative," (Terry-Short et al., 1995), "adaptive" and "maladaptive," (Bieling et al., 2004; Cox et al., 2002; Rice & Preusser, 2002) or "functional" and "dysfunctional," (Rhéaume et al., 2000), other researchers argue against labels such as these that are inherently value-laden. For example, Dunkley, Blankenstein, Halsall, Williams, and Winkworth (2000) argued that the terms Personal Standards Perfectionism (PSP) and Evaluative Concerns Perfectionism (ECP) better captured the underlying nuances of each

factor while also eliminating the directional, value-laden terms (i.e., eliminating the words "positive" and "maladaptive"). In a similar vein, Stoeber & Otto (2006) suggested using the terms "perfectionistic strivings (PS)" and "perfectionistic concerns (PC)."[3] In the present study, Dunkley et al.'s (2000) ECP and PSP delineation will be used, with ECP reflecting "those aspects of perfectionism associated with concerns over making mistakes, fears of negative social evaluations, feelings of discrepancy between one's expectations and one's performance, and negative reactions to imperfection," and PSP reflecting "those aspects associated with self-oriented striving for perfection and setting exceedingly high personal standards of performance" (Stoeber, 2012, p. 541).

Interactionism in the Two-Factor Model. Until the early 2000s, the two factors of perfectionism had largely been considered and measured independently. However, Stoeber and Otto (2006) pointed out that individuals do not necessarily exhibit *only* Perfectionistic Strivings or Perfectionistic Concerns tendencies; it was very possible (and, as it turned out, very common) for an individual to exhibit some degree of *each* type of perfectionism[4]. Thus, an interactionist perspective was born in which an individual's levels of PS and PC were considered simultaneously.

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[3]However, Stoeber coined these terms based off of a modified version of Frost's 2-factor model that did not include other-oriented perfectionism, parental expectations, parental criticism, or organization in the PS/PC distinction, claiming that "other-oriented perfectionism is better regarded as a form of perfectionism outside the two-factor model because it is directed at others, not the self… parental expectation and criticism are better regarded as developmental antecedents of PS and PC, rather than defining components… and organization was never regarded as a core dimension of perfectionism to begin with…" (Stoeber, 2018, pp. 7–8).

[4] Davis (1997) was actually one of, if not the, first to empirically examine an interaction of two dimensions of perfectionism; she found a strong, positive relationship between self-oriented perfectionism and body esteem at low levels of neurotic perfectionism and a strong negative relationship between self-oriented perfectionism and body esteem at high levels of neurotic perfectionism. However, the two dimensions she utilized (self-oriented

To empirically examine this theoretical perspective, Stoeber and Otto (2006) proposed a tripartite group-based interactionist model (not to be confused with Hewitt and Flett's (1990) aforementioned tripartite model) to categorize individuals into healthy, unhealthy, and non-perfectionist categories based on their levels of both PS and PC (see left side of Figure 1).[5]

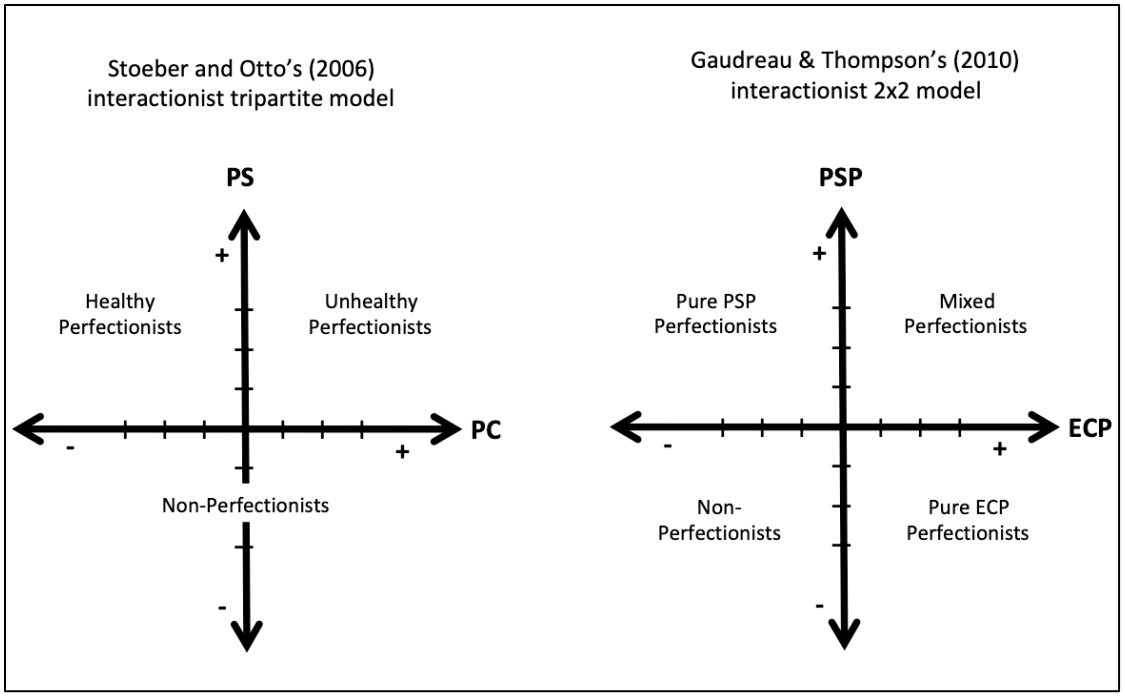

Figure 1. Comparison of two multidimensional models of perfectionism.

Stoeber and Otto argued that individuals high in PS and low in PC resulted in a healthy, adaptive form of perfectionism and that individuals high in both PS and PC

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perfectionism versus neurotic perfectionism) do not fully align with current 2-factor conceptualizations of the construct.

[5] This "healthy," "unhealthy," and "non-perfectionist" delineation was inspired by Parker's (1997) conclusions that cluster analysis using the FMPS resulted in 3 clusters: a "healthy" cluster consisting of low Concern Over Mistakes, low perceived Parental Criticism, low Doubts About Actions, high Organization, and moderate amounts of Personal Standards, Parental Expectations, and total perfectionism score, an "unhealthy" cluster consisting of high Concern Over Mistakes, Personal Standards, Parental Expectations, perceived Parental Criticism, Doubts About Actions, and total perfectionism score, and a "non-perfectionist" cluster consisting of low Personal Standards, Parental Expectations, Organization, and total perfectionism scores.

resulted in an unhealthy form of perfectionism. Additionally, they posited that individuals low in PS should not be considered perfectionists regardless of their level of PC, as perfectionistic strivings was a necessary condition within their definition of perfectionism. They proposed that non-perfectionists would demonstrate lower levels of positive outcomes than healthy perfectionists and lower levels of negative outcomes than unhealthy perfectionists. However, they made no distinction between non-perfectionists who exhibited low versus high levels of PC.

However, another team of researchers, Gaudreau and Thompson (2010), took issue with this last proposition (as well as the continued use of value-laden "healthy" and "unhealthy" category labels), and posited that variance in Evaluative Concerns Perfectionism should lead to measurable differences in outcomes of interest, resulting in two distinct combinations, a low ECP/low PSP subtype (non-perfectionists) and high ECP/low PSP subtype, as opposed to one cross-quadrant non-perfectionist subtype (see right side of Figure 1). Thus, they rejected Stoeber and Otto's tripartite model and proposed a 2x2 model of dispositional perfectionism in which 4 distinct prototypical subtypes of perfectionism (or, what the authors later termed "ways of being a perfectionist" (Gaudreau et al., 2018, p. 45)) were delineated: pure PSP (consisting of low ECP and high PSP), pure ECP (consisting of high ECP and low PSP), mixed perfectionism (consisting of high levels of both ECP and PSP), and non-perfectionism (consisting of low levels of both ECP and PSP). They claimed that individuals exhibiting pure PSP "hold perfectionistic standards that derive uniquely from the self" while those exhibiting pure ECP "pursue perfectionistic standards deriving from perceived external pressure… without personally valuing or internalizing these standards," and that

individuals exhibiting mixed perfectionism exhibit a "partially internalized perfectionism" in which they "perceive pressure from significant others to strive toward perfection" but also hold perfection-based "personal values, standards, and priorities" (Gaudreau & Thompson, 2010, p. 533).

Gaudreau and Thompson proposed a set of empirically testable hypotheses based on this model that could be applied to any outcomes of interest. Specifically, they suggested that pure ECP is more maladaptive than both non-perfectionism and mixed perfectionism, and that mixed perfectionism is more maladaptive than pure PSP. In an attempt to account for conflicting empirical findings in the literature, they also proposed three contradictory hypotheses, stating that pure PSP is more adaptive than non-perfectionism, more maladaptive than non-perfectionism, or neither better nor worse than non-perfectionism. Unsurprisingly, this inclusion of contradictory hypotheses was met with some criticism (see Stoeber, 2012), though Gaudreau and Thompson continue to stand by their inclusion (see Gaudreau, 2013). Regardless, Gaudreau and Thompson found strong empirical support for these hypotheses when examining outcomes of self-determined motivation, academic satisfaction, general positive affect, general negative affect[6], and academic goal progress.

While some debate remains on the specific set of hypotheses that can (or should) be derived from the model, as well as the methodological approaches most appropriate to its empirical application (see Appendix A for a brief discussion), current general consensus among most perfectionism researchers is that "perfectionism should be studied as a disposition composed of two core dimensions that might combine, interact, or

[6] General negative affect did not result in support for one of the proposed hypotheses.

suppress the effects of one another to predict consequential life outcomes" (Gaudreau, 2013, p. 354).

The Empirical Study of Perfectionism & Psychological Outcomes: Issues and Recommendations

As noted by Gotwals et al. (2012), empirical findings suggest that "the association between perfectionism and consequential life outcomes is marked by a substantial amount of inconsistency" (Gaudreau, 2013, p. 352). This is likely due, at least in part, to two issues: one, the influence of statistical suppression due to overlapping (i.e., correlated) dimensions, and two, a lack of consideration of trait-relevant environmental contexts. The former phenomenon has been well-studied in recent literature, while the latter has been alluded to but not explicitly examined (and, thus, was the purpose of this study).

Regarding the former, it is crucial to note both that PSP and ECP are correlated (yet distinct) dimensions and that, as evidenced by empirical examination, ECP typically exhibits much stronger relationships with outcome variables than PSP does (Hill et al., 2010). Thus, due to this correlation and to the overriding influence of ECP, relationships between PSP and any given outcome tend to be obscured (i.e., suppressed) by the influence of ECP. For example, in basic correlational analyses, PSP and ECP both seem to correlate positively with detrimental outcomes, but when the influence of ECP is partialled out (or when ECP and PSP are partialled out from each other), it becomes evident that PSP only appeared to have a positive relationship with detrimental outcomes because of its underlying correlation with ECP (Stoeber & Gaudreau, 2017). When partialled, relationships between PSP and outcomes indicate that PSP is not significantly

related to negative outcomes and is, in fact, either benign or actually beneficial (Bieling et al., 2004; Stoeber & Gaudreau, 2017; Taylor et al., 2016).

As mentioned, a second possible explanation for inconsistencies in findings regarding outcomes of interest is a lack of consideration of trait-relevant environmental contexts. Since perfectionism is conceptualized as a personality trait or disposition, it stands to reason that the aforementioned trait-relevant situation stipulations apply here as well. In other words, given that "traits are expressed behaviorally to the degree the situation offers opportunities for their expression" (Tett et al., 2013, p. 74) and that "traits influence behavior only in relevant situations" (Kenrick & Funder, 1988, p. 29), it is possible (perhaps, likely) that the influence of perfectionism (both PSP and ECP) on outcomes of interest depends on the specific situational context in which the relationship is occurring. Indeed, the likelihood of such an interaction has been mentioned in the literature (e.g., "Etiquettes such as good/adaptive or bad/maladaptive situate the adaptive or maladaptive nature of perfectionism within the trait or the disposition itself rather than within the confines of complex transactions between the person and the environment" (Gaudreau, 2013, p. 352)), but they have not been explicitly explored. Thus, given that research on perfectionism "has yet, for the most part, to explicate when and for whom some dimensions of perfectionism correlate with good or bad outcomes" (Gaudreau, 2013, p. 353), it is necessary to "search for person x situation explanations that could offer a more nuanced and thorough understanding of the effects of perfectionism" (Gaudreau, 2013, p. 352).

Thus, the present study was designed to address this very issue and examine the influence of perfectionism on health-related psychological outcomes within the confines

of a specific environmental context. Since this study was the first attempt at examining such a "person x situation" interaction, it was deemed important to examine a salient and easily accessible environmental situation in which perfection is clearly idealized, sought after, and reinforced. Fortunately, one such situation exists within the realm of modern day social media: namely, the social media platform of Instagram.

A Brave New World: Social Media

Social networking sites (SNSs) have become a fundamental aspect of social connection to many individuals in modern society. These sites, such as Facebook, YouTube, Instagram, Snapchat, Twitter, and LinkedIn, provide unique ways for individuals to connect and interact across geographic, cultural, and economic boundaries, among others. This increased social connectedness has resulted in myriad beneficial outcomes, such as increases in life satisfaction (Manago et al., 2012), social capital (Ellison et al., 2007; Steinfield et al., 2008), and emotional support (Royal Society for Public Health, 2017), as well as increasing real world relationships (Royal Society for Public Health, 2017), fostering a sense of community building (Royal Society for Public Health, 2017), establishing truly meaningful emotional connections (Hunley, 2017b; Kramer et al., 2014), and staying in touch with family and friends and forming new social connections (Hunley, 2017b).

However, many health professionals are also concerned that these platforms may also be fueling a mental health crisis (Royal Society for Public Health, 2017). For example, preliminary research shows that there are significant relationships between the amount of time spent on SNSs and problems with sleep (Primack & Escobar-Viera, 2017; Royal Society for Public Health, 2017; Woods & Scott, 2016) as well as loneliness, body

image, and fear of missing out (Royal Society for Public Health, 2017). Other studies have demonstrated that greater SNS use is associated with lower subjective wellbeing (Kross et al., 2013), lower academic achievement and increased relationship problems (Kuss & Griffiths, 2011), lower perceived emotional support (Shensa et al., 2016), lower self-esteem (Valkenburg et al., 2006; Woods & Scott, 2016), and declines in life satisfaction (Chou & Edge, 2012). Additionally, SNS use has been associated with subjective and clinical levels of anxiety (Primack & Escobar-Viera, 2017; Royal Society for Public Health, 2017; Woods & Scott, 2016) and depression (Block et al., 2014; Lin et al., 2016; Primack & Escobar-Viera, 2017; Royal Society for Public Health, 2017; Woods & Scott, 2016). However, some research suggests these problematic outcomes may only occur as a result of addictive SNS use (Jasso-Medrano & López-Rosales, 2018; Orsal et al., 2013) and that these relationships are SNS-specific and do not exist ubiquitously across all SNS platforms (Royal Society for Public Health, 2017). Thus, each SNS may impact individuals quite differently, and, as such, should be examined individually.

Instagram

Instagram is one of the most widely utilized SNSs and is the second-most downloaded free app[7]. Current reports indicate that one billion people use Instagram every month, with over 500 million of them logging in every single day (Newberry, 2019). Who are these users? As of 2019, 110 million of them were located in the United States, with other high-use countries including Brazil (70 million users), India (69 million users), Indonesia (59 million users), and Russia (40 million users). Data indicates a

[7] As of October 2019.

relatively even split between male and female users, with 48% male and 52% female (Newberry, 2019). 71% of all Instagram users worldwide are under the age of 35 (Newberry, 2019), an age-based trend that is seen within the United States as well. 72% of U.S. teenagers use the platform, and while 37% of all U.S. adults over the age of 18 also have an account, most of those users are young adults (67% of U.S. adults aged 18-29, 47% of U.S. adults aged 30-49, 23% of U.S. adults aged 50-64, and 8% of U.S. adults aged 65+) (Pew Research Center, 2019).

A Perfection-Focused Platform. From a trait relevancy perspective, Instagram is arguably one of the most perfection-oriented SNSs for personal expression, professional pursuits (namely, marketing and advertising, or "influencing," as it is often termed), and social interactions with others. For example, a quick search on Instagram indicates that 58.2 million posts have been tagged with the hashtag "perfect" and 19.4 million with the hashtag "perfection."[8] While it is a fundamental human motivation to form and maintain positive impressions of the self for others, Instagram takes this to the extreme. The photo-sharing application has built-in photo and video editing options, allowing users to easily crop, edit, and apply predesigned filters to images and videos in order to curate a specific look without having to utilize external photo editing applications or software. It also allows users to include captions and hashtags (#) that link individual posts to larger categories of posts, to make their account publicly available, and to allow other users to "follow" their page, all of which increases the size of a user's network. Users can also "like" and comment on posts, creating an easily accessible and visible feedback metric for how "successful" a post is. These factors,

[8] As of October 2020.

combined with the emphasis on the "branding of identity as a consumable good," have resulted in an exceptionally perfection-focused platform (Roccaforte & Cohen, 2017).

Instagram and Psychological Outcomes. Despite its apparent reputation as "the happiest place in the (internet) world," (Burke, 2016), both Instagram users and mental health experts have expressed concerns that "the positivity of Instagram is precisely the problem, with its relentless emphasis on promoting 'perfect' lifestyles" leading to problematic outcomes such as depression (Hern, 2018). Additionally, researchers have begun to recognize that "unrealistic expectations set by social media may leave young people with feelings of self-consciousness, low self-esteem, and the pursuit of perfectionism, which can manifest as anxiety disorders" (Royal Society for Public Health, 2017).

This can be especially salient when it comes to Instagram profiles that emphasize physical beauty ideals. Many users learn to pose strategically in ways that emphasize their assets while downplaying (or completely eliminating) their flaws, a skill that has become so commonplace that a quick Google search for "How to pose for Instagram" yields 260 million results. Additionally, both Instagram filters and external editing applications allow users to erase blemishes and wrinkles, elongate their eyelashes, and virtually drop weight with the click of a button. While being exposed to altered images of attractive celebrities is not a new social phenomenon, being exposed to consistently altered images of *peers* is. Unfortunately, research shows that viewing both celebrity and peer images on Instagram increases negative mood and body dissatisfaction among women (Brown & Tiggemann, 2016), and anecdotal comments from Instagram users themselves also highlight this problem. As one participant in the #StatusOfMind study

indicated, “Instagram easily makes girls and women feel as if their bodies aren’t good enough as people add filters and edit their pictures in order for them to look ‘perfect.’” Overall, this emphasis on perfection, combined with the ability to easily achieve it virtually, sets Instagram apart from most other SNSs.

In fact, one study (Royal Society for Public Health, 2017) found that Instagram was the worst SNS with regard to psychological health outcomes. This survey examined the impact of different types of social media use (Facebook, Instagram, YouTube, Twitter, and Snapchat) on 14 different physical and psychological health outcomes for almost 1,500 teenagers and young adults (aged 14-24). While results indicated that each platform was associated with both positive and negative outcomes, Instagram received the largest negative net score out of the five SNSs, with strong links to anxiety, depression, loneliness, sleep issues, body image concerns, bullying, and fear of missing out (fomo).

This could be due to multiple reasons. For one, researchers have suggested that, in comparison to other SNSs, Instagram places emphasis on personal identity, self-presentation, and self-promotion instead of on fostering social relationships (Dumas et al., 2017; Sheldon & Bryant, 2016). This is clearly evidenced by the large amount of “selfies” (photos of the self) that users post on Instagram (Hong et al., 2020). Thus, if the aforementioned positive outcomes of SNS use are due to socio-relational aspects of SNSs, it stands to reason that Instagram, with its primary focus on the self, may lead to more problematic outcomes than benefits. In support of this idea, research has indicated that self-focused use of SNSs leads to increased stress (as evidenced by cardiovascular measures) as opposed to other-focused use (Cipresso et al., 2019).

Second, Instagram provides an unfortunately ideal environment for the psychological "compare and despair" effect (Nahai, 2018; Royal Society for Public Health, 2017). While comparing oneself to others is a natural human phenomenon, Instagram provides a platform for comparing one's actual self to the intentionally selected and/or altered presentations of others, as opposed to others' actual selves. As users "view heavily photoshopped, edited, or staged photographs and videos and compare them to their seemingly mundane lives" (Royal Society for Public Health, 2017), they "may get the impression that everyone else is much happier and more successful" than they are, leading to feelings of social isolation (Hunley, 2017a). One Instagram user in the #StatusOfMind study highlighted this experience, claiming that "if Facebook demonstrates that everyone is boring and Twitter proves that everyone is awful, Instagram makes you worry that everyone is perfect – except you."

Ironically, the fact that most Instagram posts are positive in nature actually worsens this "compare and despair" effect. Researchers have found that "in online social networks, exposure to the happiness of others may actually be depressing to us, producing an 'alone together' social comparison effect" (Kramer et al., 2014, p. 8788) and that "…social media viewing of photos depicting friends' successes can frequently incite feelings of jealousy, unhappiness, and loneliness" (Nahai, 2018, p. 690). It is also important to note that the specific functional design of Instagram also provides a platform for a second type of comparison. In addition to comparing one's own life to the images one sees in others' posts, users are able to immediately see and compare the reactions and feedback they receive on their own profiles and posts to the reactions and feedback other users receive on theirs. Specifically, users can compare the number of followers,

retweets, and "likes" that they get with those of others. To many users, "likes" serve as an indicator of success, status, and popularity (Martinez-Pecino & Garcia-Gavilán, 2019), and "when these numbers are not as large as anticipated, or compare unfavorably to those of friends or competitors, it can lead to stress" (Nahai, 2018, pp. 689–690). Overall, despite the positive and likely well-intentioned nature of Instagram, it sets users up to "compare and despair," which can all too easily lead to feelings of anxiety, depression, and inadequacy (#StatusOfMind) as well as other stress-related outcomes (Nahai, 2018).

Personality & Motivations for Using Instagram. As previously mentioned with regard to interactionist theories of human behavior, individuals are not passive to situations but can actively choose which situations to perform in. Uses and gratifications theory takes this general idea and applies it to media, explaining that differences in both psychological (e.g., personality) and social factors influence how and why individuals use specific forms of media the way they do. It stipulates that individuals do not typically find themselves passively involved in media consumption, but that they actively make choices as to what media to engage with and consume.

Many researchers have applied this theory to social media use, and a few select studies have examined this in the context of Instagram in particular, examining what underlying personality factors influence how and why people use Instagram the way they do. However, the research looking at the link between personality factors and social media use in general has been largely limited to the Big 5 personality traits (Hamburger & Ben-Artzi, 2000; Ozguven & Mucan, 2013), and the same is true of research examining personality factors and Instagram use in particular (Kircaburun & Griffiths,

2018), though some studies have examined narcissism as well (Moon et al., 2016; Sheldon & Bryant, 2016).

For example, Sheldon & Bryant (2016) assessed various motivations for using Instagram and found that motivations clustered into 4 factors: surveillance/knowledge about others, documentation, coolness/popularity, and creativity. Interestingly, the personality trait of narcissism was linked with specific motivations for using Instagram: namely, individuals higher in narcissism were more likely to use Instagram for the purpose of trying to appear cool or popular. They argued that narcissists may be particularly drawn to Instagram because it allows them to "post and manipulate specific photos to make themselves and their lives appear to be a certain way" (p.95). In additional support of this idea, there was a positive link between narcissism and time spent editing photos before posting them on Instagram. Other studies have also found that narcissism was a salient and consistent predictor of specific Instagram use behaviors. For example, individuals who score higher on narcissism are more likely to spend more time on Instagram, post more selfies, and frequently update their profile pictures (Moon et al., 2016).

Given these links between some personality traits and various aspects of Instagram use, it stands to reason that other personality traits, such as perfectionism, may also play a role in how and why people use Instagram and in how it affects them. Additionally, "individuals possessing high levels of maladaptive perfectionism and low levels of adaptive perfectionism may be particularly concerned about how others view them, and about situations where others may view their performance, and this may confer

an increased vulnerability to a variety of anxious and depressive states" (Bieling et al., 2004, p. 1383).

Health-Related Psychological Outcomes

It is evident that both personality characteristics such as perfectionism and environmental factors such as social media can play key roles in overall health, which, according to the World Health Organization, is "a state of complete physical, mental and social wellbeing and not merely the absence of disease or infirmity" (World Health Organization, 1946). Health practitioners and researchers, as well as the general public, have become increasingly interested in the mental and social aspects of health in recent decades. This is no surprise, as nearly 20% of American adults struggle with a diagnosable mental health condition in any given year (Substance Abuse and Mental Health Services Administration Center for Behavioral Health Statistics and Quality, 2018). Mental health concerns such as depression, anxiety, and stress are particularly common. For example, in 2017, 7.1% of all adults and 13.3% of all adolescents aged 12 to 17 were diagnosed with at least one major depressive episode in the United States. Anxiety disorders appear to be even more prevalent, with 19.1% of adults and 31.9% of adolescents experiencing at least one anxiety disorder. Additionally, while "stress" is not a clinical diagnosis the way that depression and anxiety are, research indicates that the prevalence of stress-related concerns in primary healthcare is extremely high, with estimates between 60% to 80% of visits having a stress-related component (Avey et al., 2003). This is incredibly concerning from a health standpoint, as stress has been shown to both increase blood pressure and maintain elevations in blood pressure, and social stress has been shown to be a huge factor in the formation of atherosclerosis (Carver &

Vargas, 2011). Additionally, stress has been linked to coronary heart disease, heart attack, and mortality (Carver & Vargas, 2011).

However, while the majority of research continues to focus on mental health concerns, it is important to recognize that health is more than the absence of a negative; the presence of positive factors also play important roles in overall health and wellbeing. Research studies taking a positive psychology approach have focused on the positive impact that factors such as mental resilience, social support, and self-esteem can have on health-related outcomes (Snyder & Lopez, 2005). Thus, since the present study was designed to examine the impact of perfectionism and social media use on health-related psychological outcomes, both negative (depression, anxiety, stress) and positive (self-esteem) outcomes were examined.

The Current Study

The purpose of the present study was to utilize a person-environment interaction perspective to understand if Instagram serves as a trait-relevant situation for perfectionism, and, if so, to examine how the personality trait of perfectionism interacts with Instagram use to impact psychological outcomes. Based on the aforementioned notion that people actively pursue environments in which they are likely to be "rewarded for being themselves," it stands to reason that perfectionists in particular may be drawn to this social media platform due to its emphasis on portrayals of perfection as well as its inherent reward-based feedback (e.g., likes, comments, etc.) of those portrayals (see Aim 1). Additionally, based on the previously reviewed empirical relations between perfectionism (particularly ECP) and psychological outcomes, as well as Instagram use and psychological outcomes, it stands to reason that perfectionists choosing to immerse

themselves in this particular environment may be at an even greater risk for problematic outcomes (see Aim 2). If Instagram does serve as a trait-relevent situation for perfectionism, an overarching pattern of evidence was expected to emerge across multiple empirical relationships regarding both Instagram use and consequences of that use among perfectionists. Thus, specific research questions designed to examine such evidence are stated below.

It is imporant to note that only mature scientific fields can support highly specific propositions and hypotheses (with clearly stated relational directions, magnitudes, boundary conditions, etc.). One of the reasons mature fields can formulate and test magnitude hypotheses is that the conceptualization and meaurement of both the predictor and criterion space are well developed and validated. In the present case, PEX thoeries do stem from a mature literature, but the application of them to social environments and health outcomes is rare. More importantly, the conceptualization and measurement of behaviors within the Instagram enviroment is a distinctly nascent enterprise. Thus, where applicable, broad, conceptual, directional hypotheses were proposed (see Figures 3 & 4) but more specific hypotheses were unwarranted. Additionally, to maintain a proper methodological fit, the current study included a range of operationalizations of Instagram use and psychological outcomes (see Figure 2). By including multiple construct operationalizations (e.g., operationalizing "use" as frequency of use, number of posts, time spent editing, etc., operationalizing "psychological outcomes" as depression, anxiety, stress, and self-esteem), it was possible to examine (i.e., "triangulate") an overaching pattern of relations while allowing for variation in specific findings that may have resulted from differences in what exactly each behavior reflects.

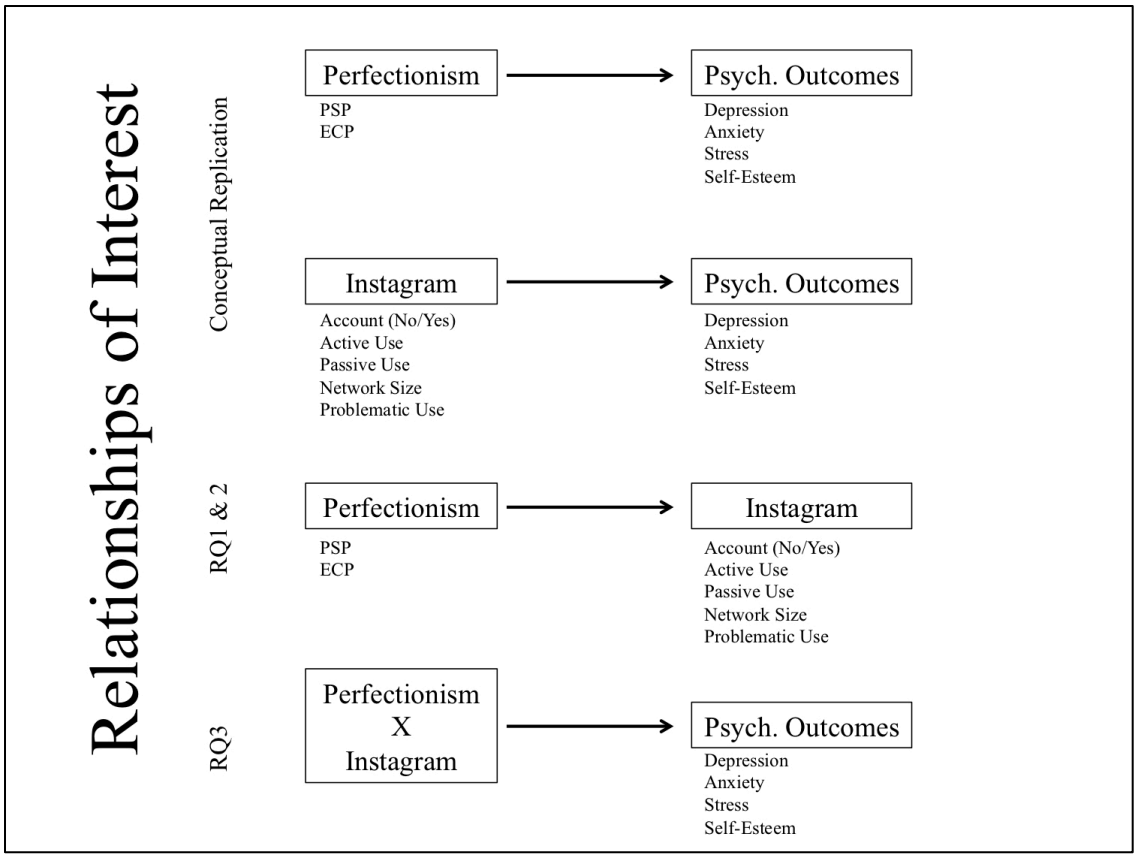

Figure 2. Summary of research questions, relationships of interest, and operationalizations.

Thus, aims and research questions designed to examine such evidence were as follows (example hypotheses with specific measures are provided as indicative of what a "pattern of evidence" would look like):

Aims 1 & 2: Conceptual Replication

While not primary aims of the present study, Aims 1 and 2 were to conceptually replicate previous findings between perfectionism (both ECP and PSP) and psychological outcomes and between Instagram use and psychological outcomes, respectively. This would serve as a strong indicator of data integrity. Hypothesized relationships between perfectionism and psychological outcomes are summarized in Figure 3. While generalized directional impacts of ECP and PSP on outcomes are known (i.e., ECP tends

to have a detrimental impact on health and wellbeing outcomes, whereas PSP tends to be either neutral or beneficial), prior research on the impact of specific aspects of Instagram use on psychological outcomes is lacking. Thus, the general hypothesis of a detrimental impact of Instagram use on outcomes of interest was proposed across all operationalizations to be in-line with prior general conclusions that Instagram use is problematic, but nuanced differences between the specific operationalizations were expected to emerge.

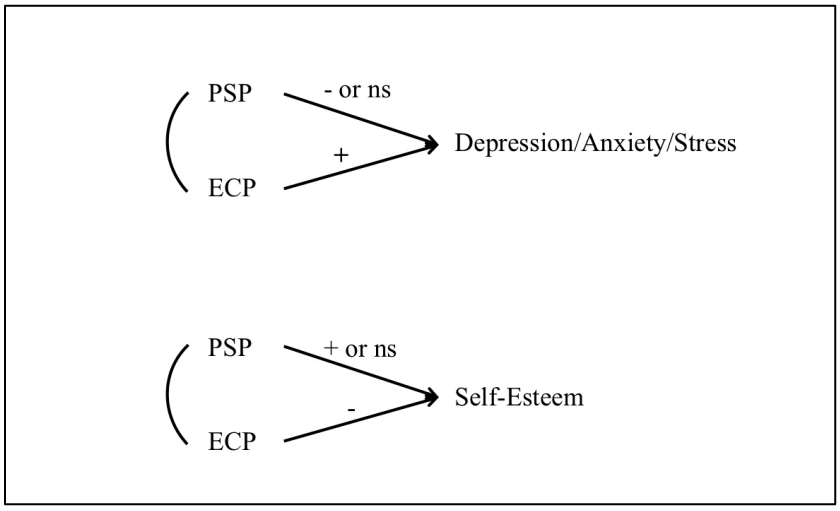

Figure 3. Hypothesized partialled impacts of ECP and PSP on psychological outcomes.

Aim 3: Evidence for Instagram as a Trait-Relevant Situation for Perfectionism

The first primary aim of the present study, Aim 3, was to examine the overall pattern of evidence in Instagram *use* among perfectionists. Two specific research questions were proposed: RQ1) Are perfectionists drawn to Instagram?, and RQ2) Does perfectionism impact Instagram use? Given the nascent status of this research venture, stating specific hypotheses between the dimensions of perfectionism and specific aspects of Instagram use would have been premature. Additonally, differences between specific

operationalizations of "Instagram use" were expected to emege. However, given the aforementioned rationale that Instagram may serve as a trait-relevant situation for perfectionists, perfectionism was expected to predict the likelihood of having an Instagram account and at least some aspects of Instagram use.

Aim 4: Interactions Between Perfectionism and Instagram Use on Psychological Outcomes

The second primary aim of the present study, Aim 4, was to examine the overall pattern of evidence in *consequents* of Instagram use among pefectionists. One specific research quetsion was proposed: RQ3) Is Instagram a more detrimental environment for perfectionists than non-perfectionists with respect to psychological outcomes? Since prior research has demonstrated detrimental impacts of ECP on psychological outcomes of interest, and preliminary research has indicated that Instagram use also detrimentally impacts such outcomes, a pattern of evidence demonstrating an exacerbating interactive effect between ECP and at least some operationalizations of Instagram use was expected to emerge.

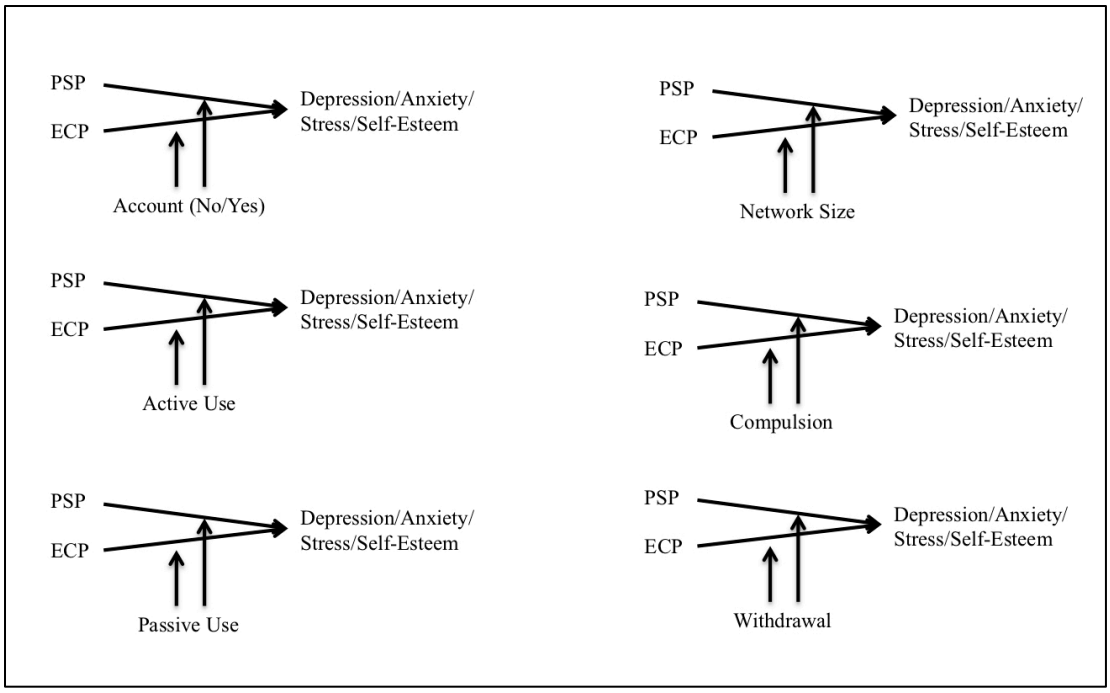

Figure 4. Interactions between perfection and Instagram use on psychological outcomes. Note: Each of the 6 models shown illustrate an amalgamation of 8 interactions for space-saving purposes, but each interaction was tested individually.

CHAPTER 3: METHODOLOGY

This study utilized a secondary data set that was collected as part of an Institutional Review Board (IRB)-approved research project at a large southeastern university in April 2020 investigating individual differences in personality, behaviors, and health and wellbeing outcomes. The author of the present project was a member of the 7-person team involved in the design of the original data collection methodology; however, the aims of the original study were not associated with the specific research questions proposed in this project. Additionally, the author of the present research project did not engage in any analysis of the data prior to the start of the present project (with the exception of data quality assessment, discussed below), so proposed research questions and hypotheses of the present project were not influenced by the data.

As with all methodological decisions, the decision to use a secondary data set has both advantages and liabilities that must be considered. Of course, a clear advantage of primary data collections is that they allow for apriori decision-making leading to a higher degree of control and intentionality with regard to construct operationalization, specific measurement tools, sampling techniques, etc. However, primary data collections also require the expenditure of more resources (e.g., time, money, staff, man-hours, additional burden on participants) compared to secondary data. A key advantage of secondary data analyses is that it is both time-saving and cost-efficient, given that no additional resources are needed up front for data collection. Additionally, it may also provide access to a larger or more representative sample than a researcher would be able to procure otherwise. Of course, the primary limitation of using a secondary dataset is a lack of

control over the selection of measures, and often the measures are embedded in a much larger battery of measures that may lead to increased error in responses.

While a lack of control over the selection of measures may be problematic if a researcher aims to closely examine specific relationships between specific variables of interest, the goal of the present study was to examine overarching patterns of findings as a first step toward investigating the nascent application of a theoretical model (person-environment interactions) to new content areas (perfectionism and Instagram use). Thus, for the present study, any combination of reasonable operationalizations of "Instagram use" and "psychological outcomes" were deemed appropriate and adequate for exploring the proposed model. Additionally, given the nascent nature of the research questions, secondary data analysis was seen as appropriate and cost effective. To ensure that this dataset contained high-quality data and was methodologically sound, an evaluation of the data set was conducted prior to its selection for the proposed study (see Data Set Evaluation below). Specific limitations of using this secondary dataset, as well as methodological recommendations for future primary data collections, are addressed in Chapter 5.

Sample

The dataset consisted of community participants recruited through Amazon's Mechanical Turk (MTurk), a virtual crowdsourcing recruitment website available to the U.S. national population. Research on this type of recruitment strategy has demonstrated that it increases researchers' access to more nationally diverse and representative samples compared to university samples and samples obtained through other virtual platforms

(Buhrmester et al., 2011; Roulin, 2015). To be included in the original study, participants needed be at least 18 years old and English-speaking to be considered for participation.

There were 304 responses in the online data collection. However, 42 responses were removed during basic data cleaning procedures: 5 failed attention checks, 20 completed the survey in less time than the established minimum possible timing, 7 had significant amounts of missing data, and 10 showed nondifferentiation in responses across the entire survey. This yielded an operational sample of $N = 262$. Of this sample, 181 indicated having an Instagram account.

Initial Study Procedure

All study measures for the original data collection were compiled in Qualtrics, which participants were able to access via their MTurk account. Participants could complete the online survey in any location and on any electronic device with Internet connection. Once participants accessed the study page within Qualtrics, they were asked to review an electronic Informed Consent Form and indicate their consent. Qualtrics automatically administered all study measures in a random order, with the exception of demographic information (age, biological sex, gender, race, ethnicity, educational attainment, current occupation status, and current job title), which was presented as the last questionnaire for all participants. Participants were paid $2.00 upon completion of the survey via their MTurk accounts.

Measures

Demographics

Self-reported demographic information (i.e., sex, gender identity, race, ethnicity, etc.) was collected (see Appendix B for a full item list).

Perfectionism

Perfectionism was assessed with the Multidimensional Perfectionism Scale (FMPS; Frost et al., 1990). This scale consists of 35 items distributed among 6 subscales, rated from 1 (*Strongly Disagree*) to 5 (*Strongly Agree*). A score for each dimension of perfectionism was calculated as follows: Personal Standards Perfectionism (PSP) was calculated by averaging the Personal Standards (7 items) and Organization (6 items) subscales, while Evaluative Concerns Perfectionism (ECP) was measured by averaging scores on the Concern Over Mistakes (9 items), Parental Expectations (5 items), Parental Criticism (4 items), and Doubts About Actions (4 items) subscales.

While most investigations of perfectionism operationalize the construct's two dimensions by using a combination of both Frost et al.'s (1990) and Hewitt and Flett's (1990) Multidimensional Perfectionism Scale measures, this single-scale operationalization of PSP and ECP has been used previously with demonstration of acceptable internal consistency for both factors (Chang et al., 2004; James et al., 2015; Parker & Stumpf, 1995; Stumpf & Parker, 2000; Taylor et al., 2016). Additionally, both PSP and ECP factors have demonstrated good convergent validity. For example, when measured this way, PSP demonstrates significant positive relationships to positive affect (Chang et al., 2004), satisfaction with life (Chang et al., 2004), extraversion (Parker & Stumpf, 1995), conscientiousness (Parker & Stumpf, 1995; Stumpf & Parker, 2000), psychological endurance (Stumpf & Parker, 2000), and self-esteem (Taylor et al., 2016) and a significant negative relationship to suicide ideation (Chang et al., 2004). Conversely, ECP demonstrates significant positive relationships with perceived stress (Chang et al., 2004), negative affect (Chang et al., 2004), suicide ideation (Chang et al.,

2004), neuroticism (Parker & Stumpf, 1995; Stumpf & Parker, 2000), and significant negative relationships with positive affect (Chang et al., 2004), satisfaction with life (Chang et al., 2004), extraversion (Parker & Stumpf, 1995), conscientiousness (Parker & Stumpf, 1995), agreeableness (Parker & Stumpf, 1995), and self-esteem (Stumpf & Parker, 2000; Taylor et al., 2016).

Instagram Use

Basic Instagram Use. Basic self-report Instagram profile data was collected for each participant (see Appendix B for full list of included questions). An exploratory factor analysis using maximum likelihood estimation was run on the individual items that were created and included to capture different aspects of Instagram Use in this study (*About how many followers do you have, About how many other accounts do you follow, How often do you post on Instagram, How often do you scroll through your Instagram feed/view others' posts, How often do you view others' Instagram stories, How often do you check to see if anyone has "Liked" or commented on your posts, How often do you edit or filter your images before posting them to Instagram*).

Results of the EFA (with an orthogonal rotation) indicated that 3 clean, interpretable factors emerged with eigenvalues greater than 1, cumulatively explaining 75.92% of the total variance. Factor 1, consisting of *How often do you post on Instagram, How often do you check to see if anyone has "Liked" or commented on your posts*, and *How often do you edit or filter your images before posting them to Instagram* was labeled “Active Use,” Factor 2, consisting of *About how many followers do you* have and *About how many other accounts do you follow*, was labeled “Network Size”, and Factor 3, consisting of *How often do you scroll through your Instagram feed/view others'*

posts and *How often do you view others' Instagram stories,* was labeled "Passive Use." The individual factor loadings were used to create new composite variables (labeled Active Use, Passive Use, and Network Size, respectively) representing optimally weighted factor scores.

Problematic Instagram Use. Problematic Instagram Use was assessed with the Social Media Use Questionnaire (SMUQ; Xanidis & Brignell, 2016), which measures two factors of problematic social media use (withdrawal and compulsion) across 9 items (e.g., "I feel anxious when I am not able to check my social network account") on a 5-point Likert scale ranging from "never" to "always." Previous studies have demonstrated good validity and reliability of this scale (Kircaburun & Griffiths, 2019; Xanidis & Brignell, 2016). In this dataset, the words "social media" were replaced with "Instagram." This minor modification has been utilized in one other study, which demonstrated that this wording change did not alter the factor structure, validity, or reliability of the measure (Kircaburun & Griffiths, 2019).

Psychological Outcomes

Depression, Anxiety, and Stress. Depression, anxiety, and stress were assessed with the DASS-21 (Henry & Crawford, 2005). This 21-item self-report scale was designed to measure the negative emotional states (not clinical diagnoses) of depression, anxiety and tension/stress across 21 items (7 per construct; e.g., "I found it difficult to work up the initiative to do things") on a 4-point Likert-type scale ranging from "Did not apply to me at all" to "Applied to me very much or most of the time." The depression subscale assesses dysphoria, hopelessness, devaluation of life, self-deprecation, lack of interest/involvement, anhedonia, and inertia. The anxiety subscale assesses autonomic

arousal, skeletal muscle effects, situational anxiety, and subjective experience of anxious affect. The stress subscale assesses difficulty relaxing, nervous arousal, and being easily upset/agitated, irritable/over-reactive, and impatient. Scores were calculated by averaging the relevant items for each construct, with higher scores indicating higher levels of each construct. Previous research has demonstrated strong internal consistency of the total and individual scale scores in both clinical and nonclinical samples (Henry & Crawford, 2005; Lovibond & Lovibond, 1995; Page et al., 2007).

Self-Esteem. Self-esteem was measured with the Rosenberg Self-Esteem Scale (RSE; Rosenberg, 1965), which measures global self-worth by evaluating an individual's positive and negative qualities. The measure consists of 10 items that are rated on a scale of 1 (*Strongly Agree*) to 4 (*Strongly Disagree*). Scoring involved calculating the average of all item ratings, where lower scores indicated higher self-esteem. However, for simplicity of interpretation in the current study, this was reverse-coded so that higher scores would reflect higher self-esteem. The RSE has demonstrated good internal consistency in past research (α = .88) as well as good convergent and discriminant validity (Robins et al., 2001). For example, prior studies found that self-esteem was positively related to life-satisfaction and positive dispositional affect as well as negatively correlated with neuroticism and perceived stress (Robins et al., 2001). Additionally, self-esteem was significantly related to higher scores on measures of self-serving biases but was unrelated to SAT scores and college GPA (Robins et al., 2001).

Data Set Evaluation

As previously mentioned, an evaluation of the dataset was conducted prior to its selection for the proposed study. Since the specifics of any research design limit the

inferences that can be drawn from it, any secondary data analysis should begin with an intentional, critical examination of both study design and consequents (e.g., sampling, measurement issues, conceptualization, limits to generalizability, etc.) prior to data analysis.

The first aspect that was evaluated was the overall quality of the original study itself and data collection strategies. One key indicator of quality study development is the existence and availability of a complete codebook. Fortunately, the codebook for this study clearly outlined all study constructs, operationalizations, variables/items, and scoring procedures. A second indicator of a quality dataset is data completeness, or limited missing data. A preliminary analysis indicated that there was very little, and no obviously systematic, missing data in the dataset. Additionally, a more detailed examination of the data quality was possible given that the original dataset included both quantitative and qualitative data, that it included specific items as attention checks for participants, and that it automatically timed how long it took respondents to complete the survey. By briefly examining the attention check questions and the qualitative data, in addition to overall response time, it was easy to identify true human-completed responses as opposed to invalid, "bot"-completed responses. This allowed for the opportunity to remove those invalid responses, resulting in a more accurate dataset.

In addition to overall quality, the appropriateness of the specific study design was assessed. Simple convenience sampling was used, which was not surprising given that the timeframe and cost-effectiveness of this method are typically more feasible than probability sampling (Whitley & Kite, 2013). However, more importantly, the constructs of interest in this study did not warrant specific sampling requirements (i.e., the

constructs of interest in the original study were likely to be present with adequate variation even in a simple convenience sample, a premise that held true for the present study as well). Additionally, the goal of the present study was to establish the utility of the person-environment interaction perspective for understanding seemingly contradictory findings in prior literature; the goal was not to obtain ideal point-estimates for specific population parameters. In other words, to put it simply, the goal of the present study was to establish an overall pattern of evidence, not to pinpoint specific magnitudes of association. Thus, convenience sampling was an entirely appropriate method.

The specific sample itself, with inclusion criteria of being over the age of 18 and English-speaking, matched the sample needs of the present study, as the personality, behavior, and psychological health outcomes in an adult population were of interest. Additionally, the specific operationalizations of the constructs of interest in this dataset were deemed appropriate, as they were established, psychometrically developed, widely used measures.

CHAPTER 4: RESULTS

Descriptive Statistics

Demographic information for the full operational sample and subsample of Instagram users is shown in Table 1. Likewise, basic descriptive statistics and zero-order correlations among key study variables for the full operational sample and for Instagram users are shown in Tables 2 and 3, respectively. Internal consistency reliability estimates are reported in the diagonal where applicable. In both the full sample and Instagram users only, all basic bivariate relationships between variables of interest were in the expected directions and were in line with prior research and theory[9]. Additionally, the relationships between perfectionism and Instagram were in line with the theoretical foundations proposed in this paper, as both PSP and ECP were positively related to having an Instagram account[10]. Among Instagram users, all bivariate relationships were in the expected directions.

Preliminary Analyses

Assessment of Control Variables

The impact of age, sex, gender identity, and race on all predictor variables of interest (i.e., all perfectionism variables and Instagram use variables) were examined via bivariate regression analyses. Age was a significant predictor of ECP (β = -.03, $p < .001$)

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[9] While *partialled* relationships between PSP and depression, anxiety, and stress were expected to be negative or non-significant, positive relationships were expected in simple bivariate relationships due to the expected suppressive influence of ECP. Similarly, the reverse situation was expected between PSP and self-esteem, with a positive relationship expected in partialled analyses but a non-significant or negative relationship expected in simple bivariate relationships.

[10] Though, again, the relationship between PSP and this outcome was expected to be influenced by the suppressive effect of ECP given the lack of partialling, so this analysis was not used to answer RQ1.

and having an Instagram account (β = -.01, p < .05), indicating that levels of ECP and the likelihood of having an Instagram account decreased as age increased. Sex and gender identity (0=male, 1=female) were significant predictors of compulsion (β = -.37, p < .05 and β = -.34, p < .05, respectively) and withdrawal (β = -.33, p < .05 and β = -.29, p < .05, respectively), indicating that both biological and identifying males were more likely to exhibit problematic Instagram behaviors compared to females. Race (dummy coded as White, Black, and Other due to small sample sizes in some categories) was a significant predictor of ECP, PSP, having an Instagram account, active use, compulsion, and withdrawal, such that individuals identifying as Black reported significantly higher levels of ECP, PSP, active use, compulsion, and withdrawal compared to individuals identifying as White. Thus, originally, all subsequent analyses included age, sex, gender identity, and race as control variables. However, in 100% of these analyses, both sex and gender identity dropped out as significant predictors once the other predictors of interest (perfectionism and Instagram variables) were included in the models. As a result, all models were revised to include only age and race as control variables. For all regression analyses, these control variables were entered as a set first, and the predictor variables of interest (perfectionism or Instagram use indicators, depending on the specific model) were entered simultaneously in step 2.

Conceptual Replication of Basic Relationships

Prior to examining the focal research questions, further analysis of bivariate relationships was undertaken to ensure that partialled relationships between variables of interest were in the expected directions and magnitudes, providing a conceptual replication of prior findings.

First, four hierarchical multiple regression analyses were conducted to examine the unique direct impacts of both PSP and ECP on the psychological outcomes (i.e., depression, anxiety, stress, and self-esteem; Table 4, *Perfectionism* model). As explained above, given the known suppression effect of ECP on relationships between PSP and outcomes of interest, zero-order relations are of little informational value. However, the partial regression coefficients from a hierarchial regression reveal the unique, and unsuppressed, effects.

As a set, PSP and ECP accounted for large amounts of variance in all four outcomes examined; depression, anxiety, stress, and self-esteem. As expected, ECP predicted increased depression, anxiety, and stress and decreased self-esteem controlling for PSP, age, and race. PSP, on the other hand, demonstrated the exact opposite relationships (as expected) and predicted decreased depression, anxiety, and stress and increased self-esteem controlling for ECP, age, and race. These findings replicate prior estimates in terms of both direction and magnitude.

Second, twelve hierarchical multiple regression analyses were conducted to examine the direct impact of Instagram usage on the four psychological outcomes (Table 4, *Instagram Account, Instagram Use,* and *Problematic Use* models). Having an Instagram account accounted for a moderate amount of variance in depression, anxiety, and stress and a small amount of the variance in self-esteem controlling for age and race (Table 4, *Instagram Account* model). Having an Instagram account predicted increased depression, anxiety, and stress, and decreased self-esteem. Each of these relationships were conceptually in line with prior research and theory demonstrating the detrimental impact of Instagram use on health-related outcomes.

Among Instagram users, specific aspects of Instagram use proved to be differentially related to the psychological outcomes of interest (Table 4, *Instagram Use* model). The set of three factors reflecting the measured aspects of Instagram use (active use, passive use, and network size combined) accounted for large amounts of variance in depression, axiety, and stress controlling for age and race. More specifically, results indicated that active use yielded a large, positive unique impact on depression, anxiety, and stress and a small negative impact on self-esteem controlling for passive use, network size, age, and race. In constrast, niether passive use nor network size yielded meaningful unique impacts on depression, anxiety, stress, or self-esteem.

The same pattern of effects were again seen when the same analyses were applied to the compulsion and withdrawal variables (Table 4, *Problematic Use* model). As a set, problematic use accounted for a large amount of the variance in all four outcomes and demonstrated the same pattern of unique effects seen above with the active use of Instragram. Thus, overall, this set of 12 hierachical regressions shows a clear and consistent pattern of a detrimental impact of "active" use of Instagram on health-related psychological outcomes that generalizes across various operationalizations.

Primary Analyses

RQ1: Are perfectionists drawn to Instagram?

To examine whether the personality trait of perfectionism impacts whether or not someone is drawn to the social media environment of Instagram, logistic regression was employed. Perfectionism (PSP and ECP as a set) was a significant predictor of whether or not someone had an Instagram account (0=*does not have an Instagram account*, 1=*has an Instagram account*), incrementally accounting for a moderate amount of the total

variance (Nagelkerke $R^2 = .10$) controlling for age and race. More specifically, results indicated that ECP has a very strong effect on the odds of having an account; for every 1SD increase in ECP, the odds of having an account increase by 99.4% ($\beta = .69$, $p < .01$, $OR = 1.994$) controlling for PSP, age, and race. PSP was not a significant predictor. This supports the conclusion that individuals with higher levels of ECP are more likely to have an Instagram account compared to those with lower levels of ECP. Importantly, holding ECP constant, differences in PSP are not associated with the choice to have an Instagram account.

RQ2: Does perfectionism impact specific aspects of Instagram use?

To examine the degree to which ECP and PSP influence specific aspects of Instagram use, 5 hierarchical multiple regression analyses were conducted regressing each of the different aspects of Instagram use (active use, passive use, network size, compulsion, and withdrawal) onto ECP and PSP (Table 5).

Perfectionism (PSP and ECP as a set) accounted for a large amount of variance in active use, compulsion, and withdrawal, as well as a moderate amount of variance in passive use. It did not account for variance in network size. More specifically, there was a large, positive impact of ECP on active use ($\beta = .53$, $p < .01$), compulsion ($\beta = .83$, $p < .01$), and withdrawal ($\beta = .80$, $p < .01$) controlling for PSP, age, and race. ECP did not predict passive use or network size. PSP had a moderate positive impact on passive use ($\beta = .24$, $p < .01$) and small negative impacts on compulsion ($\beta = -.21$, $p < .01$) and withdrawal ($\beta = -.20$, $p < .01$) controlling for ECP, age, and race. PSP did not predict active use or network size.

This pattern of findings supports the overall conclusion that perfectionism does impact Instagram use. Interpreting these results in light of the previously revealed relationships between Instagram use and psychological outcomes, it is clear that ECP predicts the more problematic aspects of Instagram use (i.e., active use, compulsion, and withdrawal) whereas PSP predicts the neutral aspect (passive use) and seems to be a protective agent against some problematic aspects (compulsion and withdrawal).

RQ3: Is Instagram a more detrimental environment for perfectionists than non-perfectionists?

To examine the focal theoretical question of whether and how the personal characteristic of perfectionism interacts with the environment of Instagram in potentially detrimental ways, a total of 48 hierarchical moderated multiple regression analyses were conducted (Tables 6-8). Overall, the expectation was that a pattern would emerge across these analyses in which ECP would interact with the more active aspects of the Instagram environment to exacerbate the negative psychological effects of Instagram use, whereas there was expected to be no interaction with the passive aspects of Instagram use. Such a pattern would be consistent with the PEX model.

To ease the interpretation of the interactions, all continuous predictors were *z*-scored. In each analysis, the set of control variables were entered in step 1, both linear terms for the predictor variables were entered in step 2, and the interaction term (calculated as the product of *z*-scored predictor variables) was entered in step 3. As main (linear) effects were examined above, this section will focus exclusively on the interaction effects.

An interaction was considered meaningful if it met two conditions: 1) the beta coefficient for the interaction term met the traditional standard for a small effect using the PPMC metric (i.e., $r = .10$), and 2) the final step of the regression model accounted for a meaningful increment in variance explained as indicated by $\Delta R^2 \geq .01$. This was deemed best practice, as 1% can be a meaningful amount of incremental variance for a moderation effect (i.e., non-linear effects are by definition not as robust as linear effects) and statistical significance was not expected to be the best indicator of a true moderated relationship given the relatively small sample size. In order to more fully examine the nature and magnitude of these interaction effects, simple slopes were plotted for any interaction that met both of these criteria. Following standard conventions (Cohen et al., 2002), scores reflecting +/- 1SD and the mean were used to plot the simple slopes with continuous variables.

The full set of regression results are presented in Tables 7 and 8. Because of the excessive amount of information presented and the importance of focusing on the pattern of results across those 48 moderated regression analyses, a verbal summary of these results is displayed in Table 6.

Interactions between ECP and Instagram use. Of the 24 interactions examining ECP and each aspect of Instagram use on the psychological outcomes of interest, 9 met the aforementioned criteria of having an interaction term with a $\beta \geq .10$ and $\Delta R^2 \geq .01$ for the final step of the model containing the interaction term (see upper portion of Table 6 for summary and Table 7 for statistical results). Overall, results indicate that ECP and Instagram use interact in a way that detrimentally impacts psychological outcomes. For example, having an Instagram account moderated the

relationships between ECP and depression, anxiety, and stress (Figures 5-7) such that the impact of ECP on these outcomes was stronger for individuals who have an Instagram account than for those who do not. Similarly, active use moderated the relationships between ECP and depression, anxiety, and stress (Figures 8-10) such that the impact of ECP on these outcomes was also stronger as level of active use increased. Following this same pattern, both withdrawal and compulsion moderated the relationship between ECP and depression such that the impact of ECP on depression increased as compulsion and withdrawal increased (Figures 11 & 12). Interestingly, while none of the other interactions predicted self-esteem, the interaction between ECP and network size did impact self-esteem. This interaction (Figure 13) followed the same general pattern but in the opposite direction (i.e., the detrimental impact of ECP on self-esteem became stronger as network size increased), which was to be expected given that self-esteem is a positive psychological outcome, whereas depression, anxiety, and stress are negative psychological outcomes.

Thus, in general, the overall pattern of results demonstrated that certain aspects of Instagram use significantly interacted with ECP to differentially predict psychological outcomes, such that higher levels of ECP and higher levels of Instagram use contributed to worse psychological outcomes. Each of these interactions is reported in greater detail below.

ECP and Having an Instagram Account. ECP and having an Instagram account interacted to incrementally predict 1% of the variance in depression, anxiety, and stress above and beyond the main effects of these predictors. Each of these interactions was ordinal in nature. No interactive effect between ECP and having an account was found

for self-esteem. The positive relationships between ECP and depression, anxiety, and stress were stronger for individuals who had an Instagram account than for those who did not. At low levels (-1SD) of ECP, the level of depression, anxiety, and stress was relatively the same and remained below average regardless of whether or not someone had an Instagram account. Levels of depression, anxiety, and stress increased significantly as level of ECP increased, and at high levels of ECP (+1SD) there was a noticeable difference in depression, anxiety, and stress symptoms between those who had an account and those who did not. Thus, as expected, these results suggest that individuals high in ECP experience greater psychological distress when engaged in the environment of Instagram.

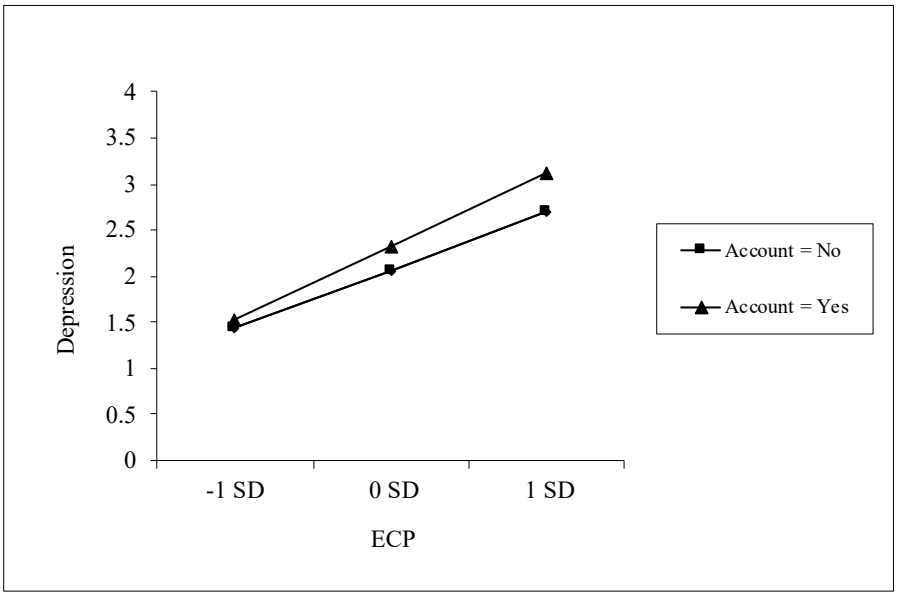

Figure 5. Interaction between Evaluative Concerns Perfectionism and Instagram Account Status on Depression

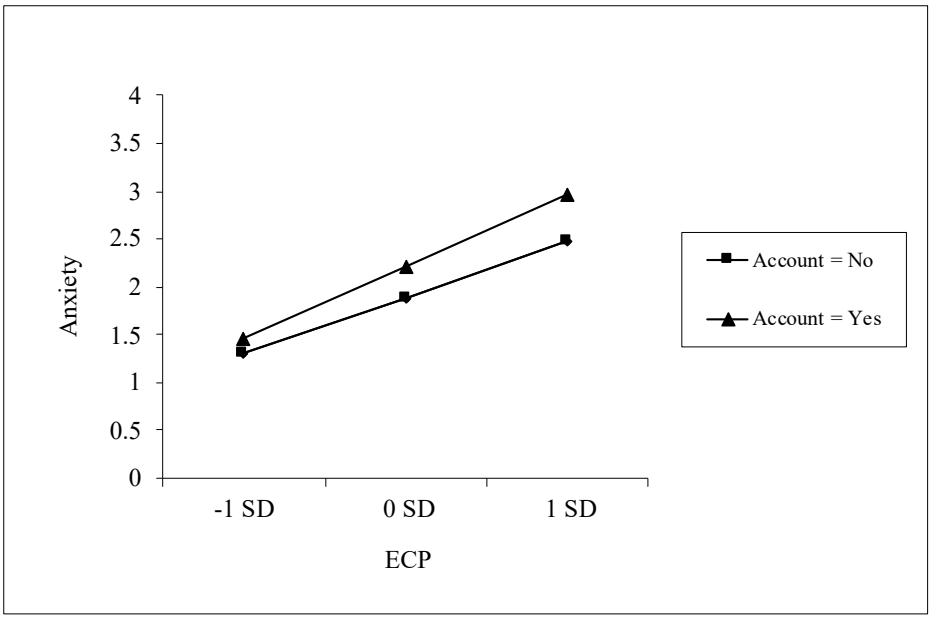

Figure 6. Interaction between Evaluative Concerns Perfectionism and Instagram Account Status on Anxiety

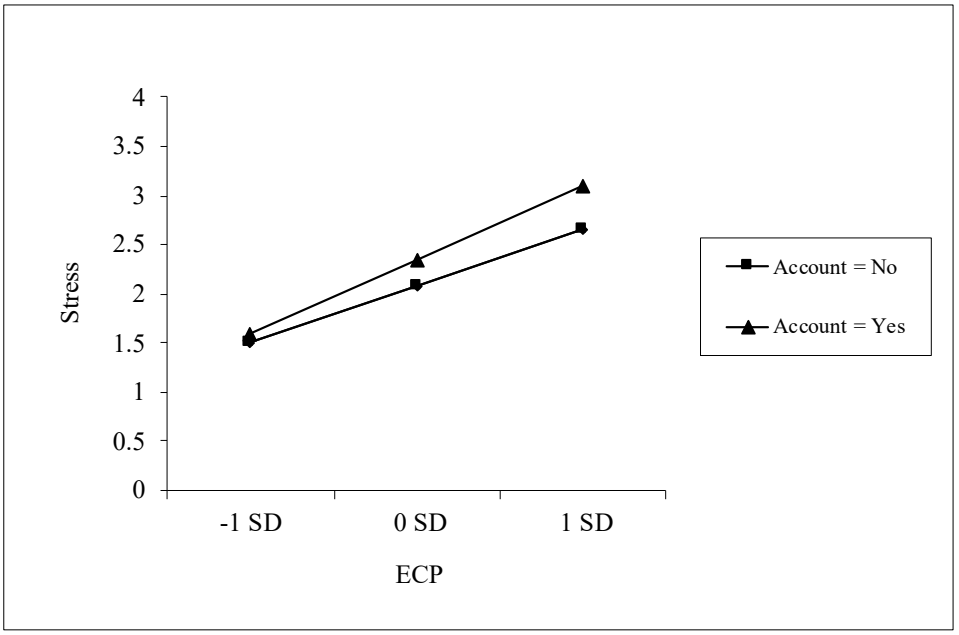

Figure 7. Interaction between Evaluative Concerns Perfectionism and Instagram Account Status on Stress

ECP and Active Use. The same pattern of results that emerged in the interactions between ECP and having an Instagram account was seen in interactions between ECP and active use, though to an even larger extent. ECP and active use interacted to

incrementally predict 2% of the variance in depression, 4% of the variance in anxiety, and 1% of the variance in stress above and beyond the main effects. No interactive effect between ECP and having an account was found for self-esteem. The positive relationships between ECP and depression, anxiety, and stress increased as active use increased. At low levels (-1SD) of ECP, the level of depression, anxiety, and stress was relatively the same and remained below average regardless of level of active use. Levels of depression, anxiety, and stress increased significantly as level of ECP increased, and at high levels of ECP (+1SD) there was a noticeable impact of active use on depression, anxiety, and stress symptoms such that individuals who engaged in high active use (+1SD) exhibited higher levels of symptomology than those who engaged in low levels (-1SD) of active use. In other words, ECP predicted significantly increased levels of depression, anxiety, and stress across all individuals, and this increase was even stronger for individuals who engaged in high levels of active use.

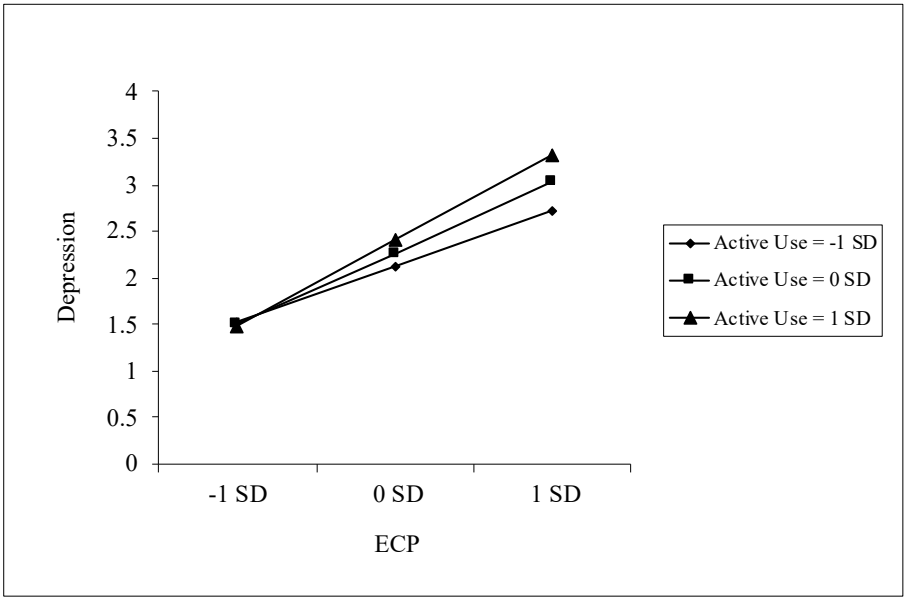

Figure 8. Interaction between Evaluative Concerns Perfectionism and Active Use on Depression.

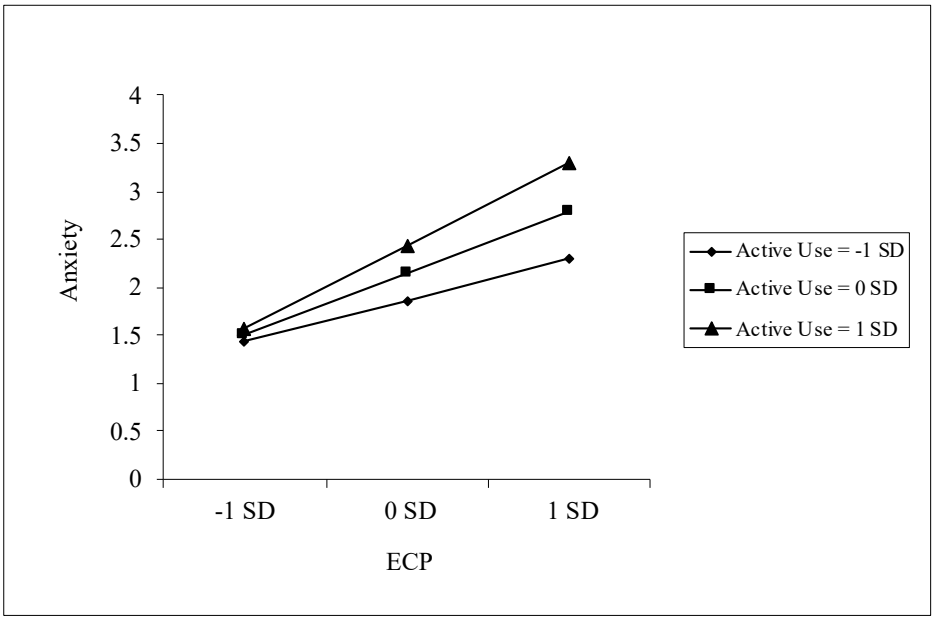

Figure 9. Interaction between Evaluative Concerns Perfectionism and Active Use on Anxiety.

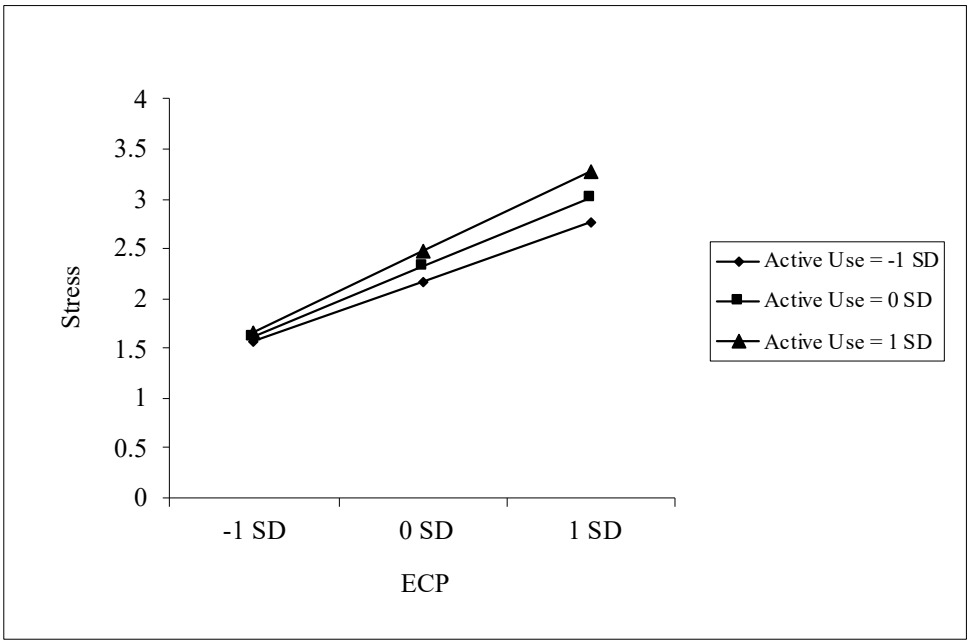

Figure 10. Interaction between Evaluative Concerns Perfectionism and Active Use on Stress.

ECP and Compulsion/Withdrawal. The interactions between ECP and compulsion and ECP and withdrawal were almost identical to each other and were

consistent with the pattern of results discussed above. The interaction between ECP and compulsion, as well as that between ECP and withdrawal, incrementally predicted 1% of the variance in depression above and beyond the main effects. These interactions were ordinal in nature. No meaningful interactive effects between ECP and these facets of Instagram use were found for anxiety, stress, or self-esteem. The positive relationships between ECP and depression increased as compulsion and withdrawal increased.

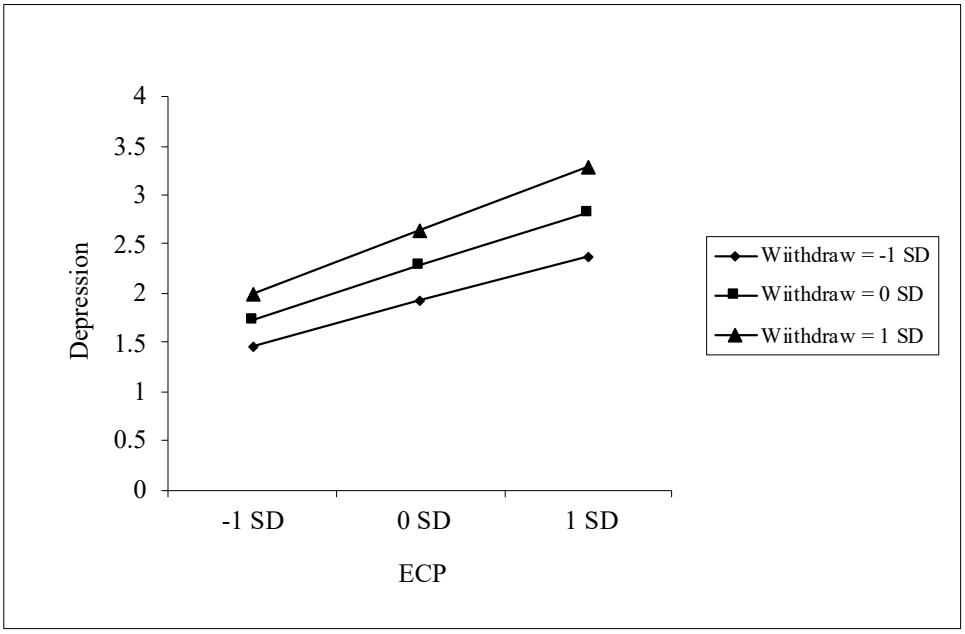

Figure 11. Interaction between Evaluative Concerns Perfectionism and Withdrawal on Depression.

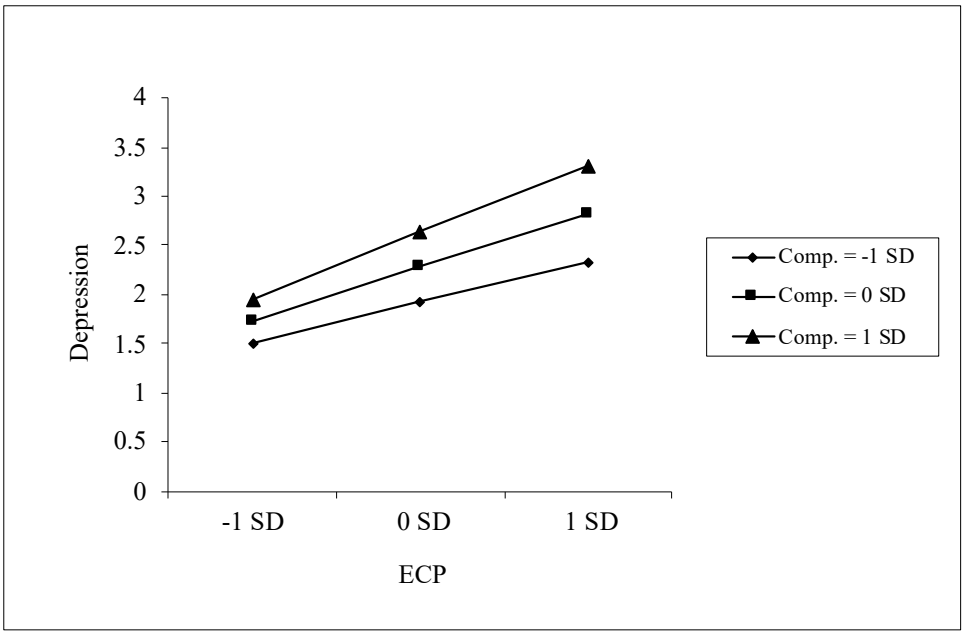

Figure 12. Interaction between Evaluative Concerns Perfectionism and Compulsion on Depression.

ECP and Network Size. ECP and network size interacted to incrementally predict 1% of the variance in self-esteem above and beyond the main effects. This interaction was disordinal in nature. Overall, ECP had a negative impact on self-esteem, and this impact increased as network size increased. However, due to the disordinal nature of this interaction, the impact of network size on self-esteem was opposite between low and high levels of ECP: at low levels (-1SD) of ECP, self-esteem increased as network size increased, but at high levels (+1SD) of ECP, the opposite was true, as self-esteem decreased as network size increased. This indicates that having a larger network size may be a beneficial aspect of Instagram use under some circumstances (e.g., low levels of ECP), but detrimental in others (e.g., high levels of ECP).

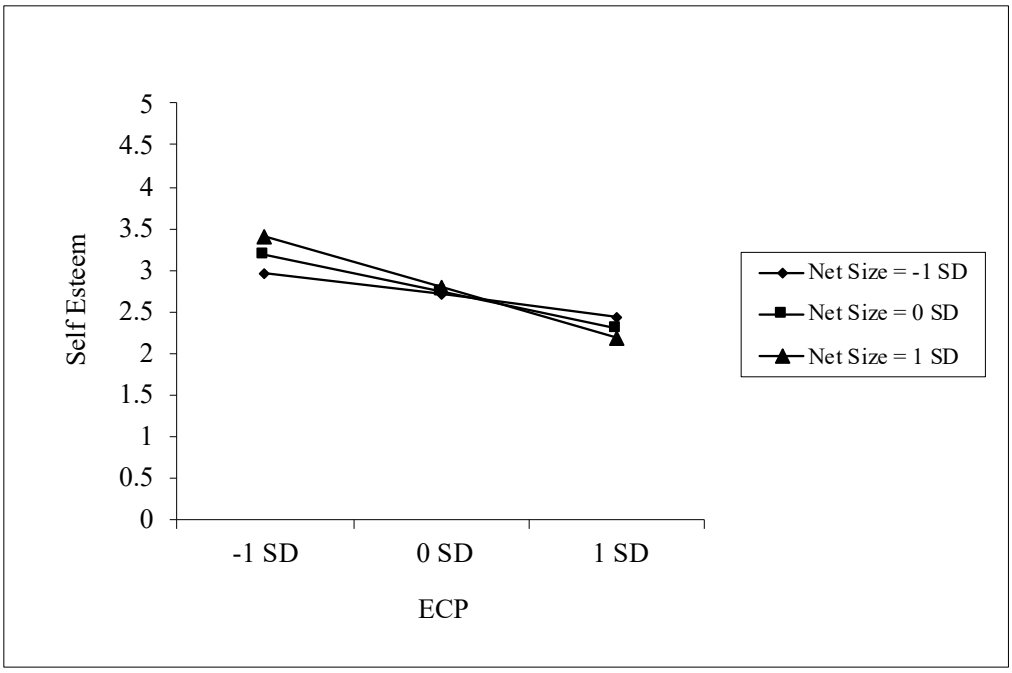

Figure 13. Interaction between Evaluative Concerns Perfectionism and Network Size on Self-Esteem.

Interactions between PSP and Instagram on Psychological Outcomes. Of the 24 interactions examined between PSP and each aspect of Instagram use on the psychological outcomes of interest, only 2 met the aforementioned criteria of having an interaction term with a $\beta \geq .10$ and $\Delta R^2 \geq .01$ for the final step of the model containing the interaction term (see Table 6). Thus, overall, results indicate that PSP and Instagram use do not typically interact with regard to health-related psychological outcomes. The two exceptions to this are reported below.

PSP and Active Use. PSP and active use interacted to incrementally predict 1% of the variance in anxiety above and beyond the main effects. This interaction was ordinal in nature. Overall, there was a negative relationship between PSP and anxiety, and this relationship diminished as active use increased. Thus, the protective impact of

PSP on anxiety decreased as active use increased. No interactive effect was found between PSP and active use for depression, stress, or self-esteem.

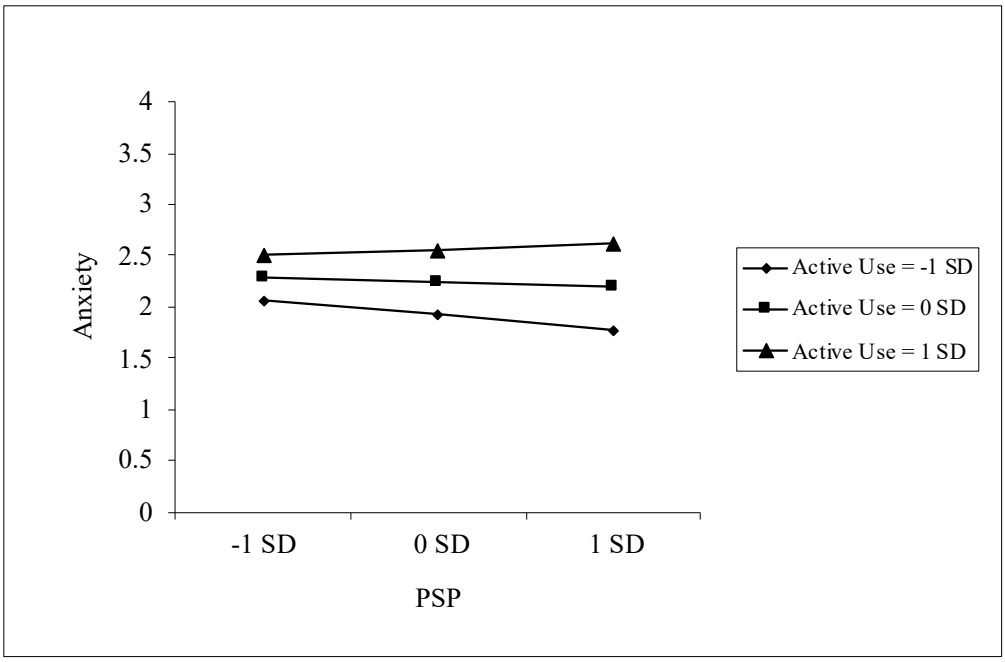

Figure 4. Interaction between Personal Standards Perfectionism and Active Use on Anxiety.

PSP and Network Size. PSP and network size interacted to incrementally predict 1% of the variance in depression above and beyond the main effects. Overall, PSP had a negative impact on depression, and this impact increased as network size increased. At low levels (-1SD) of PSP, depression levels were relatively the same and remained above average regardless of network size, but at high levels (+1SD) of PSP, network size significantly decreased level of depression. This interaction suggests that higher network size enhances the positive effects of PSP on depression (i.e., it enhances the protective impact of PSP on depression).

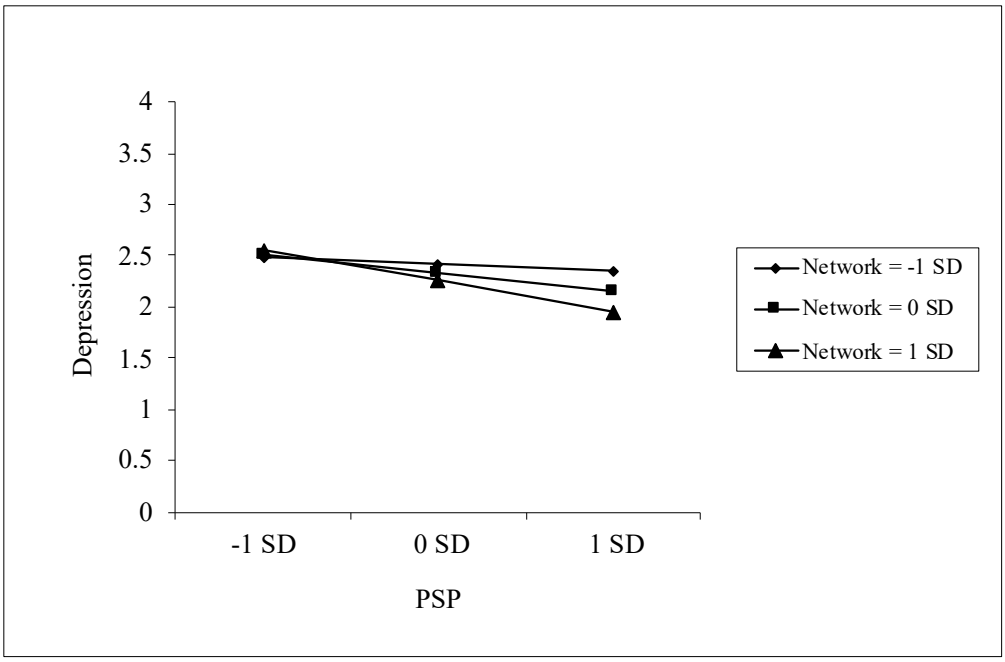

Figure 15. Interaction between Personal Standards Perfectionism and Network Size on Depression.

CHAPTER 5: DISCUSSION

This dissertation utilized person-environment interaction (PEX) theory to bridge two previously disparate predictors of health-related psychological outcomes: the personality trait of perfectionism (consisting of both Evaluative Concerns Perfectionism (ECP) and Personal Standards Perfectionism (PSP)) and the social media environment of Instagram. While myriad research studies have examined the impact of perfectionism on health-related psychological outcomes (see Sirois & Molnar, 2016 for an extensive review), and preliminary research has examined the impact of Instagram use on similar outcomes (Royal Society for Public Health, 2017), no research to date has examined the interaction of the two.

Thus, this dissertation was designed to examine if and how perfectionism and Instagram use interact to impact psychological outcomes. The proposition of this interaction was grounded in the theoretical premises that 1) personality traits "fit" with environmental situations to varying extents, 2) individuals tend to seek out environments in which their natural tendencies can be both expressed and reinforced, and 3) personality traits "are expressed behaviorally to the degree the situation offers opportunities for their expression" (Tett et al., 2013, p. 74) and "influence behavior only in relevant situations" (Kenrick & Funder, 1988, p. 29). In light of these theoretical foundations, it was proposed that the social media platform of Instagram, an environment that tends to both encourage and reinforce portrayals of perfection via social and evaluative interaction, would be a particularly attractive and reinforcing environment for perfectionists, primarily those who express a type of perfectionism that is based in socially-evaluative

concerns (i.e., ECP). Overall, the results of the present study demonstrate a consistent pattern that fits this prediction.

Across 70 regression analyses (48 of which examined interactions), the pattern of results was consistent with prior literature that ECP tends to be problematic, while PSP tends to be either neutral or beneficial. Additionally, an overall pattern emerged demonstrating that individuals high in ECP are more likely to use Instagram and engage in active and problematic Instagram behaviors, and that these aspects of Instagram use exacerbate the detrimental impact of ECP on health-related psychological outcomes. The results also indicated that using Instagram in a passive sense, where one simply observes others' posts, is not linked with detrimental impacts on psychological outcomes. More detailed discussions of each finding, as well as possible explanations and implications, are provided below.

RQ1: Are perfectionists drawn to Instagram?

Results demonstrated that perfectionists are more likely to use the social media platform of Instagram, but, critrically, it was only the ECP aspect of perfectionism driving this effect. The odds of having an Instagram account increased dramatically as levels of ECP increased, whereas PSP did not statistically influence the liklihood of having an Instagram account.

This relationship supports the notion that the social media environment of Instagram may serve as an enticing trait-relevant situation for ECP. Trait-relevancy, or the degree to which a given environment triggers or elicits a given personality trait, is based on the notion that "traits are expressed behaviorally to the degree the situation offers opportunities for their expression" (Tett et al., 2013, p. 74). Instagram's overall

emphasis on social comparison and feedback aligns with the extrinsically motivated, socially focused aspects underlying ECP (Stoeber et al., 2018), and, as such, provides ample opportunities for expression of underlying ECP tendencies. Individuals high in ECP tend to be overly concerned with mistakes, have fears of negative social evaluations, experience feelings of discrepancy between their expectations and actual performance, and have negative reactions to imperfection (Stoeber 2012). Thus, on Instagram, individuals high in ECP may find an environment in which they can take steps through careful selection, editing, and filtering of posts to avoid mistakes, increase the likelihood of positive social evaluations, reduce discrepancies between their expectations and their performance (since their performance, or posts, can be manipulated to match their perfectionistic expectations), and avoid imperfection altogether. Additionally, Instagram users high in ECP may find that Instagram's functionality addresses their underlying extrinsic motivations for achieving perfection by allowing posts to receive "likes" and comments. Given that people have a basic psychological need to express their natural traits (Tett et al., 2013) and are drawn to situations in which the expression of those traits is both valued and rewarded, it makes sense that individuals high in ECP would be drawn to the environment of Instagram.

While the cross-sectional nature of the data collection does prevent definitive causal conclusions between the trait of perfectionism and Instagram use, personality traits are theorized to have early genetic and developmental roots, thus preceeding the choice of whether or not to engage with this particular social media platform. Of course, while it is possible that users are initially drawn to Instagram because of their perfectionism, it is equally possible that among the diverse individuals who pursue Instagram, those with

perfectionistic tendencies are the ones who find themselves in an environemnt befitting their personality and are more likely to choose to remain, while those with personality traits that do not align with Instagram's demands and reinforcers are more likely to disengage from the environment. It is also possible that Instagram is such a salient trait-relevant situation for perfectionism that individuals end up exhibiting more perfectionistic behaviors over time as they engage more with the platform. This is not to say that Instagram use *causes* perfectionism (this would go against most personality theory), but it is possible that individuals who exhibit even low baseline levels of perfectionistic tendencies may find themeslves in an environment that elicits and triggers those tendencies to a noticeable degree. Of course, only carefully controlled, longitudinal research could provide a definitive answer to the question of why perfectionism is linked with the likelihood of having an Instagram account.

RQ2: Does perfectionism impact Instagram use?

A consistent pattern of results emerged across five regression analyses indicating that perfectionism does impact Instagram use. More specifically, this pattern illustrated at least some of the ways in which ECP and PSP impact how Instagram users utlize the platform; as ECP increases, levels of active use (editing posts, creating posts, and checking for likes and comments on one's own posts) and indicators of problematic use (compulsive use and withdrawal) increase. PSP, on the other hand, predicts increases in passive use (looking at others' posts) and predicts decreases in compulsive use and withdrawal.

It is important to view these relationships in the context of the link between each aspect of Instagram use and their psychological outcomes; regression results indicated

that the type of use predicted by ECP (active use, compulsive use, and withdrawal) is linked with higher levels of depression, anxiety, and stress as well as lower levels of self-esteem, while the type of use predicted by PSP (passive use) is not linked with the detrimental psychological outcomes examined in this study. Thus, combining these sets of findings, it is clear that individuals high in ECP tend to use Instagram in ways that are linked with detrimental psychological health outcomes, whereas individuals high in PSP tend to engage in relatively less harmful (at least, with regard to the particular outcomes in this study) Instagram behaviors.

These opposing influences of ECP and PSP are not surprising given the wealth of evidence that indicates that these two dimensions of perfectionism often influence outcomes in contrasting ways. Additionally, these specific patterns are consistent with the underlying nature of each dimension of perfectionism. Given ECP's socially-influenced yet self-focused nature (as in, there is an emphasis on perfection of the *image of oneself* with underlying extrinsic motivations), it is not surprising that ECP would impact the aspects of Instagram use that focus on portrayals of the self (i.e., one's own posts) as well as on examinations of social evaluations of the self (i.e., checking for feedback on one's own posts), perhaps even in compulsive ways. Additionally, the link between ECP and problematic Instagram use as evidenced by engaging in compulsive behaviors and experiencing withdrawal may indicate that not only is Instagram a trait-relevant situation for ECP, but that it is an extremely salient one. In other words, it is possible that not only are perfectionists drawn to the Instagram environment, but they may actually find themselves becoming addicted to it as their perfectionist behaviors are

"rewarded." This would not be surprising, especially given the known addictive aspects of social media use in general (Dalvi-Esfahani et al., 2019).

RQ3: Is Instagram a more detrimental environment for perfectionists than non-perfectionists with respect to psychological outcomes?

A pattern of results emerged across 48 regression analyses in support of the hypothesis that an exacerbating interactive effect between ECP and at least some aspects of Instagram use would emerge. In general, results indicated that ECP detrimentally impacts health-related psychological outcomes, leading to increased depression, anxiety, and stress and decreased self-esteem, and that certain aspects of Instagram use (having an account, engaging in active and problematic use, and overall network size) magnify those detrimental effects. PSP, overall, does not tend to interact with aspects of Instagram use, with two exceptions: active use diminished the beneficial impact of PSP on anxiety, while network size magnified the beneficial impact of PSP on self-esteem.

The finding that ECP detrimentally impacts health-related psychological outcomes in this way is in line with prior research that demonstrates that "individuals possessing high levels of maladaptive perfectionism… may be particularly concerned about how others view them, and about situations where others may view their performance, and this may confer an increased vulnerability to a variety of anxious and depressive states" (Bieling et al., 2004, p. 1383). The interactions between ECP and having an Instagram account, as well as those between ECP and active use, led to remarkably similar impacts on depression, anxiety, and stress. Of course, some of these similarities may be due to methodological influences (depression, anxiety, and stress were all subcomponents of the same scale and were strongly correlated with each other).

However, the goal of the present study was to examine the overall impact of these interactions on negative and positive psychological outcomes in general, and this was achieved.

Of all the interactions examined in this study, those involving network size were among the most surprising. Unlike the other interactions, which were ordinal in nature, the interactions between both ECP and PSP and network size resulted in disordinal interactions. At low levels of ECP, increasing network size appears to be a beneficial aspect, leading to increases in self-esteem. However, at high levels of ECP, the exact opposite is true, with increases in network size leading to decreases in self-esteem. A similar (though opposite, as expected, given the opposing natures of ECP and PSP) pattern was found between PSP and network size for depression; at low levels of PSP, network size did not significantly impact depression, but at high levels of PSP, increases in network size led to decreased depression. While a variety of explanations are possible (different underlying motivations for seeking social connections, differences in patterns of feedback from the social network as size increases, etc.), it is too early to draw any definitive conclusions from this finding. However, this finding, if replicated, could have interesting implications and should be examined in future research.

Specific nuanced differences aside, the overall pattern of evidence demonstrates that problematic Instagram use exacerbates the detrimental impact of ECP on health-related psychological outcomes. This provides strong empirical support for the application of PEX theory to examinations of how individual and situational differences combine to impact health-related outcomes.

Implications

The application of PEX theory to the study of perfectionism, the social media environment of Instagram, and the overall perspective of health-related psychological outcomes is relatively novel within Health Psychology. Indeed, applications of PEX-based theories may help explain some of the inconsistent findings that are evident in both personality and social psychology research, as well as in Health Psychology as a whole.

Implications for Perfectionism Research and Treatment

Despite a relatively active literature regarding the conceptualization and measurement of perfectionism, it has been noted that the association between perfectionism and consequential life outcomes is marked by a substantial amount of inconsistency (Gotwals et al., 2012). The present study provides one explanation for why such inconsistency may exist: the impact of perfectionism on consequential life outcomes may depend on the situational context in which that perfectionism is expressed.

Links between perfectionism and mental health outcomes in particular have been widely-studied, and the present study's findings align with prior research demonstrating that ECP tends to be related to psychological health concerns such as depression (Argus & Thompson, 2008; Black & Reynolds, 2013; Hamachek, 1978; Hewitt & Dyck, 1986), anxiety (Burgess & DiBartolo, 2016; Flett et al., 1989, 1994), and stress (Childs & Stoeber, 2012; Rice et al., 2006; Rice & Van Arsdale, 2010). Unfortunately, far fewer studies have examined the unique relationship between PSP and such outcomes, a critical issue that continues to plague perfectionism research (Stoeber, 2018b) and which the present study sought to address. Additionally, research on perfectionism and health suffers from a lack of explanatory theories (Molnar et al., 2018). The present study's successful application of PEX theory to predict health-related outcomes from

perfectionism demonstrates that the application of existing theories of human behavior in context can likely serve to provide explanations for why and how perfectionism impacts health outcomes in differential ways.

Interestingly, the specific application of PEX theory to the perfectionism construct provides a possible explanation for another phenomenon that has recently been uncovered in perfectionism research: perfectionism has increased notably over the past few decades (Curran & Hill, 2019). While there have likely always been environments in which perfection was portrayed and celebrated, it is very possible that modern society, coupled with the advent of social media, has exponentially increased our society's expectations of perfection and, as a result, has created more perfection-focused environments. In other words, it is possible that at least part of the explanation for why we see perfectionism increasing over time is due to an increase in trait-relevant situations for this personality trait.

The present research has implications for the treatment of perfectionism as well. While "perfectionism" does not exist as a clinical diagnosis in the same way that depression or personality disorders do, it has nonetheless received a great deal of attention from a treatment and intervention perspective. Cognitive-behavioral models of perfectionism (Shafran et al., 2002, 2010) have led to recommendations for cognitive-behavioral treatment for individuals whose perfectionism has reached problematic levels (Egan & Shafran, 2018). However, it is unclear if or how these models and treatment recommendations consider social media environments and behaviors that may trigger, elicit, and reinforce this personality disposition. This is a notable omission, as helping perfectionists become aware of how their contextual environments (and engagements

with such) may trigger and elicit perfection-oriented cognitions and behaviors could prove an efficacious avenue for intervention.

Implications for Social Media Use and Research

This study also highlights the importance of contextualization from the social media perspective. While preliminary research has begun to examine the overall impact of social networking site (SNS) use on health-related outcomes, this research too is marked by a substantial amount of inconsistency (e.g., social media use is linked with lowered depression in some studies (Ang & Chen, 2019; Farpour et al., 2017) and increased depression in others (Block et al., 2014; Lin et al., 2016; Primack & Escobar-Viera, 2017; Royal Society for Public Health, 2017; Woods & Scott, 2016)).

The present study, again, provides a possible broad explanation for this: the impact of SNS use on health-related outcomes may depend on individual differences, such as personality traits, among the SNS users as well as in differences in *how* the particular SNS is used. Since the present study found that there are three distinct aspects to Instagram use- active (self-focused) use, passive (other-focused) use, and the size of one's social network- and that each of these aspects of use were differentially related to outcomes of interest, it will be important for future research on Instagram to consider the specific ways in which users are engaging with the platform.

As social networking sites continue to evolve as ever-present forms of social connection in the modern world, some interesting questions arise concerning the impact of such an environment on the individuals who choose to engage with it. The present study illustrates that understanding the health impacts of social media use is not simply a matter of understanding specific aspects of the site itself; it is also critically important to

understand individual differences in who the users are. While far beyond the scope of this study, this opens the door for ethical questions such as who is responsible for making users aware of the potential impacts of various aspects of SNS use and who is responsible for intervening when that use becomes problematic.

Implications for Health Psychology

In addition to these specific implications for perfectionism and social media research, the present study supports some broader implications for Health Psychology research as a whole. The field of Health Psychology has provided a crucial bridge between the biomedical and the psychological worlds. Whereas traditional biomedical models of health have prioritized biologically-based influences on and relationships between health outcomes, Health Psychology embodies a more holistic approach and emphasizes that health is multifaceted and results from a combination of biological, psychological, and social factors. This biopsychosocial model, a core tenet of Health Psychology, provides a conceptual framework for understanding that complex interactions between these factors influence health. However, while frameworks such as this highlight the importance of understanding that these factors *can* interact, the application of more specific theories can begin to provide some explanations for *why* and *how* specific factors interact and *for whom* specific environments may be especially impactful. Along with a few others studies (see Slaug et al., 2019 and Hill et. al., 2010), the present study demonstrates that applying theories from other banches of psychological research, such as PEX theory, may be able to fill in some of these gaps.

Additionally, it is important to note that research in the field of Health Psychology often prioritizes overarching relationships and processes between factors that are

common among all, or at least groups, of people. This allows researchers to tease apart general risk factors for illness, identify proponents of health, and develop and evaluate interventions related to the two. However, embedded within every broad, overarching relationship is a host of variability and individual differences, and even the most rigorously developed interventions are not guaranteed to be equally efficacious for all people. Instead of ignoring or dismissing these differences as error, rigorously examining contextual and individual difference factors will allow Health Psychologists to explore and empirically test the boundary conditions of psychological theories and interventions by asking questions such as *when, under what conditions,* and *for whom* does a psychological theory hold true or an intervention work?

Limitations and Future Directions

Limitations of the study include a smaller than ideal sample size, particularly in light of the interaction analyses that were needed. It should be noted that while interactions between ECP and Instagram use, as well as interactions between PSP and Instagram use, were examined, it was not possible to examine a three-way interaction of ECP, PSP, and Instagram use due to a lack of power as a result of the sample size. This is notable given that ECP and PSP are strongly correlated, and individuals tend to exhibit some degree of each. Thus, while the current interaction models allowed for a distinct look at the individual influence of ECP and PSP while controlling for each other, a more ecologically valid approach would allow for these predictors to interact with each other in addition to interacting with the Instagram use variables (this would also allow for utilization of the specific comparative hypotheses set out by Gaudreau and Thompson (2010) in the 2x2 model of perfectionism). Additionally, it should be noted that other

personality traits were not able to be controlled for as they were not measured in the original data set. Given known correlations between perfectionism and other traits, such as neuroticism (Flett et al., 1989; Stumpf & Parker, 2000) and known relationships between neuroticism and Instagram use (Balta et al., 2020), it is possible that at least some of the captured variance in this study was influenced by that underlying variable.

Finally, one unusual limitation of note is that the data for this study was captured during the time of the COVID-19 global pandemic in 2020. Thus, it is possible that participant behaviors (particularly with regard to social media use) and mental health outcomes were influenced during this time. Unfortunately, as this health crisis is ongoing at the time of this dissertation's completion, there is no concrete evidence as of yet regarding its larger behavioral and psychological effects. While it is unclear how the particular influence of this global experience would systematically influence the predictors of interest in such a way as to confound the findings, the unique context of this data collection must still be considered.

Future research addressing these limitations would be beneficial. Additionally, future research focusing on more specific aspects of the population and the predictor constructs, as well as expanding the operationalizations of the criterion construct (health-related psychological outcomes), would allow for an even more nuanced understanding of the unique ways in which these factors interact. For example, with regard to the population of interest, it would be interesting to see if there are differences in these behaviors and these interactions for "digital natives" who grew into, and learned to express, their personality traits in the context of social media compared to those who did not. Additionally, examining differences in whether or not someone uses Instagram for

personal or professional reasons, as well as differences in the specific content of the posts themselves, may shed more light on the boundary conditions of the conclusions drawn in this study.

Conclusions

This study highlights the importance of including the social media environment as an influential environment in people's lives and their overall health, and it presents an interesting potential avenue for intervention. While it should be noted that, due to the correlational nature of the present study, no definitive causal inferences can be made, personality traits are generally thought to be relatively stable, or, at the very least, challenging to modify. Behaviors, on the other hand, are malleable and are often an efficacious route through which to impact health and wellness outcomes. Thus, while individuals may not be able to easily modify their perfectionistic tendencies, they could possibly be made more mindful of the behaviors they engage in on social media (and, in this instance, on Instagram in particular), which may, in turn, impact health-related psychological outcomes. Specifically, the present research indicates that engaging in "active" use of Instagram- posting, editing, and checking on those posts for feedback- is linked to increased depression, anxiety, and stress as well as decreased self-esteem for Instagram users in general, and that these relationships are even stronger for individuals who are high in ECP. Thus, launching behavior-awareness and behavior-modification campaigns (perhaps through Instagram itself!) may prove to be efficacious avenues for impacting health and wellbeing outcomes.

This study shows that engaging in the seemingly innocuous pastime of posting on Instagram is not so harmless after all, and it can be especially damaging for individuals

with perfectionistic tendencies. Modern day social environments are ever-evolving and becoming ever-more virtual (particularly against the backdrop of a global pandemic), and it is important to pause and examine the impacts of those virtual environments on our overall health and wellbeing. Additionally, we must keep in mind that while it may be incredibly easy to edit and filter our lives and ourselves into oblivion, it may not be so easy to recover from the costs of such a perfectionistic façade.

More broadly, the present study provides an empirical example of the interaction between a personality trait and a specific environment impacting health-related psychological outcomes. Specifically, it sheds light on the notion that the impact of Instagram use on health-related outcomes of interest depends on, at least to some extent, a specific personality trait of the individual users. This supports the notion that it is not sufficient to simply ask the questions, "Is trait X beneficial or detrimental for health and psychological outcomes?" or, "Is situation Y beneficial or detrimental for health and psychological outcomes?" Instead, it is crucial to examine person-level factors within the context of trait-relevant situations, resulting in the more nuanced questions of, "*Under what conditions* is trait X beneficial or detrimental?" and "*For whom* is situation Y beneficial or detrimental?" Thus, while examining the nature of person-environment interactions between perfectionism and Instagram is a very specific example, it highlights the broader conclusion that personality traits can impact psychological outcomes in different ways depending on the surrounding environmental contexts.

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TABLES

Table 1

Demographic characteristics of operational sample

	Full Sample	Instagram Users
Valid *N*	262	181
Age		
M	36.69	35.73
SD	10.96	10.54
Sex (%)		
Male	59.2	61.3
Female	40.8	38.7
Gender (%)		
Male	58.8	60.8
Female	40.8	38.7
Gender variant/non-conforming	0.4	0.6
Race (%)		
White	74.4	68.5
Black/African American	15.6	19.9
Asian/Asian-American	5.3	6.1
Native American/Alaskan Native	1.9	2.2
Other	2.7	3.4
Ethnicity (%)		
Hispanic/Latin@/Spanish	24.4	31.5
Not HLS	74.0	66.3
No response	1.5	2.2
Education Level (%)		
Less than HS degree	0.4	0.0
High school degree (or equivalent)	6.9	5.5
Some college (no degree)	10.3	7.7
2-year degree	8.4	6.6
Bachelor's degree	53.1	57.5
Master's degree	19.8	21.5
Doctorate degree	1.1	1.1
Employment status (%)		
Student	1.9	2.8
Employed part-time	12.6	12.7
Employed full-time	72.1	76.2
Unemployed (not a student)	4.6	3.3
Self-employed	9.5	6.1
Retired	0.4	0
Other	1.1	0.6

Table 2

Descriptive statistics and zero-order correlations among study variables for full sample

	M	*SD*	1	2	3	4	5	6	7	8
1. Age	36.69	10.96	--							
2. Personal Standards Perf.	3.77	.67	-.08	(.86)						
3. Evaluative Concerns Perf.	3.16	.95	**-.28**	**.50**	(.95)					
4. Instagram Account (N/Y)[a]	.69	.46	**-.13**	**.15**	**.33**	--				
5. Depression	2.20	.95	**-.21**	**.18**	**.71**	**.31**	(.94)			
6. Anxiety	2.07	.96	**-.23**	**.23**	**.71**	**.34**	**.86**	(.94)		
7. Stress	2.24	.92	**-.20**	**.25**	**.72**	**.32**	**.89**	**.87**	(.93)	
8. Self-Esteem	2.82	.64	**.25**	.03	**-.50**	**-.16**	**-.68**	**-.52**	-.**62**	(.87)

Note. $N = 262$. Internal consistency estimates based on full sample shown in diagonal. Statistically significant correlations appear in bold; correlations larger than $r > |.10|$ are significant at $p < .05$; $r > |.15|$ are significant at $p < .01$.

[a] Instagram Account coded as 0 = no, 1 = yes.

Table 3

Descriptive statistics and zero-order correlations among study variables for Instagram users

	M	*SD*	1	2	3	4	5	6	7	8	9	10	11	12
1. Age	35.73	10.54	--											
2. PSP	3.83	0.63	-.14	(.86)										
3. ECP	3.37	0.90	**-.28**	**.49**	(.95)									
4. Active Use	0.00	0.97	-.00	**.16**	**.47**	--								
5. Passive Use	0.00	0.87	-.11	**.24**	.10	.03	--							
6. Network	0.00	1.00	-.08	-.04	-.02	.01	.00	--						
7. Compulsion	2.82	1.26	-.14	**.21**	**.70**	**.67**	.02	-.00	(.91)					
8. Withdrawal	2.76	1.23	-.13	**.22**	**.69**	**.70**	-.03	.02	**.92**	(.92)				
9. Depression	2.40	0.93	-.14	**.22**	**.71**	**.51**	-.04	-.06	**.75**	**.75**	(.94)			
10. Anxiety	2.29	0.94	-**.18**	**.27**	**.72**	**.62**	-.07	-.01	**.87**	**.87**	**.85**	(.94)		
11. Stress	2.44	0.90	-.15	**.29**	**.74**	**.52**	-.04	-.07	**.77**	**.76**	**.87**	**.88**	(.93)	
12. Self-Esteem	2.75	0.60	**.20**	-.04	**-.53**	**-.21**	-.06	-.06	**-.46**	**-.42**	**-.70**	**-.56**	**-.65**	(.53)

Note. Listwise valid $N = 170$. Internal consistency estimates based on full sample shown in diagonal. Statistically significant correlations appear in bold; correlations larger than $r > |.15|$ are significant at $p < .05$; $r > |.19|$ are significant at $p < .01$.

Table 4

Preliminary analyses; Examination of unique direct effects of perfectionism and Instagram use on psychological outcomes

		Outcomes															
		Depression				Anxiety				Stress				Self-Esteem			
Models		*b*	*SE*	*β*	ΔR^2	*b*	*SE*	*β*	ΔR^2	*b*	*SE*	*β*	ΔR^2	*b*	*SE*	*β*	ΔR^2
Perfectionism (N=262)																	
Step 1	*Controls*				.11**				.16**				.13**				.08**
Step 2					.45**				.40**				.43**				.29**
	ECP	.81**	.05	.82		.77**	.05	.76		.76**	.05	.79		-.45**	.04	-.66	
	PSP	-.32**	.07	-.22		-.23**	.07	-.16		-.21**	.07	-.15		.34**	.06	.35	
Instagram Account (N=262)																	
Step 1	*Controls*				.11**				.16**				.13**				.08**
Step 2					.08**				.09**				.08**				.02*
	Account[a]	.58**	.12	.28		.63**	.12	.30		.58**	.11	.29		-.19*	.08	-.14	
Instagram Use (N=181)																	
Step 1	*Controls*				.10**				.15**				.11**				.07**
Step 2					.21**				.31**				.22**				.03
	Active use	.46**	.07	.47		.57**	.06	.58		.44**	.06	.48		-.11*	.05	-.17	
	Passive use	-.07	.07	-.06		-.10	.06	-.09		-.06	.07	-.05		-.03	.05	-.04	
	Network size	-.08	.06	-.08		-.03	.06	-.03		-.08	.06	-.09		-.02	.05	-.04	
Problematic Use (N=181)																	
Step 1	*Controls*				.11**				.15**				.12**				.07**
Step 2					.50**				.64**				.50**				.16**
	Compulsion	.31**	.09	.41		.37**	.07	.49		.32**	.09	.45		-.22**	.08	-.47	
	Withdrawal	.27**	.09	.36		.29**	.07	.38		.24**	.09	.32		.03	.08	.05	

Note. Only the focal partial regression coefficients from the final steps have been shown to save space. "Controls" = the functional set of age and race dummy codes. [a]Account coded as 0 = no account, 1 = have account.

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

Table 5

Regression of Instagram usage variables on perfectionism

		Outcome Variables									
		Active Use		Passive Use		Network Size		Compulsion		Withdrawal	
Predictors		β	ΔR^2	β	ΔR^2	β	ΔR^2	β	ΔR^2	β	ΔR^2
Step 1	*Controls*		.08**		.03		.01		.10**		.13**
Step 2			.19**		.06**		.00		.43**		.41**
	Evaluative Concerns Perf.	.52**		-.03		-.01		.79**		.77**	
	Personal Strivings Perf.	-.10		.26**		-.04		-.18**		-.16**	

Note. *N*=170 for analyses with Active Use, Passive Use, and Network Size as criterion variables; *N*=181 for Compulsion and Withdrawal. "Controls" = the functional set of age and race dummy codes.

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

Table 6

Summary table of observed interaction effects

Interaction between …		Criterion Variable: Depression	Anxiety	Stress	Self-Esteem
ECP and ...	Having an Account	Small IX effect (1%); *ECP exacerbates effect*	Small IX effect (1%); *ECP exacerbates effect*	Small IX effect (1%); *ECP exacerbates effect*	No interaction
	Active Use	Small IX effect (2%); *ECP exacerbates effect*	Moderate IX effect (4%); *ECP exacerbates effect*	Small IX effect (1%); *ECP exacerbates effect*	No interaction
	Passive Use	No interaction	No interaction	No interaction	No interaction
	Network Size	No interaction	No interaction	No interaction	Small IX effect (1%); *ECP exacerbates effect*
	Compulsion	Small IX effect (1%); *ECP exacerbates effect*	No interaction	No interaction	No interaction
	Withdrawal	Small IX effect (1%); *ECP exacerbates effect*	No interaction	No interaction	No interaction
PSP and …	Having an Account	No interaction	No interaction	No interaction	No interaction
	Active Use	No interaction	Small IX effect (1%); *PSP is a protective factor*	No interaction	No interaction
	Passive Use	No interaction	No interaction	No interaction	No interaction
	Network Size	Small IX effect (1%); *PSP enhances effect*	No interaction	No interaction	No interaction
	Compulsive Use	No interaction	No interaction	No interaction	No interaction
	Withdrawal	No interaction	No interaction	No interaction	No interaction

Note. Traditional standards for *r* as an effect size were applied to the standardized beta as an estimate of the interaction effect size.

Table 7

Analysis of interactions between Instagram use and Evaluative Concerns (ECP)

	Outcomes							
	Depression		Anxiety		Stress		Self-Esteem	
Models	β	ΔR^2	β	ΔR^2	β	ΔR^2	β	ΔR^2
Having IG Account								
PSP	-.21**		-.15**		-.13**		.22**	
ECP	.63**		.58**		.58**		-.43**	
Account	.26**		.32**		.27**		-.00	
IX with ECP	**.17***	**.01***	**.16**	**.01**	**.17***	**.01***	**.01**	**.00**
Active Use								
PSP	-.18**		-.10		-.09		.19**	
ECP	.76**		.65**		.70**		-.43**	
Active use	.14**		.28**		.15**		.05	
IX with ECP	**.16****	**.02****	**.21****	**.04****	**.10***	**.01***	**.04**	**.00**
Passive Use								
PSP	-.16		-.08		-.08		.19**	
ECP	.80**		.75**		.76**		-.41**	
Passive Use	-.06		-.11		-.07		-.05	
IX with ECP	**-.01**	**.00**	**-.03**	**.00**	**-.02**	**.00**	**.04**	**.00**
Network Size								
PSP	-.18**		-.11		-.10		.18**	
ECP	.82**		.78**		.78**		-.44**	
Network size	-.11		-.07		-.11		.04	
IX with ECP	**.11**	**.00**	**.15**	**.00**	**.13**	**.00**	**-.17**	**.01**
Compulsive Use								
PSP	-.15*		-.02		-.06		.17**	
ECP	.55**		.26**		.43**		-.31**	
Compulsion	.36**		.62**		.41**		-.09	
IX with ECP	**.13***	**.01***	**.08**	**.00**	**.04**	**.00**	**.05**	**.00**
Withdrawal								
PSP	-.14*		-.03		-.06		.19**	
ECP	.55**		.30**		.43**		-.35**	
Withdrawal	.36**		.60**		.41**		-.05	
IX with ECP	**.10**	**.01**	**.07**	**.00**	**.01**	**.00**	**.04**	**.00**

Note. The functional set of controls (age and race dummy codes) were included in the models but not shown here for space purpose. Only the final ΔR^2 associated with the step from the entry of the interaction (IX) term is shown.

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

Table 8

Analysis of interactions between Instagram use and Personal Strivings (PSP)

	Outcomes							
	Depression		Anxiety		Stress		Self-Esteem	
Models	β	ΔR^2	β	ΔR^2	β	ΔR^2	β	ΔR^2
Having IG Account								
PSP	-.27**		-.20**		-.17**		.25**	
ECP	.74**		.69**		.69**		-.42**	
Account	.23**		.29**		.23**		-.01	
IX with PSP	**.10**	**.00**	**.09**	**.00**	**.06**	**.00**	**-.04**	**.00**
Active Use								
PSP	-.13*		-.04		-.07		.20**	
ECP	.70**		.57**		.67**		-.44**	
Active use	.17*		.32**		.16*		.05	
IX with PSP	**.07**	**.01**	**.10**	**.01***	**.05**	**.00**	**.03**	**.00**
Passive Use								
PSP	-.17*		-.10		-.09		.19**	
ECP	.80**		.76**		.76**		-.41**	
Passive Use	-.06		-.09		-.06		-.04	
IX with PSP	**.04**	**.00**	**.08**	**.01**	**.03**	**.00**	**.06**	**.01**
Network Size								
PSP	-.18**		-.11		-.10		.18**	
ECP	.79**		.75**		.76**		-.40**	
Network size	-.07		-.02		-.06		-.02	
IX with PSP	**-.12**	**.01**	**-.06**	**.00**	**-.02**	**.00**	**.04**	**.00**
Compulsive Use								
PSP	-.08		.03		-.03		.19**	
ECP	.45**		.20**		.41**		-.35**	
Compulsion	.40**		.64**		.41**		-.06	
IX with PSP	**.09**	**.01**	**.07**	**.00**	**.07**	**.00**	**-.01**	**.00**
Withdrawal								
PSP	-.09		.01		-.05		.19**	
ECP	.47**		.24**		.43**		-.39**	
Withdrawal	.40**		.63**		.40**		-.01	
IX with PSP	**.07**	**.00**	**.03**	**.00**	**.03**	**.00**	**-.03**	**.00**

Note. The function set of controls are included but not shown for space purpose. Only the final ΔR^2 associated with the step from the entry of the interaction (IX) term is shown.

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

APPENDIX A

A Note on Group-Based vs. Dimensional Techniques

While a deeper methodological debate is beyond the scope of this study, it should be noted that group-based approaches tend to be plagued by various methodological fallacies and limitations, including the misapplication of group-based prototypes to individuals, as well as the use of arbitrary, sample-specific mean- or median-splits to demarcate empirical boundaries between "groups." In addition to the problem of rendering cross-sample comparisons impossible, dichotomizing continuous data can result in significant loss of crucial information. Given that perfectionism is best conceptualized as a dimensional characteristic and not a categorical one, a more methodologically sound approach is to utilize multiple regression to examine continuous relationships where continuous data exists as opposed to falsely dichotomizing a construct into "low" and "high" levels (Broman-Fulks et al., 2008; Gaudreau, 2012; Gaudreau & Verner-Filion, 2012). Additionally, given that each of Gaudreau and Thompson's (2010) four "subtypes" of perfectionist "simply represent different combinations of individual differences in the degree to which people show ECP and PSP, and should not be regarded as distinct subtypes of perfectionism" (Stoeber, 2012, p. 543), continuous-data methodology (e.g, regression) is preferable to group-based ones (Gaudreau et al., 2018). Fortunately, many perfectionism researchers now agree with this premise and use this technique in applying interactive perfectionism models to empirical data (e.g., Franche et al. (2012); Franche & Gaudreau (2016); Gaudreau & Verner-Filion (2012); Taylor et al. (2016)).

APPENDIX B

Study Measures

Demographics

1. What is your age (in years)?
2. What sex were you assigned at birth?
    - ¢ Female (1)
    - ¢ Male (2)
3. Please select the gender identity that you most identify with:
    - ¢ Female (1)
    - ¢ Male (2)
    - ¢ Transgender Female (3)
    - ¢ Transgender Male (4)
    - ¢ Gender Variant/Non-Conforming (5)
    - ¢ Preferred Identity Not Listed (6)
    - ¢ Prefer Not to Answer (7)

    3a. Gender_Oth: _____
4. Please indicate the racial category you identify with:
    - ¢ American Indian or Alaska Native (1)
    - ¢ Asian (2)
    - ¢ Black or African American (3)
    - ¢ Native Hawaiian or Other Pacific Islander (4)
    - ¢ White (5)
    - ¢ Two or more races (6)
    - ¢ Other (see #4a) (7)

    4a. Race_Other: _____
5. Please indicate the ethnic category you identify with:
    - ¢ Hispanic or Latino or Spanish origin (1)
    - ¢ NOT Hispanic or Latino or Spanish origin (0)
6. Please indicate your highest level of educational attainment:
    - ¢ Less than 8th grade (1)
    - ¢ Some high school (9-12th grade, no degree) (2)
    - ¢ High school graduate (or equivalent) (3)
    - ¢ Some college (no degree) (4)
    - ¢ Trade or vocational certificate/degree (5)
    - ¢ Associate's degree (6)
    - ¢ Bachelor's degree (7)
    - ¢ Master's degree (8)
    - ¢ Doctorate degree (9)
7. What is your current occupation status?
    - ¢ Student (1)
    - ¢ Employed part-time (2)
    - ¢ Employed full-time (3)
    - ¢ Unemployed (not a student) (4)

¢ Self-employed (5)
¢ Retired (6)
¢ Other (see 7a) (7)

7a. Occupation_Other: _____

8. What is your job title? (Please explain your job in a few words if it's not obvious by the title).
_____

Multidimensional Perfectionism Scale (FMPS)

	Below is a list of statements dealing with your general feelings about yourself, your characteristics, and your experiences. Please indicate how strongly you agree or disagree with each statement:	Strongly Disagree	Somewhat Disagree	Neither Agree Nor Disagree	Somewhat Agree	Strongly Agree
1	My parents set very high standards for me.	1	2	3	4	5
2	Organization is very important to me.	1	2	3	4	5
3	As a child, I was punished for doing things less than perfect.	1	2	3	4	5
4	If I do not set the highest standards for myself, I am likely to end up a second-rate person.	1	2	3	4	5
5	My parents never tried to understand my mistakes.	1	2	3	4	5
6	It is important to me that I be thoroughly competent in everything I do.	1	2	3	4	5
7	I am a neat person.	1	2	3	4	5
8	I try to be an organized person.	1	2	3	4	5
9	If I fail at work/school, I am a failure as a person.	1	2	3	4	5
10	I should be upset if I make a mistake.	1	2	3	4	5
11	My parents wanted me to be the best at everything.	1	2	3	4	5
12	I set higher goals than most people.	1	2	3	4	5
13	If someone does a task at work/school better than I, then I feel like I failed the whole task.	1	2	3	4	5
14	If I fail partly, it is as bad as being a complete failure	1	2	3	4	5
15	Only outstanding performance is good enough in my family.	1	2	3	4	5
16	I am very good at focusing my efforts on attaining a goal.	1	2	3	4	5

17	Even when I do something very carefully, I often feel that it is not quite right.	1	2	3	4	5
18	I hate being less than the best at things.	1	2	3	4	5
19	I have extremely high goals.	1	2	3	4	5
20	My parents have expected excellence from me.	1	2	3	4	5
21	People will probably think less of me if I make a mistake.	1	2	3	4	5
22	I never felt like I could meet my parents' expectations.	1	2	3	4	5
23	If I do not do as well as other people, it means I am an inferior human being.	1	2	3	4	5
24	Other people seem to accept lower standards from themselves than I do.	1	2	3	4	5
25	If I do not do well all the time, people will not respect me.	1	2	3	4	5
26	My parents have always had higher expectations for my future than I have.	1	2	3	4	5
27	I try to be a neat person.	1	2	3	4	5
28	I usually have doubts about the simple everyday things I do.	1	2	3	4	5
29	Neatness is very important to me.	1	2	3	4	5
30	I expect higher performance in my daily tasks than most people.	1	2	3	4	5
31	I am an organized person.	1	2	3	4	5
32	I tend to get behind in my work because I repeat things over and over.	1	2	3	4	5
33	It takes me a long time to do something "right".	1	2	3	4	5
34	The fewer mistakes I make, the more people will like me.	1	2	3	4	5
35	I never felt like I could meet my parents' standards.	1	2	3	4	5

Instagram Use

1. Do you use Instagram?
    ¢ No (0)
    ¢Yes (1)

2. Is your account public or private?
    ¢ Public (0)
    ¢ Private (1)
    ¢ I have one or more of each (3)

3. About how many followers do you have?
_____

4. About how many other accounts do you follow?
_____

		Less than once a month	About once a month	A few times a month	About once a week	A few times a week	About once a day	More than once a day
5	How often do you post on Instagram?	1	2	3	4	5	6	7
6	How often do you scroll through your Instagram feed/view others' posts?	1	2	3	4	5	6	7
7	How often do you view others' Instagram stories?	1	2	3	4	5	6	7
8	How often do you check to see if anyone has "Liked" or commented on your posts?	1	2	3	4	5	6	7
9	How often do you edit or filter your images before posting them to Instagram?	1	2	3	4	5	6	7

Social Media Use Questionnaire (SMUQ)

		Never	Rarely	Sometimes	Often	Always
	I check my social media account during the day	1	2	3	4	5
	I feel better after I have checked my social network account.	1	2	3	4	5
	I try to cut down my social media use.	1	2	3	4	5
	I use social network sites, when I should be working.	1	2	3	4	5
	I struggle to stay in places, where I won't be able to access social network sites.	1	2	3	4	5
	When my spare time is limited, I prefer using social network sites to other activities	1	2	3	4	5
	I feel angry, when I am not able to access my social network account	1	2	3	4	5
	My relatives and friends complain that I spend too much time using social network site	1	2	3	4	5
	I check my social network account in the 30 minutes before going to sleep	1	2	3	4	5
	I check my social network account after 5 p.m	1	2	3	4	5
	I check my social network account in the 30 minutes after I wake up in the morning.	1	2	3	4	5
	I check my social network account, when I wake up during the night.	1	2	3	4	5
	I lose track of time, when using social network sites.	1	2	3	4	5
	I miss meals because of using social network sites.	1	2	3	4	5
	I use social network sites, when I am in the company of friends	1	2	3	4	5
	I prefer communication via social network sites rather than other kinds of communication.	1	2	3	4	5
	I feel anxious, when I am not able to check my social network account	1	2	3	4	5
	I check my social network account because there is nothing better to do.	1	2	3	4	5
	I stay online longer than initially intended.	1	2	3	4	5
	I spend a large proportion of my day using social network sites.	1	2	3	4	5
	I feel guilty about the time that I spend on social network sites	1	2	3	4	5

DASS-21

	Please read each statement and circle a number 0, 1, 2 or 3 which indicates how much the statement applied to you over the past week. There are no right or wrong answers. Do not spend too much time on any statement.	Not at all	To some degree	Quite a bit	Very much
1	I found it hard to wind down	1	2	3	4
2	I was aware of dryness of my mouth	1	2	3	4
3	I couldn't seem to experience any positive feeling at all	1	2	3	4
4	I experienced difficulty breathing (excessively rapid breathing, breathlessness in the absence of physical exertion)	1	2	3	4
5	I found it difficult to work up the initiative to do things	1	2	3	4
6	I tended to over-react to situations	1	2	3	4
7	I experienced trembling (ex- in the hands)	1	2	3	4
8	I felt that I was using a lot of nervous energy	1	2	3	4
9	I was worried about situations in which I might panic and make a fool of myself	1	2	3	4
10	I felt that I had nothing to look forward to	1	2	3	4
11	I found myself getting agitated	1	2	3	4
12	I found it difficult to relax	1	2	3	4
13	I felt down-hearted and blue	1	2	3	4
14	I was intolerant of anything that kept me from getting on with what I was doing	1	2	3	4
15	I felt I was close to panic	1	2	3	4
16	I was unable to become enthusiastic about anything	1	2	3	4
17	I felt I wasn't worth much as a person	1	2	3	4
18	I felt that I was rather touchy	1	2	3	4
19	I was aware of the action of my heart in the absence of physical exertion (sense of heart rate increase, heart missing a beat)	1	2	3	4
20	I felt scared without any good reason	1	2	3	4
21	I felt that life was meaningless	1	2	3	4

Rosenberg Self-Esteem Scale (RSES)

		Strongly disagree	Disagree	Agree	Strongly agree
1	On the whole, I am satisfied with myself	0	1	2	3
2	At times I think I am no good at all	0	1	2	3
3	I feel that I have a number of good qualities	0	1	2	3
4	I am able to do things as well as most people	0	1	2	3
5	I feel I do not have much to be proud of	0	1	2	3
6	I certainly feel useless at times	0	1	2	3
7	I feel that I'm a person of worth, at least on an equal plane with others	0	1	2	3
8	I wish I could have more respect for myself	0	1	2	3
9	All in all, I am inclined to feel that I am a failure	0	1	2	3
10	I take a positive attitude toward myself	0	1	2	3