Multiple Investigations into Gaming and Psychosocial Functioning in a Community Sample of Adult Gamers

by

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Abstract

As one of the world's most popular pastimes, video games have been a focus of study for several decades. Yet, there are still necessary areas of investigation, particularly those informed by human developmental perspectives that also yield implications for psychosocial functioning. In this dissertation, video game engagement is positioned as a proximal process, a driving mechanism of human development that is influenced by individual characteristics of gamers. Utilizing a community sample of 226 adult gamers, the two studies within this dissertation collectively examine how individual characteristics in game engagement, specifically, gaming motivations, and perceptions of gameplay, are related to psychosocial functioning.

Grounded in basic psychological needs theory, the first study used structural equation modeling to examine links between gaming motivations (e.g., diversion) and social gaming (i.e., time spent playing with others) with psychosocial distress, in the context of general coping behaviors (e.g., self-distraction). The results indicated that the associations between diversion motivated gaming and higher psychosocial distress were exacerbated by self-distraction coping behaviors. Additionally, active coping was associated with lower psychosocial distress but did not interact with gaming motivations. Implications include discouraging gaming as a method of diversion from real-life responsibilities and practicing more active coping behaviors.

The second study, informed by life course theory and symbolic interactionism, used a mixed method analytical approach. First, latent profile analyses distinguished four unique subgroups of gamers based on their perceptions of benefits and detriments derived from gameplay. Then, a phenomenological approach was used to describe gamers' experiences in detail, both as a whole sample and across subgroups. Although some differences in experience were expressed between subgroups, similar themes regarding benefits (e.g., stress relief, shared

social activity) and detriments (e.g., maladaptive distraction, conflicts in close relationships) were identified. Finally, analyses of variance were used to test differences in psychosocial outcomes between subgroups, and generally indicated that groups who reported more benefits than detriments experienced better outcomes. Implications include rebalancing boundaries between gaming and other life roles.

Overall, the two studies convey the applicability of applying human developmental theories to the study of gameplay and next steps include examining interdependent relational and familial outcomes.

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Chapter 1

General Introduction

Electronic gaming is one of the world's most popular pastimes. By 2023, it is projected that around 3 billion people will be playing video games (Clement, 2021b). The global gaming industry reported approximately $145 billion in revenue in 2019, over twice as much as the music and film industries *combined* (Richter, 2020). Gaming is rising in prominence in the United States, where two-thirds of the general population were gamers in 2018 (Clement, 2021a), up 8% since 2013. Some estimates indicate that up to 98% of American adolescents between the ages of 11-17 years old play video games (Lenhart et al., 2008). Gaming is also appealing for adults as the Entertainment Software Association (2019) reports that 65% of American adults (approximately 160 million people) play video games, and the average age of the American gamer is 33 years old.

There are several genres of video games ranging from action-oriented first-person shooters (e.g., *Halo*, *Call of Duty*) to puzzle games (e.g., *Tetris*, *Toon Blast*) to life simulators (e.g., *The SIMS*). There are also several different ways to play video games including home consoles (e.g., Xbox) and personal computers (PCs), along with portable options such as cell phones or tablets. Additionally, despite the cultural narratives that gamers are socially stunted and isolated, video games are played by most people and are often played in a social context, such as with friends and family members. Sixty-three percent of American adult gamers play games with friends, both online and in person, and 57% of gaming parents play with their kids at least once a week (ESA, 2019). These facts position gaming as an individual and social activity that people engage with on a near daily basis. Due to the widespread popularity of gaming as a leisure activity, video games have been a focus of research for several decades, particularly

concerning how participation with games may influence psychosocial functioning in negative (Calvert et al., 2017; Przybylski et al., 2010; Sherry, 2001) and positive ways (Adachi & Willoughby, 2013; Jones et al., 2014; Wohn et al., 2011).

Despite these investigations, there are still important gaps in our knowledge regarding gaming and psychosocial well-being. First, game engagement is often conceptualized and studied as a function of the time spent playing and the content present in games (e.g., violence, sexuality), leaving other engagement measures such as gaming motivations and social context of play comparatively understudied. However, emerging evidence indicates that gaming motivations and social context are uniquely related to psychosocial outcomes, even when accounting for time spent playing (Burke & Lucier-Greer, under review). Additionally, given the mixed evidence on the beneficial and detrimental effects of gaming, it no longer seems helpful to broadly question whether game engagement is "good" or "bad" for individuals and their social networks. Rather, it is important to understand the contexts in which differing forms of game engagement are associated with beneficial and/or detrimental outcomes. Therefore, analysis of gaming engagement alongside other contextual factors (e.g., coping behaviors) is an important next step. Finally, the vast majority of video game research is quantitative in nature which may overlook important details that can be gleaned from more in-depth, qualitative approaches to understanding gamers' experiences. Therefore, qualitative explorations of the psychosocial effects of gaming which utilize gamers' own words as a source of information may illuminate new areas of research and provide details beneficial to the development of psychoeducation and intervention. To these ends, the purpose of this dissertation is to present two studies examining game engagement as related to individual and relational psychosocial outcomes.

This introduction begins with an overview of the research on associations between gaming and individual and relational functioning. Then, limitations from the current body of knowledge are highlighted. Finally, a brief overview of the Study of Electronic Gaming in Adults is provided to set up the two separate studies included in this dissertation.

Gaming and Individual and Relational Functioning

Gaming has been linked to numerous individual and relational outcomes. The most prolific areas of this research have been focused on violent and addictive behaviors. Several studies have demonstrated associations between playing violent video games and increases in violent or aggressive behaviors (Anderson et al., 2008; Calvert et al., 2017; Shibuya et al., 2008; Willoughby et al., 2012). With the rise of massively multiplayer online role-playing games (MMORPGs), addictive or problematic play behaviors have become an increasingly larger focus of examination (Bonnaire & Phan, 2017; Dieris-Hirche et al., 2020; He et al., 2020; Mathews et al., 2019). However, in recent years, a new focus for video game research has emerged suggesting that video games may also benefit individuals and relationships in numerous ways. For example, playing games has been linked to positive outcomes including cognitive performance (Adachi & Willoughby, 2013; Basak et al., 2008), developing new relationships with others and/or maintaining connection with established social networks (Wohn et al., 2011; Yee, 2006), and general well-being (for review, see Jones et al., 2014). Games have even been explored as helpful factors of posttraumatic stress disorder treatments for veterans. For example, Butler and colleagues (2020) found that veterans who played Tetris for an hour a day, in addition to their treatments, displayed decreases in anxiety, depression, and posttraumatic stress symptoms, compared to those who received the treatment as usual. Qualitatively, veterans have reported games as helpful distractions from negative ruminations as well as providing a sense of

accomplishment and confidence that transferred to different life challenges (Colder Carras, Kalbarczyk, et al., 2018). Other qualitative reports of non-clinical gaming samples repeatedly suggest that games are excellent stress relievers and opportunities for fun, rewarding social interactions (Hussain & Griffiths, 2009; Oswald et al., 2014; Wood et al., 2007). Alongside the emergence of video game research examining positive outcomes, new conceptualizations of game engagement have begun to be explored.

Theoretical Approaches to Game Engagement as Related to Psychosocial Functioning

Much of the research examining negative outcomes, especially violence, have focused on violence exposure in gaming. These examinations are theoretically aligned with social learning perspectives (Bandura et al., 1961; 1963), putting emphasis on how repeated exposure to violent video game content can prime and reinforce violent behaviors in other settings (for review, see Buckley & Anderson, 2006). As a result, many studies have examined game engagement as time spent playing combined with measures of violent video game content (Anderson et al., 2008; Collins & Freeman, 2013; Ferguson et al., 2008).

However, other aspects of game engagement, namely *gaming motivations* and *social context* (i.e., the extent to which gaming is played with others, whether in person or through Internet-mediated connections) have more recently been examined in relation to individual and relational outcomes. These explorations align with a self-determination theory perspective, which posits that individual and relational well-being result from satisfying the basic psychological needs of competence, autonomy, and relatedness (Ryan & Deci, 2000a). Therefore, this theoretical perspective indicates that gaming's association with psychosocial outcomes is a function of basic needs satisfaction (Przybylski et al., 2010). In other words, this perspective is more concerned with how the experience and context of gaming are related to

meeting basic needs than the specific time spent playing or the potential influence of video game content. For example, Ryan and colleagues (2006) demonstrated links between basic needs satisfaction in gaming and better self-esteem and mood. Additionally, gaming that thwarts basic needs satisfaction has been associated with poorer outcomes, such as aggressive feelings and thoughts (Przybylski et al., 2014). It is plausible that gaming motivations and social context are related to psychosocial outcomes as a function of how well they satisfy or thwart basic needs satisfaction. For example, gaming motivated by the desire to avoid responsibilities or stressors could diminish competence or autonomy and be related to poorer outcomes. A systematic review found that playing for avoidance or escapism is generally related to more addictive play behaviors (see Melodia et al., 2020). Additionally, being motivated to play by the desire to avoid or escape real life stressors appears to be related to poorer mental health outcomes (e.g., depressive symptoms, Hagström & Kaldo, 2014), even after controlling for time spent playing (Burke & Lucier-Greer, under review). These findings indicate that motivations for play are uniquely predictive of psychosocial outcomes, but this has not been well-explored. Even less is known about how socially oriented gaming (e.g., gaming motivated by social interaction, the amount of time spent playing with others) is associated with psychosocial functioning as it is unclear whether social gaming is more directly associated with better (e.g., prosocial behaviors; Jin & Li, 2017) or worse outcomes (e.g., diminished social support; Kowert et al., 2014). Given the popularity of gaming, it is vital to refine understanding of the associations between gaming and psychosocial functioning due to the potential benefits and detriments of game play. Such outcomes hold important implications for understanding individual and relational development and functioning in the context of gaming.

Gaming in a Human Development Context

Theories of human development, such as the bioecological model (for review, see Bronfenbrenner & Morris, 2007; Rosa & Tudge, 2013), emphasize that individual development primarily occurs through *proximal processes.* Proximal processes are interdependent interactions between an individual and their environments (e.g., other persons, objects, or symbols). Two key aspects of proximal processes are that they occur frequently and persistently, and that their impact is determined, in part, by a person's individual characteristics and sociohistorical contexts (including the person's developmental stage). As games are frequently utilized by a growing number of people (Clement 2021b; ESA, 2019) and are linked to meaningful psychosocial outcomes (as described above), game engagement can readily be understood as a proximal process, influenced by individual and contextual factors. In this dissertation, motivations for play, general coping behaviors (Study 1), and personal perceptions of video games (Study 2) are examined as individual factors. Regarding sociohistorical contextual factors, the samples utilized for the current analyses are young-to-middle-aged adult gamers, and the effects of gaming may be especially pronounced for this developmental stage. Developmental perspectives, such as life course theory (Elder, 1977), emphasize that different stages of life carry different roles, and the ways that individuals manage these roles hold implications for the individual and for their social connections. Young-to-middle-aged adults have been referred to as the "sandwich generation" (for review, see DeRigne & Ferrante, 2012), because of their centrality and influence on older (i.e., aging parents) and younger generations (e.g., children) in their families. Therefore, as gaming has an influence on individual development and functioning, this proximal process could produce reverberating effects on social and familial connections. For these reasons, refining knowledge around the potential influence of gameplay will provide important implications for

promoting individual and relational well-being. As a first step, it is important to identify and address gaps in the current knowledge.

Limitations in Video Game Research

One of the first limitations to address is underexplored measures of game engagement and their associations with psychosocial functioning. Specifically, more investigation is needed to understand how gaming motivations and social context of play are related to individual and relational outcomes. Though there is good evidence linking motivations for play with problematic gaming outcomes (e.g., addictive play; for review see Melodia et al., 2020), more investigation is needed to clarify associations between gaming motivations and other aspects of psychosocial functioning (e.g., mental health). Additionally, studies that have examined social context of play have captured limited information on social gaming factors (e.g., only measured how frequently gamers played with their friends; Jin & Li, 2017). More detailed measures may help refine understanding of how social context of play is related to psychosocial outcomes. Furthermore, there is a lack of investigation regarding how gaming motivations and social context of play are associated with well-being, particularly when intersecting with other behavioral contexts (e.g., coping behaviors). Answering these questions may provide important nuance to bolster understanding of the contexts in which game engagement is beneficial or detrimental for psychosocial functioning.

Next, the vast majority of research in this field has been conducted using quantitative measures, leaving qualitative, participant-centered analyses underutilized. Investigations that emphasize the participant's experience and perspective can help clarify important facets of psychosocial functioning in relation to gaming (e.g., criteria for addictive play; Colder Carras, Porter, et al., 2018). Therefore, utilizing qualitative data provides important details regarding the

impact of gaming on psychosocial functioning from gamers' perspectives. These details are especially helpful when developing evidence-based implications for individuals, families, helping professionals, and policy makers regarding gaming. Additionally, many of the qualitative studies that have been conducted utilized samples of gamers that either play addictively (Beranuy et al., 2013) or those who are highly invested in gaming (e.g., participating in online game forums; Oswald et al., 2014). Additionally, many of these studies utilized samples comprised of mostly men. As such, findings from these samples may not be transferrable to individuals who play games more casually (e.g., playing a quick game on a cell phone) or to women gamers. As such, there is a need to understand how gaming is related to psychosocial functioning from a qualitative perspective in a community sample of men and women gamers. Such investigations could provide rich details on the perceived effects of games which can readily translate into specific recommendations for individuals, families, interventionists, and policy makers. Furthermore, there is limited information on how these qualitative perspectives are associated with validated measures of psychosocial functioning due to a lack of mixed method analytical approaches. These approaches could provide theoretical and empirical implications regarding how *perceptions* of gaming are linked with self-reported measures of individual and relational well-being.

Finally, much of the gaming literature has focused on child and adolescent (Anderson et al., 2008), college student (Bösche, 2010) and older adult samples (Anguera et al., 2013), positioning young-to-middle-aged adults as one of the largest (ESA, 2019), but least studied populations of gamers. Given the relatively sparse research dedicated to this age group, along with the theoretical salience of this population for broader social implications, it is important to expand the scope of study to include more samples of young-to-middle-aged adults.

The Study of Electronic Gaming in Adults

To examine these questions and address these research gaps, I began the Study of Electronic Gaming in Adults (SEGA) in 2019. This project collected quantitative and qualitative data from 226 adult gamers (54.4% Women) and was designed to extend empirical investigation into gaming and psychosocial outcomes. As such, multiple methods of game engagement were measured including time spent playing, social context of play, content rating of favorite games, and gaming motivations. Additionally, several measures of psychosocial functioning (e.g., coping behaviors, depressive symptoms, social support) were included. Although this study only captures information from individual gamers, it is an important step in the process of examining gaming from a human development and relational perspective. This dissertation is a presentation of two studies from the SEGA dataset. The purpose of the first study is to examine how gaming motivations (e.g., diversion, fantasy, social interaction) are associated with psychosocial functioning in the context of coping behaviors. The second study is a mixed methods analysis of how gamers' perceptions of the benefits and detriments of gaming are related to psychosocial outcomes. Results from both studies yield important implications for scientific understanding and practical application regarding the links between gaming with individual and relational health.

Chapter 2

Study 1 - Coping Behaviors as Moderators of the Association between Gaming Motivations and Social Context with Individual Psychosocial Distress

According to the Entertainment Software Association (2019), 65% of American adults play video games. This means that roughly 160 million adults use video games as a leisure activity. Given their widespread popularity, it is not surprising that a growing body of literature is working to explicate the role of video game engagement in psychosocial functioning (e.g., violent behaviors; Calvert et al., 2019). Much of this research has examined gaming engagement through time spent playing and the content of video games (e.g., violence, sexuality). However, emerging evidence contends that the reasons why people play, termed *gaming motivations*, and the *social contexts* in which they play (i.e., by themselves or with others) matter for psychosocial health (Kowert et al., 2014; Przybylski et al., 2009) and warrant further examination.

The purpose of the current study is to, first, replicate these trends, specifically examining the associations between gaming motivations and social context with adult well-being, in a community sample of adult gamers. Emerging evidence indicates that gaming motivations and social context have the potential to influence psychosocial well-being through satisfying or thwarting the basic psychological needs of competence, autonomy, and/or relatedness (for review, see Przybylski et al., 2010). Young-to-middle-aged adult gamer samples are important to examine given that average age of the American gamer is approximately 33 years old and that 58% of household gamers are between the ages of 18 and 49 (ESA, 2019). However, much of the research, to date, has examined gaming in children, adolescent, college-aged, and older adult samples (Adachi & Willoughby, 2013; Bösche, 2010; Toril et al., 2014). Additionally, these studies often focus on those with potentially clinical levels of problematic gaming (e.g., addictive

play; for review, see Melodia et al., 2020), leaving out those who game at a more balanced, casual level (i.e., community samples). The second purpose of this study is to extend scholarly knowledge by examining behavioral contexts, specifically coping behaviors, that may exacerbate or mitigate associations between gaming motivations and social contexts with psychosocial functioning. The implications of this study are poised to shed light on the specific circumstances in which video games are linked to beneficial or detrimental psychosocial outcomes in one of the largest gaming demographics.

Theoretical Considerations

This study is informed by basic psychological needs theory, a sub-theory of self-determination theory, which posits that well-being is promoted by the satisfaction of three basic needs: competence, autonomy, and relatedness (Ryan & Deci, 2000a; 2000b). Competence refers to an individual's perception of their self-efficacy. Autonomy describes an individual's perception of control and agency in their lives (i.e., do they feel that they can control their context or does the context control them) and relatedness refers to the desire to be connected to relationships, society, and/or culture. Generally, fostering the three basic needs is related to better well-being, whereas thwarting the basic needs is related to poorer well-being (e.g., depression, anxiety, and low self-esteem; for review, see Ryan & Deci, 2000a).

Emerging evidence suggests that gaming and psychosocial functioning can be well understood through the lens of basic needs (Przybylski et al., 2010). For example, across four different studies, Przybylski and colleagues (2014) explored how in-game competence (i.e., the level of difficulty the player experienced trying to control their in-game character's movements) was related to player reports of aggressive feelings and thoughts after play. They found that more difficulty mastering the control inputs for the game (thereby, thwarting the need for competence)

was related to more aggressive feelings and thoughts. Additionally, Ryan and colleagues (2006) examined links between the basic needs and psychosocial functioning in the context of gaming across several studies. The results suggested that fostering competence and autonomy while playing was associated with improved mood and self-esteem. These empirical findings support the theoretical supposition that gaming in a manner conducive to the three basic psychological needs is linked with better psychosocial outcomes. Therefore, it is important to understand which aspects of game engagement are aligned with promoting basic needs, which may clarify factors that are salient for psychosocial functioning.

Gaming Motivations, Social Context, and Psychosocial Functioning

In a recent study by Burke and Lucier-Greer (under review), time spent playing, the content of one's favorite video game, motivations for play, and social context of play were simultaneously examined in relation to depressive symptoms, stress, loneliness, and social support. These four measures of game engagement conceptually align with different theoretical perspectives regarding the links between gaming and psychosocial functioning. Time spent playing and content were thought to align with a social learning perspective (Bandura et al., 1961, 1963; Buckley & Anderson, 2006), whereas motivations for play and social context of play were posited to reflect a basic psychological needs position. The results indicated that only two gaming motivations, diversion and fantasy, and social context of play (i.e., the percentage of total gaming time spent playing with friends, family members, and/or romantic partners) were related to psychosocial functioning. Specifically, playing games for diversion (i.e., avoiding responsibilities) and fantasy (i.e., doing things in-game that cannot be done in "real life") were related to greater stress and depressive symptoms, while spending more time in social play (whether in person or through Internet-mediated connections) was related to lower loneliness.

These results lend support for the basic psychological needs perspective and helped identify potentially salient measures of game engagement for basic need satisfaction.

Additional evidence suggests that gaming motivated by diversion and fantasy is counterproductive to satisfying the basic needs of competence and autonomy and are related to poorer outcomes (Hagström & Kaldo, 2014; Ryan et al., 2006). Playing for diversion and fantasy may be a method of procrastination, a practice often used by individuals struggling with poor self-concept and fears of failure (for review, see Flett et al., 1995), which reflect negative perceptions of self-efficacy and personal agency. Indeed, Hagström and Kaldo (2014) found that gaming motivated by negative escapism (i.e., the desire to divert oneself from stress) was related to poorer life satisfaction and greater psychological distress. Further, Ryan and colleagues (2006) found that immersion motivation (a composite score made up of aspects including diversion and fantasy) was predictive of poorer mood after playing. Finally, playing for escapism has been linked to problematic or addictive gameplay across several studies (for review, see Melodia et al., 2020).

Regarding the need for relatedness, much of the discussion around the social consequences of gaming revolves around whether gaming displaces or augments social opportunities (Nie, 2001; Shen & Williams, 2014; Wellman, 2001). Essentially, if gaming displaces opportunities for social interaction, the basic need for relatedness may be thwarted. However, games are often reported as helpful for creating and supporting relationships (Wohn et al., 2011; Yee, 2006), which could reflect augmented social opportunities, and thereby promote relatedness. The evidence concerning social aspects of gaming, relatedness, and psychosocial functioning is unclear. Ryan and colleagues (2006) did not find significant associations between satisfying the need for relatedness while gaming with positive mood. Social motivations for play

(e.g., desiring to make and maintain friendships through gameplay) have been linked to greater loneliness and less time spent in communication with family members, but also with better online community connections (Shen & Williams, 2011; Yee, 2006). Moving beyond social motivations to examine social context of play, Reer and Kramer (2014) found that gamers who frequently met online to play with their clan/guildmates (i.e., friends from within-game online communities) reported greater social capital (i.e., benefits from social relationships). Though Jin and Li (2017) did not specify whether it was online or in-person, they did find that greater frequency of playing with friends was positively associated with greater pro-social behaviors. These findings indicate that both social motivations and social context are important aspects to examine regarding psychosocial outcomes that warrant further exploration. Examining both factors simultaneously may elucidate how social gameplay motivations and behaviors are differentially associated with well-being.

In review, evidence on playing games for the purpose of diversion from stressors and/or fantasy may stifle the satisfaction of competence and autonomy, and the examination of social motivations and social context of play is still developing. However, these findings also pose a quandary for researchers attempting to refine understanding on the links between gaming motivations and social context with psychosocial outcomes. The evidence seems to suggest that playing games to avoid/divert from stressors may thwart basic needs and yield poorer outcomes. Yet, gamers often indicate that playing video games is a helpful tool to relieve stress (Beranuy et al., 2013) and gaming has been linked to reductions in objective measures of physiological stress (Russoniello et al., 2009)[1]. Additionally, the evidence on social play is unclear, but gamers frequently indicate that video games are socially beneficial (Wohn et al., 2011; Yee 2006).

[1] It should be noted that neither Beranuy et al., 2013, or Russoniello et al., 2009 examined gaming motivations as predictors. However, the point remains that in some contexts, gaming is perceived as a stress reducer and more objective evidence can confirm this benefit.

Because of these mixed findings, it no longer seems helpful to broadly ask whether game engagement is related to beneficial or detrimental outcomes. Rather, next steps in the development of this literature beg the question: under what contexts are gaming motivations and social context of play related to differential psychosocial outcomes? Better understanding of these nuances could improve intervention efforts, psychoeducational material, and policy discourse regarding adaptive and maladaptive gaming.

From a basic psychological needs theory perspective, examining needs satisfaction in gaming *and* non-gaming contexts simultaneously may clarify some unperceived nuances on this topic. For example, Przybylski and colleagues (2009) found that thwarted need satisfaction outside of gaming was a more salient predictor of life satisfaction, mental health, and physical health compared to gaming motivations. General needs satisfaction accounted for approximately 40% of the variance in these outcomes compared to 1-2% accounted for by gaming motivation. This suggests that though games are an important context to consider for psychosocial functioning, other behavioral contexts, such as general approaches to coping, may be more prominently related to needs satisfaction and warrant consideration alongside game engagement.

The Context of Coping Behaviors

Coping behaviors are attempts to respond to life stressors or challenges (for review, see Ntoumanis et al., 2009). As such, they may be more notably related to basic need satisfaction and psychosocial functioning than gaming. There are numerous coping behaviors, but they tend to fall into two broad categories: problem-focused coping (e.g., planning strategies to manage a challenge; taking direct action to solve a problem) and emotion-focused coping (e.g., distracting oneself from difficult emotions; seeking empathy from others; Carver et al., 1989). Although all coping behaviors can be adaptive or maladaptive depending on context, problem-focused coping

behaviors may reflect basic needs satisfaction and psychosocial well-being whereas emotion-focused coping may be more closely related to thwarted basic needs and psychosocial distress.

Active and Self-Distraction Coping Behaviors

Theoretically, individuals who practice active, problem-focused coping strategies by directly addressing challenges would likely view themselves as autonomous agents, able to manage stressors effectively. In addition to theoretical supposition, there is empirical evidence that practicing active, problem-focused coping is associated with basic needs satisfaction and better psychosocial outcomes. For example, Shih (2019) found that engaged coping (which included active coping behaviors) was related to greater competence and autonomy. Bakracheva (2019) found that proactive coping was predictive of higher levels of autonomy, competence, and relatedness. Though mediation analyses were not significant, higher basic needs satisfaction was also associated with greater happiness and life satisfaction. Additionally, Li and colleagues (2016) found that greater life stress was associated with more addictive Internet use *through* thwarted basic psychological needs in a sample of 998 adolescents. In this same study, positive coping behaviors (including active coping) were found to mitigate the association between life stress and basic needs, such that adolescents who practiced more positive coping behaviors had better needs satisfaction compared to those who used these coping strategies less often.

On the other hand, individuals who feel a lack of autonomy or competence may employ more emotionally-focused behaviors (e.g., self-distraction), especially considering that these coping strategies are generally used to cope with stressors perceived to be out of one's control (Carver et al., 1989; Ntoumanis et al., 2009). For example, avoidant coping behaviors have been directly linked to lower levels of basic needs satisfaction, happiness, and life satisfaction (Bakracheva, 2019). Mahmoud and colleagues (2012) found that maladaptive coping (including

self-distraction behaviors) was associated with greater stress, depression, and anxiety in a sample of 508 college students. Furthermore, avoidant coping has been positively correlated with stress in military spouses (Padden et al., 2011) and increased depression in adolescents and adults (Dunkley et al., 2006; Seiffge-Krenke & Klessinger, 2000).

Given the theoretical and empirical connections between active and avoidant coping behaviors with basic needs and psychosocial functioning, these behaviors are important to examine in the context of gaming and well-being. A systematic review from Melodia and colleagues (2020) indicated that diversion motivations for play and avoidant coping are both predictive of more addictive gaming behavior. However, in this review, these two factors were rarely analyzed in the same studies simultaneously and never in a moderation context. Therefore, it is unclear how avoidant coping behaviors alter the associations between diversion motivations and psychosocial functioning. Bowditch and colleagues (2018) did examine how problem-solving and emotionally-focused coping behaviors moderated the links between escapist motivations for play and problematic gaming outcomes (e.g., losing sleep because of game play). Coping through problem-solving mitigated the association between escapist motives for play and poorer outcomes, but emotionally-focused behaviors (i.e., wishful thinking) strengthened this link. Though this study provides initial evidence that coping behaviors moderate the associations between diversion gaming motivations and well-being, further development is needed in relation to psychosocial functioning outside of gaming contexts (e.g., depressive symptoms, loneliness). Therefore, active and self-distraction coping behaviors may be particularly salient to examine in relation to diversion motivations and psychosocial functioning.

Social Support Coping Behaviors

Utilizing social support is another important coping mechanism in relation to basic needs

and psychosocial functioning. Social support is a complex construct that can include several strategies, but two of the primary behaviors are seeking emotional (e.g., empathy) and instrumental (e.g., advice) support from others (Carver et al., 1989). Instrumental support seeking is generally considered a problem-focused coping behavior and emotional support seeking is more closely aligned with emotion-focused coping (for review, see Carver et al., 1989). Although some emotion-focused coping strategies broadly seem maladaptive (e.g., self-distraction; Mahmoud et al., 2012), other strategies, like seeking emotional support, may be beneficial depending on the stressor being addressed (Ntoumanis et al., 2009). Despite the differences between emotional and instrumental support, they are likely both components of a holistic interpersonal coping strategy and have been combined and measured together as an overall reflection of social support (e.g., Multidimensional Scale of Perceived Social Support; Zimet et al., 1988). Additionally, instrumental and emotional support-seeking behaviors are posited to influence psychosocial functioning to the extent that they satisfy or thwart the basic psychological needs. Instrumental support seeking may reflect a sense of autonomy and competence through utilizing social resources to problem-solve, and emotional support seeking may represent relatedness through empathetic social ties. In a study of 350 older adult patients diagnosed with incurable cancers, using emotional support was associated with lower depression and greater quality of life (Nipp et al., 2016). Additionally, Park and colleagues (2010) found that having less instrumental and emotional support was associated with greater suicide ideation in a sample of 10,922 South Korean adults, indicating that social support utilization is protective of psychosocial well-being.

On the other hand, seeking social supports may have the paradoxical effect of thwarting the basic needs, resulting in poorer outcomes. Horwitz and colleagues (2011) found that seeking

emotional support was predictive of greater suicidal ideation in adolescents. Furthermore, Bisschop et al. (2004) found that receiving both instrumental and emotional support was associated with greater depression in a sample of 2,288 older adults with chronic diseases. Though the explanations for these findings are unclear, the authors suggest that higher amounts of instrumental and emotional support may inadvertently thwart an individual's sense of autonomy over their own self-care. Therefore, social support appears to be a notable indicator of psychosocial functioning and is an important coping behavior to consider in the context of gaming and basic psychological needs.

Despite the theoretical expectation that social gaming would help satisfy the need for relatedness, social motivations and social context of play have been linked to psychosocial benefits *and* detriments. Reer and Kramer (2014) found that more online gaming with friends was positively associated with social capital *through* greater communication frequency and self-disclosure. In this way, social gaming appears to promote relatedness. Conversely, Shen and Williams (2011) found that gaming motivated by desire for social interactions was related to greater loneliness and less time for communicating with family members. This may be evidence that the motivation to socialize through gaming does not guarantee that actual social interactions are occurring or that the quality of such interactions promotes social relatedness. Access and utilization of general social support may be a more prominent indicator of the basic psychological need for relatedness, and therefore, may mitigate or exacerbate associations between social gaming motivation and context with psychosocial outcomes.

The Current Study

Given the widespread use of gaming by adults (ESA, 2019), as well as the potential benefits and detriments examined in the gaming literature, it is important to understand the

contexts in which gaming is associated with psychosocial functioning. Evidence suggests that gaming motivations and social context are systematically linked to several psychosocial distress indicators including depression, stress, loneliness, and general well-being (Burke & Lucier-Greer, under review; Hagström & Kaldo, 2014; Shen & Williams, 2011). As such, the current study examined the associations between gaming motivations (namely, diversion, fantasy, and social interaction motivations) and social context of play (i.e., playing video games with others) with psychosocial distress. Psychosocial distress is defined as perceived experiences of negative emotions and social outcomes (Holland & Bultz, 2007) and was operationalized as a latent variable comprised of four observed indicators, specifically, depression, stress, loneliness, and life satisfaction.

To advance the literature, these associations were analyzed in the context of coping strategies, namely, self-distraction coping, active coping, and social support seeking coping behaviors, to understand how game engagement is related with psychosocial distress in the context of behaviors that may be more salient predictors of basic need satisfaction and psychosocial functioning. Because of the conceptual links between diversion and fantasy motivations with self-distraction and active coping behaviors, these factors were examined in relation to psychosocial distress. First, diversion and fantasy motivations were examined in relation to psychosocial distress in the moderating context of *self-distraction coping behaviors*. It was expected that diversion and fantasy motivations would be related to greater psychosocial distress, and this relationship would be amplified in the context of more frequent self-distraction coping behaviors (Hypothesis 1a). This hypothesis reflects the theoretical supposition that diversion and fantasy motivations and self-distraction coping behaviors are counterproductive to meeting basic psychological needs (Ryan & Deci, 2000a). Then, to preserve power and promote

interpretability of results, diversion and fantasy play motivations were analyzed in relation to psychosocial distress in the moderating context of *active coping behaviors* in a separate model. It was expected that the use of more frequent active coping behaviors would mitigate the association between diversion and fantasy motivations and psychosocial distress (Hypothesis 1b). This was hypothesized because of previous evidence indicating that factors outside of the gaming context may be more prominent predictors of psychosocial functioning than game engagement (Przybylski et al., 2010).

Finally, given the conceptual links between social interaction motivations and social context of play with *social support coping behaviors*, these factors were examined together in relation to psychosocial distress (Research Question 1). In other words, are the associations between social interaction motivation and social play context with psychosocial distress moderated by social support seeking coping behaviors? Because the literature on social gaming variables and social support behaviors is mixed, this research question was exploratory.

This analysis utilized the Study of Electronic Gaming in Adults community sample of young-to-middle-aged adult gamers (one of the largest demographics of gamers in the United States; ESA, 2019). The implications from the current investigation are applicable to individuals, families, and interventionists as they seek to understand how motivations and social context are related to psychosocial functioning when moderated by coping behaviors.

Method

Procedure

Survey Development

Data were drawn from the Study of Electronic Gaming in Adults (SEGA), a community sample of those who engage in video games. The survey consisted of 132 questions, but

participants did not have to answer the total battery of questions due to personal preference and skip logics (e.g., if a participant reported no family military involvement, they did not have to see any follow-up questions on the topic). Data on demographics (e.g., age, race/ethnicity), game play (e.g., motivations for play), and individual psychological vulnerability (e.g., perceived stress, depressive symptoms) were used for this study. It is important to note that these data were collected before the COVID-19 pandemic. Therefore, some measures, particularly concerning game engagement may be different than those experienced during the wide social closures required by the pandemic response. Participants were offered the chance to win one of four $25.00 Amazon gift cards. If the respondents wanted to participate in the drawing, they provided an email address, which was stored separately from survey responses to protect respondent confidentiality. The survey was developed and distributed in collaboration with a colleague from the University of Arkansas, and the project was approved by the University of Arkansas Institutional Review Board, Human Subjects Committee.

Survey Distribution

The survey was developed and distributed via Qualtrics and was open to participant response for approximately three months between November 2019 and January 2020. Shareable posts with a brief description of the purpose of the data collection and potential compensation were published on Twitter, Facebook, and Discord. Discord is a communication application that allows users to build online communities around shared interests and communicate using text, audio, and video chat. Through all survey distribution channels, “snowball” sampling occurred when respondents shared the survey with their own online communities. It is unclear how many participants learned about and participated in the survey through each distribution channel. Because of these procedures, this is a convenience sample of adult gamers. The average length of

time for survey completion was 20.18 minutes (*SD* = 12.16).

Participants

The total number of original respondents was 248. Participants were removed from analysis for survey non-response (*n* = 21) or if it was clear the respondents were providing purposefully false answers (e.g., listing "attack helicopter" as the respondent's sex; *n* = 1). After the removal of these cases, the final analytic sample was 226.

The sample was almost half men (45.1%) and half women (54.4%), and one respondent identified as non-binary. The average age of the participants was 32.6 years old (*SD* = 8.79). Most participants identified as White (78.3%), but some identified as African American/Black (4%), Asian American (4.4%), Asian/Pacific Islander (4%), Hispanic/LatinX (3.1%), Native-American (.9%), and Other (1.3%). Most of the sample had completed at least a four-year degree (65.9%). Most of the sample was employed full-time (59.3%) and had an income between $30,000 – $59,999 over the previous 12 months (29.2%). The sample was mostly married (49.1%) or dating someone (23.5%), although several identified as single (23.5%). For those who were married or dating someone, the average length of the relationship was 9.76 years (*SD* = 7.09). The average number of years that the participants reported playing video games over the course of their lives was 21.36 years (*SD* = 8.6). The majority of respondents indicated that they played video games on their cell phones/tablets (*n* = 186), followed by console players (e.g., Xbox One; *n* = 155), then PC players (*n* = 116), and portable systems (e.g., Nintendo 3DS; *n* = 69); notably, most participants (*n* = 170; 75.2%) reported playing on 2 or more platforms.

Measures

Detailed information about each measure is presented below. Means, standard deviations, ranges, and reliability coefficients (Chronbach's α) of the independent, moderating, and

dependent variables (when appropriate) can be found in Table 1. Correlations between variables are presented in Table 2. A full list of the items on each measure can be found in Appendix A.

Independent Variables

Motivations for Playing. The Video Game Uses and Gratifications Instrument (VGUGI; Sherry et al., 2006) was used to measure motivations for play. Participants rated their agreement with reasons for video game play on a scale of *strongly disagree* (1) to *strongly agree* (7). This study examines three motivations for play, specifically diversion ("I play video games instead of other things I should be doing"), fantasy ("I play video games because they let me do things I can't do in real life"), and social interaction ("My friends and I use video games as a reason to get together") motivations. Scores for each subscale were summed and averaged to create mean ratings with higher scores indicating more agreement with each motivation. The subscales were not totaled to create an overall motivation score because each motivation is substantively different. According to Sherry and colleagues (2006), the VGUGI is a valid predictor of game engagement, and the subscales demonstrate good reliability (α = .80 - .89).

Social Context of Play. A modified version of the Family Leisure Activity Profile (FLAP; Zabriskie & McCormick, 2001) was used to measure the social context of play. Participants noted how frequently they engaged in game play by themselves or with family members, friends, or romantic partners (whether physically present or through Internet-mediated communication channels) on a scale from *at least daily* (1) to *at least annually* (4). This item was reverse scored so that higher values indicated more frequent discrete gaming sessions. Then, this variable was recoded to reflect the frequency of discrete game play sessions *per year*. Therefore, a rating of *at least daily* (4) was recoded to 365, *at least weekly* (3) was recoded to 52, and so on. Participants also indicated the general length of each play session when playing by themselves or

with family members, friends, or romantic partners on a scale from *less than one hour* (1) to *8+ hours* (5). The frequency of discrete gaming sessions was multiplied by the general length of each gaming session for each social context. Then, the scores for time spent playing in each social context were added together to get an approximation of the total time spent playing video games (i.e., hours per year). Finally, the social context of play was measured as the percentage of total playtime spent playing video games with family members, friends, and/or romantic partners (i.e., physically present and/or connected via online communication tools). The scores range from *no social play time* (0%) to *all social play time* (100%). The average percentage of time spent playing in a social context was 42.37% (*SD* = 34.49%), indicating that these gamers, on average, spent a little over half their time playing alone and the remainder of the time playing with others.

Moderating Variables

Coping Behaviors. Coping behaviors were captured using subscales from the Brief Coping Orientation to Problems Experienced scale (Brief COPE; Carver, 1997). Overall, the Brief COPE measure has demonstrated convergent and discriminant validity (Carver et al., 1989) and acceptable reliability (α = .64 – .71; Carver 1997). Each subscale is made up of two items. Participants indicated how frequently they engaged in various coping behaviors on a scale of 1 (*I haven't been doing this at all*) to 3 (*I've been doing this a lot*). Scores were averaged with higher scores indicating more frequent use of coping behaviors.

Three types of coping behaviors were examined as moderators in the current study: self-distraction coping ("I've been doing something to think about it less, such as going to the movies, playing video games, watching TV, reading, daydreaming, sleeping, or shopping"), active coping ("I've been taking action to try to make the situation better"), and social support

seeking coping. The social support seeking coping measure was composed of two subscales from the Brief COPE: using emotional support ("I've been getting emotional support from others") and using instrumental support ("I've been getting help and advice from other people"). More specifically, the emotional and instrumental support subscales were combined and averaged to make a composite score for *social support* coping behaviors; the social support coping measure reflected strong face validity, and a principal components analysis was conducted with a varimax rotation to ensure that combining these subscales was appropriate. The four items strongly loaded onto the same factor (.82 - .88) indicating that a composite variable was appropriate. The reliability for the social support subscale was good in the current sample ($\alpha = .86$). There are methodological challenges in estimating reliabilities for two-item scales (i.e., the self-distraction and active coping subscales in the current study; for review, see Eisinga et al., 2013). Inter-item correlations have been used to approximate reliabilities for such scales. The inter-item correlation for the self-distraction subscale is $r = .37$, $p < .001$, and the inter-item correlation for the active coping subscale is $r = .53$, $p < .001$. However, Eisenga and colleagues (2013) suggest that the Spearman-Brown coefficient is the most appropriate reliability estimate for two-item scales. The Spearman-Brown coefficients for the self-distraction and active coping subscales were $r = .54$ and $r = .70$, respectively.

Outcome Variables

Depressive Symptoms. Depressive symptoms were measured using the 10-item Center for Epidemiological Studies Depression (CES-D) Scale Short Form (Irwin et al., 1999). Participants were asked to rate their symptoms over the past week on indicators such as, "I felt that everything I did was an effort" and "I was lonely." Participants responded with either a *yes* (1) or *no* (0). Two items were reverse scored because they contraindicated depressive symptoms

(e.g., “I was happy” and “I enjoyed life”). Scores for this measure were summed with higher scores indicating more depressive symptoms. This measure has demonstrated good criterion validity and appears to be comparably valid to the larger version of the scale (Irwin et al., 1999). Additionally, Irwin and colleagues suggest that a score of ≥ 4 may indicate clinically significant depressive symptoms. Accordingly, 38.6% of the sample reported depressive symptoms which may indicate clinical diagnosis of depression.

Perceived Stress. Participants responded to the four item Perceived Stress Scale Short Form (PSS-4; Warttig et al., 2013) to indicate how frequently they experienced stressful circumstances in the previous month on a scale of *never* (1) to *very often* (4). Examples include, feeling “unable to control important things in your life” and “difficulties were piling up so high that you could not overcome them.” Two items were reverse coded because they contraindicated stressful experiences (e.g., “felt that things were going your way” and “felt confident about your ability to handle your personal problems”). Responses to this measure were summed and averaged to create mean scores with higher values indicating more stress. The PSS-4 has demonstrated adequate reliability ($\alpha = 0.77$; Warttig et al., 2013) and has been recommended for studies where respondent burden prohibits the use of longer scales (Leung et al., 2010).

Loneliness. Loneliness was measured using the Three-Item Loneliness Scale (Hughes et al., 2004). Participants rated how frequently they experienced symptoms of loneliness in their lives on a scale from *hardly ever* (1) to *often* (3). Example items include, “How often do you feel that you lack companionship?” and “How often do you feel left out?” Responses were summed and averaged to create mean loneliness scores with higher values indicating more loneliness. This scale has demonstrated both convergent and discriminant validity (Hughes et al., 2004).

Life Satisfaction. The Single-Item Satisfaction with Life measure (Cheung & Lucas,

2014) has demonstrated good criterion validity compared to longer life satisfaction measures and asks participants to rate how satisfied they are with their life on a scale from *very satisfied* (1) to *very dissatisfied* (4). This scale has been reverse coded so that higher scores indicate more life satisfaction.

Control Variables

Participants responded to several demographic questions including income and age. Participants indicated their individual income over the previous 12 months on a scale from 1 (*Less than $10,000*) to 5 (*100,000 or more*). They also recorded their age in years. Greater income appears to be related to better psychosocial outcomes (Diener et al., 1993; Masarik & Conger, 2017). Age is also correlated with psychosocial outcomes such as anxiety and depression (Christensen et al., 1999; Mirowsky & Ross, 1999), however the nature of these associations is somewhat complex. For example, Christensen and colleagues (1999) found that growing older is generally associated with lower depression and anxiety, but there may be differential associations depending on specific measures (i.e., greater somatic symptoms, but lower psychological symptoms). Additionally, Mirowsky and Ross (1999) found that the links between depression and age reflect more of a quadratic trajectory than a linear relationship. Specifically, depressive symptoms were at their lowest for adults between ages of 30 – 45 years old compared to younger and older age groups. Because of the established links between age and income with psychosocial functioning, these variables were included as potential controls.

Plan of Analysis

Descriptive statistics were assessed for normality, and bivariate correlations were examined between all study variables. Little's MCAR test (Little, 1988) was conducted to examine if there were nonrandom patterns of missing data in the outcome variables. Motivations

for play, social context of play, and coping behaviors were mean centered to address multicollinearity in the interaction terms (Iacobucci et al., 2016; 2017). Descriptive statistics, bivariate correlations, missingness analyses, and mean centering were conducted in SPSS 24.

Mplus Version 8.4 (Muthén & Muthén, 2017) was used to construct the measurement model for the latent psychosocial distress variable, to create the interaction terms, and to fit three separate structural equation models to test the hypotheses and research question. First, a measurement model for the psychosocial distress latent construct was created using the observed variables of depressive symptoms, perceived stress, loneliness, and life satisfaction. Based on existing literature (Holland & Bultz, 2007), these variables appear to be linked to a latent construct reflecting difficulties across mental, social, and general quality of life domains. To statistically verify this construct, model fit was examined along with standardized factor loadings of $\beta > .50$. Good model fit for the measurement model (and the following structural equation models) was determined by a non-significant χ^2 p-value ($p > .05$), a RMSEA value of $\leq .06$, and a TLI and CFI value greater than .95 (Hooper et al., 2008). Statistical significance was set at $p < .05$. The maximum likelihood estimation with robust standard errors (MLR) was used to account for missing data and any non-normally distributed variables.

Second, interaction terms were created for each structural equation model. See the following paragraphs for more detail about interaction term specification. Third and finally, three separate structural equation models were fit to examine main effects and interactions between the independent, moderating, and outcome variables, with covariates. Motivations for play and social context of play were observed independent variables. Coping behaviors served as observed moderating variables. As described above, psychosocial distress was a latent outcome variable. The independent, moderating, and control variables were entered and examined

simultaneously for each model. Control variables were constrained in the final models if they were not significantly associated with the outcome and if constraint did not significantly alter model fit (as determined by non-significant Satorra-Bentler χ^2 tests). For all three models, interaction terms were interpreted first if significant. The ModGraph-I program was used to plot simple slopes and interpret interaction effects (Jose, 2013). If the interactions were not significantly associated with psychosocial distress, significant main effects were interpreted instead. The significance level was set at $p < .05$.

See Figure 1 for the conceptual structural equation model. To analyze *hypothesis 1a*, the interaction between diversion motivation with *self-distraction* coping as well as the interaction between fantasy motivation with *self-distraction* coping were examined as predictors of psychosocial distress. To analyze *hypothesis 1b*, the interaction between diversion motivation with *active* coping as well as the interaction between fantasy motivation with active coping were examined as predictors of psychosocial distress. To analyze *research question 1*, the interaction between social interaction motivation with *social support* coping as well as the interaction between social context of play with *social support* coping were examined as predictors of psychosocial distress.

Results

Preliminary Results

Descriptive statistics and bivariate correlations can be found in Table 2. The bivariate correlations were mostly in expected directions, though not all were significant. Of note, those motivated to play by social interaction reported significantly higher perceived stress ($r = .14$, $p = .04$), while those who played with others reported significantly lower loneliness ($r = -.21$, $p = .003$). Though it was somewhat unexpected to see social interaction motivation linked with higher stress, these associations mirror previous links between socially oriented gaming and

beneficial and detrimental outcomes (Shen & Williams, 2011). Little's MCAR test indicated that missing data in the outcome variables were missing completely at random, $\chi^2 = 2.78$ (6), $p = .84$.

Measurement Model Results

Results for the measurement model indicated that depressive symptoms, stress, life satisfaction, and loneliness loaded onto the psychosocial distress construct at an absolute value of .70 or higher (depressive symptoms, stress, and loneliness positively loaded onto the psychosocial distress latent variable whereas life satisfaction negatively loaded onto the construct). Additionally, the measurement model demonstrated excellent fit to the data, $\chi^2 = 2.07$ (2), $p = .36$, RMSEA = .01 (90% confidence interval [CI] = .00, .14), CFI = 1.00, TLI = .99, and this model explained 53 % of the variance in the psychosocial distress latent variable.

Hypothesis 1a Results

For all structural equation models, age and income were initially included as covariates. Although there is evidence of gender differences in psychosocial outcomes (Brougham et al., 2009; Kuehner, 2003), the bivariate correlations indicated that there were no gender differences in an any psychosocial outcome in the current study. As such, it was not included as a potential covariate for any model.

The first model addressed *hypothesis 1a* and examined the moderating role of self-distraction coping behaviors on the links between diversion and fantasy motivations with psychosocial distress (see Figure 2). Age did not significantly covary with psychosocial distress. Therefore, the path between age and psychosocial distress was constrained for parsimony. Because the MLR estimator was used for the analyses, a Satorra-Bentler χ^2 test was performed to examine differences in model fit between the nested (age path constrained) and comparison (age path unconstrained) models. The results indicated that fit did not significantly differ between the

two models, Satorra-Bentler $\chi^2 = 1.00$ (1), $p = .32$. As a result, the constrained model was chosen. Income was allowed to covary with psychosocial distress and was significantly associated with lower psychosocial distress ($\beta = -.19$, $p = .01$). The model demonstrated excellent fit to the data, $\chi^2 = 50.15$ (39), $p = .11$, RMSEA = .04 (90% confidence interval [CI] = .00, .07), CFI = .97, TLI = .97. The interaction between fantasy motivation and self-distraction coping behaviors was non-significant as a predictor of psychosocial distress. Additionally, the main effect of fantasy motivations was not significantly associated with psychosocial distress. However, the interaction between diversion motivation and self-distraction coping behaviors was a significant predictor of psychosocial distress ($\beta = -.14$, $p = .05$)[2]. Simple slopes were plotted and examined utilizing the ModGraph-I program (Jose, 2013) and can be found on Figure 3. The simple slopes indicated that the associations between diversion gaming motivation and psychosocial distress were exacerbated for those who practiced more frequent self-distraction coping behaviors. Additionally, those who practiced more frequent self-distraction coping behaviors had higher rates of psychosocial distress compared to those who used self-distraction less frequently, regardless of how much their gaming was motivated by diversion. Therefore, *hypothesis 1a* was partially supported. The model explained 27% of the variance in the latent psychosocial distress variable.

Hypothesis 1b Results

The second model addressed *hypothesis 1b* and examined the moderating role of active coping behaviors on the links between diversion and fantasy motivations with psychosocial

[2] Despite the behavioral similarities between diversion motivated gaming and self-distraction coping behaviors, these appear to be related, but distinct phenomena. First, the bivariate correlations from the current study indicate that diversion motivation and self-distraction coping are positively, but weakly correlated, $r = .21$, $p < .002$. Additionally, gaming may differ from other, more passive forms of self-distraction (e.g., watching TV) through their ability to stimulate high engagement and basic needs like competence and autonomy (e.g., Ryan et al., 2006). Therefore, these results indicate a meaningful interaction between distinct behavioral experiences rather than a reflection of conceptual overlap resulting in spurious statistical findings.

distress (see Figure 4). Again, age did not significantly covary with psychosocial distress and this path was constrained. A Satorra-Bentler χ^2 test indicated that model fit did not significantly differ between the nested (age path constrained) and comparison (age path unconstrained) models, Satorra-Bentler $\chi^2 = 1.13$ (1), $p = .16$; thus, the path was constrained for parsimony. Income was allowed to covary with psychosocial distress and was significantly associated with lower psychosocial distress ($\beta = -.17$, $p = .02$). The model demonstrated acceptable fit to the data, $\chi^2 = 61.98$ (40), $p = .02$, RMSEA = .05 (90% confidence interval [CI] = .02, .08), CFI = .93, TLI = .94. The interactions between active coping with diversion motivation and active coping with fantasy motivation were not significant as predictors of psychosocial distress. Therefore, main effects were interpreted. Diversion motivation was significantly associated with greater psychosocial distress ($\beta = .30$, $p < .001$). Active coping was significantly and uniquely associated with lower psychosocial distress ($\beta = -.16$, $p = .03$). To evaluate the comparative strength of these significant associations with psychosocial distress, the diversion motivation and active coping paths were constrained to be equal and a Satorra-Bentler χ^2 test was performed. The results indicated that constraining the paths resulted in significantly poorer model fit, Satorra-Bentler $\chi^2 = 7.09$ (1), $p = .007$. This suggests that the paths are not equal, and that diversion motivation was a stronger predictor of psychosocial distress than active coping. Because the interactions were non-significant predictors of psychosocial distress, *hypothesis 1b* was not supported. The model explained 19% of the variance in the latent psychosocial distress variable.

Research Question 1 Results

The third model addressed the exploratory *research question* and examined the moderating role of social support behaviors on the associations between social interaction motivations and social context of play with psychosocial distress. The original model included

age and income as control variables. This model did not fit the data, $\chi^2 = 138.37$ (39), $p < .001$, RMSEA = .11 (90% confidence interval [CI] = .09, .13), CFI = .66, TLI = .70. Similar to previous models, age did not significantly covary with psychosocial distress and was constrained. However, this did not result in a significant improvement in model fit, Satorra-Bentler $\chi^2 = .08$ (1), $p = .78$, and the model still did not fit the data, $\chi^2 = 138.37$ (40), $p < .001$, RMSEA = .11 (90% confidence interval [CI] = .09, .13), CFI = .66, TLI = .71. After this step, statistical and theoretical considerations were consulted for potential changes. However, there were not sufficient theoretical justifications to apply statistical solutions (e.g., removing paths) to improve fit for the originally conceptualized model.

However, an alternative, exploratory model informed by the bivariate correlations and theoretical considerations was attempted. The bivariate analyses indicated that social motivations for play were significantly correlated with higher stress ($r = .14$, $p = .04$) and social context of play (i.e., playing with others) was significantly correlated with lower loneliness ($r = -.21$, $p = .003$). Because there are theoretical reasons that social motivations, social context of play, and social support would be related to loneliness (as it is assessing an aspect of social functioning), an exploratory model was attempted with interactions between social motivations for play with social support coping and social context of play with social support coping as predictors of loneliness. This model also did not fit the data, $\chi^2 = 75.83$ (16), $p < .001$, RMSEA = .14 (90% confidence interval [CI] = .11, .17), CFI = .00, TLI = .00. As there were limited theoretical or statistical justifications for changing the model further, the regression statistics for each model were not interpreted.

Discussion

The goal of the present study was to examine how gaming motivations were related to

psychosocial distress in the context of more generalized coping behaviors. In other words, it is clear that gaming motivations, the reasons why gamers play, and coping behaviors matter for mental health and well-being (Burke & Lucier-Greer, under review; Hagström & Kaldo, 2014; Mahmoud et al., 2012; Shih, 2019), but this study is one of the first to examine how the interaction between gaming motivations and more generalized coping behaviors are related to psychosocial distress. As expected, gaming motivations, particularly playing games as a diversionary tactic, and coping behaviors, including self-distraction coping and active coping, were directly linked to psychosocial distress in expected directions. Furthermore, the interplay of gaming motivations and more general coping behaviors were related to amplified psychosocial distress. Specifically, when gamers played to distract themselves from other responsibilities *and* they tended to use self-distraction coping techniques in other aspects of their lives, they reported greater psychosocial distress. These findings help advance our understanding of how gaming is linked to individual mental health and well-being and support the use of a basic psychological needs theory lens in gaming research (Przybilski et al., 2010). Further development is still needed to identify if and how other gaming motivations (e.g., fantasy and social interaction motivations) and coping behaviors (e.g., active coping, social support seeking) interact to influence psychosocial functioning in gamers given that not all models in this study were supported.

A Basic Needs Approach to Understanding the Psychosocial Distress of Gamers

The current study found that being motivated to play video games for the purpose of diversion was related to higher psychosocial distress, and this effect was amplified when gamers tended to also engage in more frequent use of self-distraction as a coping mechanism. These findings replicate previous work demonstrating that both diversion motivation and self-

distraction coping are associated with poorer psychosocial outcomes (Hagström & Kaldo, 2014; Mahmoud et al., 2012), and extend this research by demonstrating one of the first moderating links between gaming motivations, coping behaviors, and psychosocial distress. This moderating effect may indicate that the use of self-distraction behaviors and diversion motivation have permeated multiple aspects of gamers lives (e.g., coping, hobbies, entertainment), thereby exacerbating the potential for psychosocial distress. Importantly, these findings were demonstrated in a sample almost evenly split by gender, suggesting that men and women in community samples may have similar gaming experiences regarding motivation, coping, and psychosocial distress.

These results align with a basic psychological needs perspective on gaming research. This theory suggests that psychosocial well-being is a function of how well the needs for competence, autonomy, and relatedness are met (Ryan & Deci, 2000a). In the context of this theory, competence refers to a person's perceptions of their own self-efficacy, and autonomy signifies an individual's locus of control and their sense of personal agency (Ryan & Deci, 2000a). As such, it is likely that being motivated to play video games for diversion and utilizing self-distraction as a coping mechanism thwart the satisfaction of these needs, because gamers are using strategies that actively avoid challenges, rather than confronting them. Utilizing avoidant coping behaviors reflects a sense that there are aspects of one's life that feel too difficult to handle or out of one's control or ability to change (Carver et al., 1989), and counterproductive behaviors, which sometimes can include gaming, are chosen to manage the negative emotions that arise. Coping through general self-distraction or using video games as a diversion may exacerbate these feelings of incompetence or powerlessness. In line with previous research, avoidant coping has been linked with lower competence, autonomy, and relatedness

(Bakracheva, 2019), as well as longitudinal increases in depression (Dunkley et al., 2006; Seiffge-Krenke & Klessinger, 2000). Therefore, it is theoretically sound (though not well-tested) that utilizing self-distraction coping behaviors is linked to poorer psychosocial distress *through* reductions in basic needs. There is likely a similar indirect link between diversion motivation and psychosocial functioning, given the conceptual similarities between playing games for diversion and self-distraction coping, but this has not been well-established.

On the contrary, active coping as related to basic needs and psychosocial outcomes has begun to be explored in recent years. Specifically, Li and colleagues (2016) found that stress predicted thwarted basic needs which, in turn, predicted greater addictive Internet use. However, active coping weakened the link between stress and basic needs, suggesting a protective effect. Therefore, a similar protective effect was hypothesized in the current study, but this interaction was not supported in the analyses. Despite lack of support for a protective effect in the context of gaming, gamers who practiced active coping strategies (e.g., focusing efforts to address a problem), more generally, did report lower psychosocial distress, which aligns with a basic psychological needs perspective as well. Gamers who take direct action to deal with challenges likely foster a sense of competence and autonomy, resulting in better psychosocial outcomes. These findings replicate other evidence that active coping is linked to higher basic psychological needs and better psychosocial functioning (Bakracheva, 2019; Li et al., 2016; Shih, 2019). Though theoretically sound, it is unclear why the interaction effect was not supported. Regarding the bivariate correlations, gamers who practiced active coping did report significantly lower diversion motivation. It is possible that the comparatively small sample size limited the power needed to detect a significant association between this interaction and psychosocial distress. There are potential theoretical explanations as well, namely with the conceptualization of active

coping. Though there are empirical reasons to view active coping at the opposite end of an adaptive spectrum with self-distraction coping (e.g., active coping has been linked with benefits while self-distraction has been linked with deficits; Bakracheva, 2012), theoretical supposition indicates that these behaviors are not on a continuum and have the potential to play different roles in psychosocial functioning (Carver et al., 1989), as they did in the current study. Therefore, although self-distraction coping behaviors did interact with diversion motivation, active coping may be linked with other gaming motivations (e.g., the desire to play games for achievement, competition, or challenge) or they could be simply unrelated to one another. More research with a larger sample and, perhaps, a more nuanced measure of active coping is needed before any explanations can move beyond speculation.

It should be noted that the current study is cross-sectional, and therefore, the direction of effects described above is speculative. It is also possible that individuals who are experiencing psychosocial distress are more prone to using gaming and other activities to distract themselves from unpleasant psychological and social experiences. For example, veterans dealing with posttraumatic stress disorder symptoms have reported that video games are helpful distractions from negative thoughts and ruminations (Colder Carras, Kalbarczyk, et al., 2018). In fact, gaming has been prescribed as a helpful supplement in posttraumatic stress disorder treatments (Butler et al., 2020), and self-distraction has been linked with improvements for individuals with depression (Huffziger & Keuhner, 2009). Therefore, more psychosocial distress could be predictive of more diversion and self-distraction, and these behaviors are not inherently maladaptive (Carver et al., 1989). More longitudinal investigation is needed to understand the directional associations of gaming motivations, coping behaviors, and psychosocial distress.

Fantasy Motivations, Social Gaming, and More Nuanced Associations

Although several of the more complex models and hypothesized associations were not supported in the analyses, such as the role of fantasy motivations and social gaming, there were some nuances found in the preliminary analyses that may warrant further investigation. For example, fantasy motivation was not associated with psychosocial distress in either model, but it was correlated with higher depressive symptoms and loneliness. There is little research demonstrating links between fantasy motivation and outcomes like depression or loneliness (see also, Ballabio et al., 2017). It is possible that playing games for the fantasy aspect is uniquely associated with outcomes that reflect a lack of excitement or interest with "real world" experiences and relationships. For clarity, fantasy motivation in the current study measured a sense that the game world was more exciting or engaging than real life. Therefore, gamers motived by fantasy may take less pleasure in the real world and could be more prone to anhedonia (i.e., the absence of enjoyment or pleasure), which is a common symptom and predictor of depression (Pizzagalli, 2014). In other words, gamers may feel excitement and enjoyment through play, but then experience anhedonia or a lack of enjoyment with real life circumstances and relationships, which is uniquely reflected in measures of depressive symptoms and loneliness. Much more exploration is needed to understand the role of fantasy motivations on psychosocial functioning.

Similarly, the model examining social motivation and social context and the interplay of social support coping was uninterpretable given the poor model fit. However, we can still glean some insights from these variables. For example, social motivations for play were correlated with higher perceived stress and more social play was correlated with lower loneliness. These findings indicate that there could be a disconnect between being *motivated* to play games for social opportunities and the *actual* experience of social interaction through play. More

investigation is needed to understand the differences between social motivation for play and socially interactive play, and how these different constructs are associated with differing measures of psychosocial functioning.

Implications

The current study does provide some implications for gaming individuals and service providers. First, gamers may benefit from examining their motivations for play and, when needed, taking steps to reduce their time spent playing for the purposes of diversion from other responsibilities or stressors. Choosing a specific task in-game and playing until that task is accomplished or until a previously set time limit may help gamers focus their intentions for play on a goal instead of for the purpose of avoiding aspects of their life that need to be addressed. Additionally, games could be considered rewards for accomplishing tasks in real life, rather than distractions from external stressors. If gamers struggle with significantly negative self-conceptions, therapeutic or counseling services may bolster personal competence and/or autonomy. Interventionists may find some success by training gamers to practice more active coping skills (e.g., forming a plan, taking direct action), as these were associated with lower psychosocial distress in the current study. Cognitive behavioral therapy may be a particularly effective approach to address self-deprecating thoughts and create effective behavior plans that address gaming motivations and adaptive coping behaviors (Young, Rygh, Weinberger, & Beck, 2014).

Limitations and Future Directions

This was one of the first studies to examine the interplay between gaming motivations and non-gaming coping behaviors with psychosocial distress, and the findings should be interpreted with limitations in mind. First, although strengthened by being a community sample

of young-to-middle-aged adult gamers and by being almost evenly split by gender, the sample is relatively small and ethnically homogeneous. A larger, more representative sample may have allowed for other significant findings (e.g., an interaction between diversion motivation and active coping) and could also speak to outcomes experienced by non-White, gaming adults. Second, the Brief COPE scale was selected, in part, to reduce respondent burden, but it is possible that a comprehensive measure with more nuanced items could have revealed more information about how active coping potentially interacts with gaming motivations. Additionally, the scale for depressive symptoms reduces respondent burden by using simpler, dichotomous indications of depressive symptom presence. However, the dichotomous nature of the response options limits detail regarding depressive symptom severity. Third, though it is theorized that diversion motivation is reflective of thwarted needs, this connection is speculative and requires further examination. Future work would benefit from establishing an empirical link between these gaming motivations, social context of play, and basic psychological needs to enhance theoretical understanding. Additionally, qualitative research on game engagement and psychosocial functioning could provide important details from which to build theory and inform implications. Finally, this study was cross-sectional which limits causal inference. It is possible that psychosocial distress predicts more avoidance, or that there is a bidirectional cycle occurring where distress predicts more avoidance which predicts more distress. Longitudinal models, particularly those using a cross-lagged design may be especially helpful in clarifying the causal direction between these factors.

Conclusion

The current study extends knowledge on how gaming motivations are associated with psychosocial functioning and is one of the first to examine gaming in the context of coping

behaviors. Studies of game engagement that include non-gaming behaviors are informative as gaming takes place within the broader context of life circumstances and choices. As such, this study is an important step to refining our understanding of how this popular leisure activity interacts with general life behaviors and provides important implications for application to the well-being of adult gamers.

Table 1

Descriptive Statistics and Reliability Coefficients of Independent, Dependent, and Control Variables

Variable Name	Min-Max	Mean (SD)	α
Independent Variables			
Motivations			
Social	1 – 7	4.20 (2.13)	.88
Diversion	1 – 7	4.37 (1.77)	.90
Fantasy	1 – 7	4.63 (1.47)	.86
Social context of play	0% - 100%	42.37% (34.49%)	
Moderation Variables			
Coping			
Active	1 – 3	2.39 (.54)	
Social Support	1 – 3	2.14 (.61)	.86
Self-Distraction	1 – 3	2.26 (.58)	
Dependent Variables			
Depressive symptoms	1 - 10	4.71 (2.19)	.78
Perceived stress	1 - 3.75	2.19 (.66)	.80
Loneliness	1 - 3	1.61 (.56)	.79
Life Satisfaction	1 - 4	1.73 (.66)	

Table 2

Means, Standard Deviations and Bivariate Correlations for Study 1 (N =226)

Variable		1	2	3	4	5	6	7	8	9	10	11	12	13
1	Age	1.00												
2	Income	.43***	1.00											
3	Diversion Motivation	.01	-.11	1.00										
4	Fantasy Motivation	-.18**	-.14*	.20**	1.00									
5	Social Interaction Motivation	-.36**	-.15*	.13†	.30***	1.00								
6	Social Play %	-.15*	.00	-.18**	-.05	.39***	1.00							
7	Self-Distraction Coping	-.02	-.02	.21**	.19**	.11	.02	1.00						
8	Active Coping	-.09	.08	-.21**	.06	-.09	-.02	.12†	1.00					
9	Social Support Coping	-.20**	.12†	-.02	.13†	-.01	.03	.22**	.33***	1.00				
10	Depressive Symptoms	-.10	-.12	.22**	.18*	.09	.11	.30***	-.08	.08	1.00			
11	Perceived Stress	-.14*	-.20**	.39***	.11	.14*	.03	.31***	-.23**	.01	.54***	1.00		
12	Loneliness	-.19**	-.22**	.24***	.17*	.07	-.21**	.27***	-.06	-.01	.53***	.53***	1.00	
13	Life Satisfaction	.02	.14†	-.17*	-.11	-.12†	-.04	-.21**	.23**	.17*	-.49***	-.58***	-.50***	1.00
	Mean	32.6	2.88	4.37	4.63	4.20	.42	2.26	2.39	2.14	3.03	2.19	1.61	1.73
	SD	8.78	1.27	1.77	1.47	2.13	.34	.58	.54	.61	2.51	.66	.56	.66

Note. Social Play % = Ratio of total play time spent playing with friends, family members, and/or romantic partners.

†$p < .10$. *$p < .05$. **$p < .01$. ***$p < .001$.

Figure 1

Conceptual Structural Equation Model of Video Game Participation Factors Predicting Psychosocial Distress Moderated by Coping Behaviors

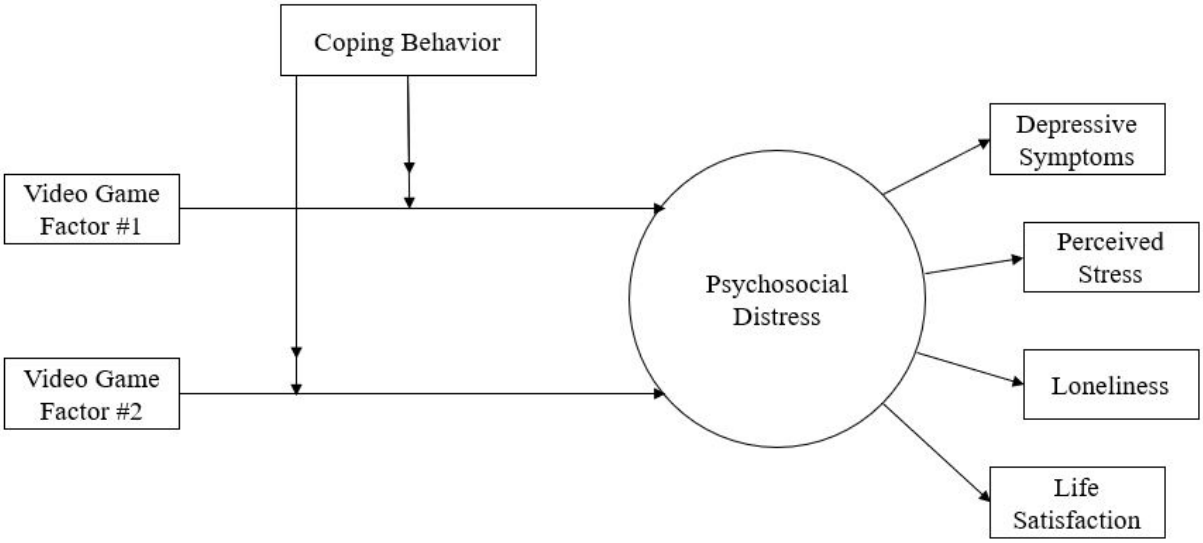
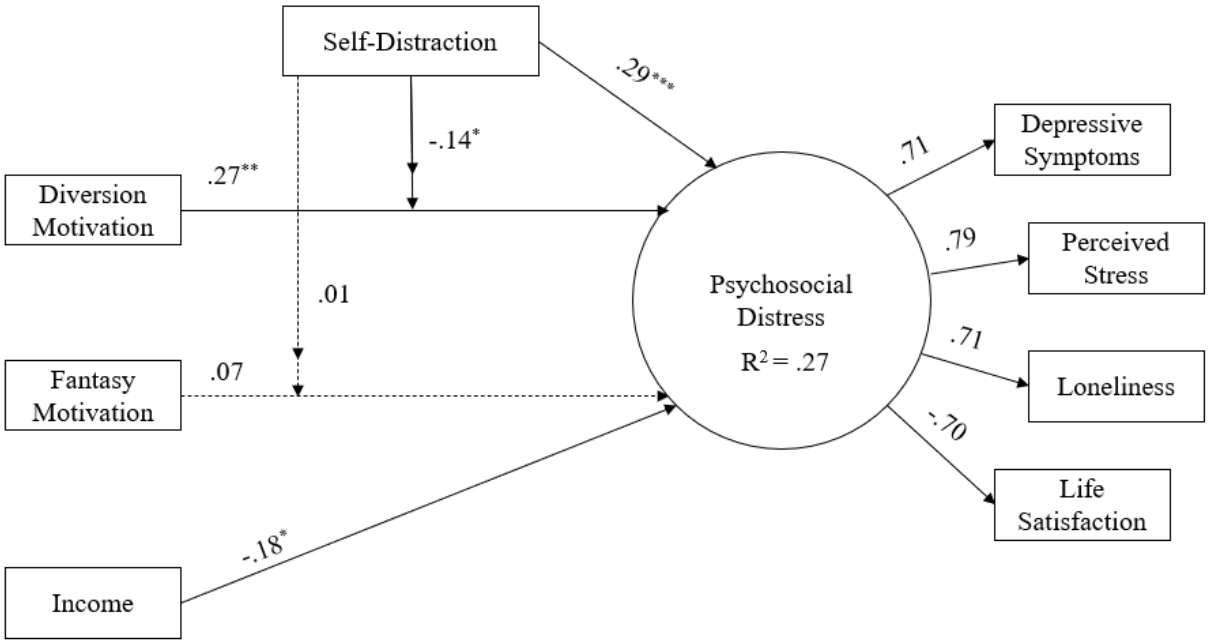


Figure 2

Structural Equation Model of Diversion and Fantasy Motivations Predicting Psychosocial Distress Moderated by Self-Distraction Coping Behaviors (Hypothesis 1a)



Note: Solid lines denote significant paths. All coefficients are standardized. Model fit = χ^2 = 50.15 (39), p = .11, RMSEA = .04, CFI = .97, TLI = .97.

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

Figure 3

Simple Slopes of Hypothesis 1a: Diversion Motivation Predicting Psychosocial Distress Moderated by Self-Distraction Coping Behaviors

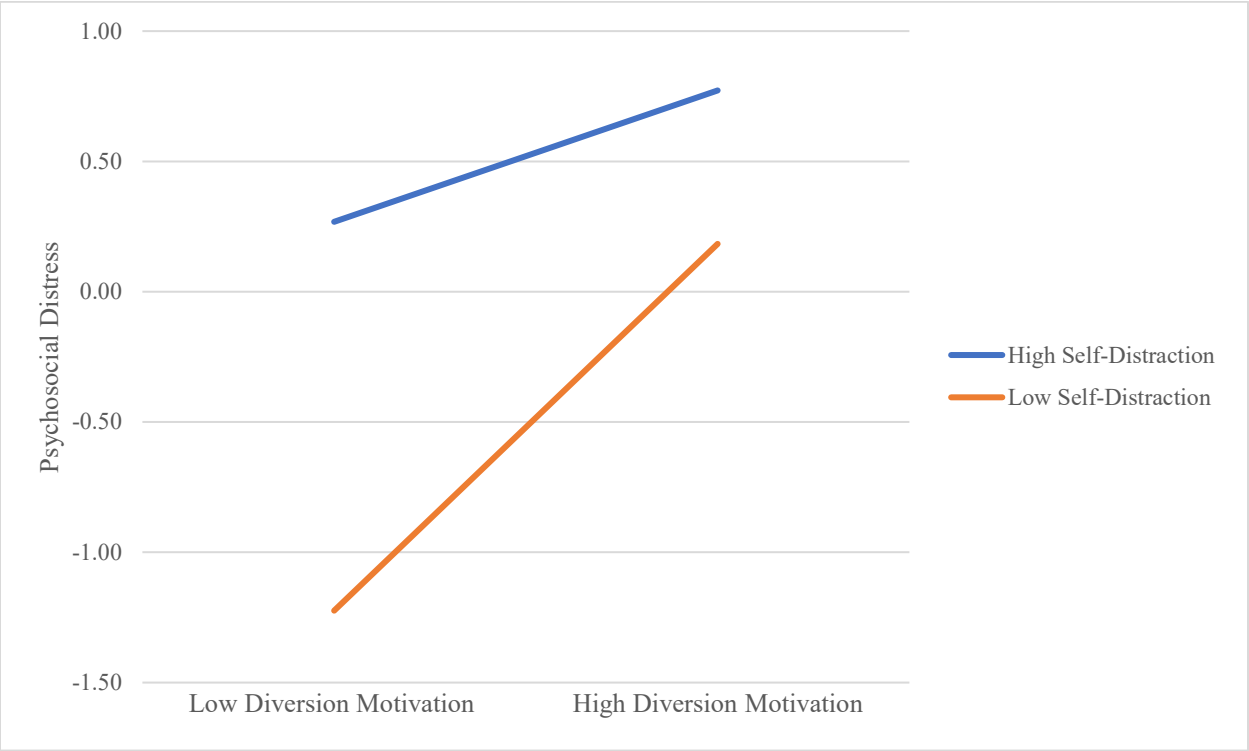
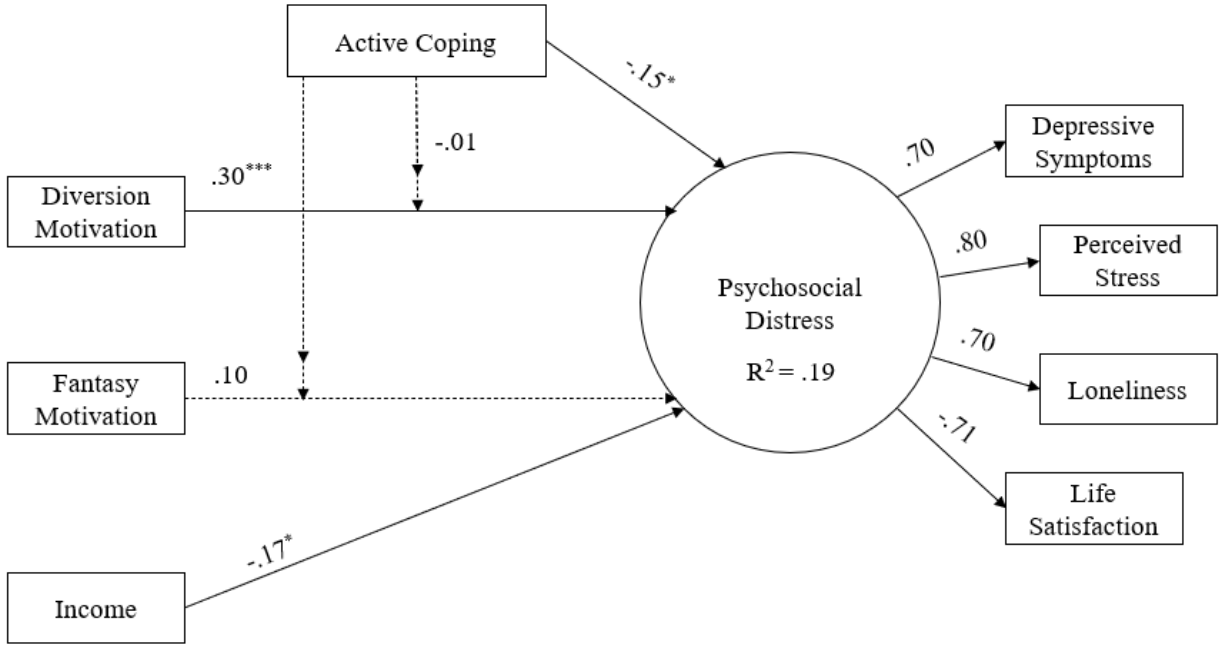


Figure 4

Structural Equation Model of Diversion and Fantasy Motivations Predicting Psychosocial Distress Moderated by Active Coping Behaviors (Hypothesis 1b)



Note: Solid lines denote significant paths. All coefficients are standardized. Model fit = χ^2 = 61.98 (40), p = .02, RMSEA = .05, CFI = .93, TLI = .94.

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

Chapter 3

Study 2 - "Playing Video Games Is How I Unwind": A Mixed Methods Analysis Examining Positive and Negative Perceptions of Video Games on Adult Gamer's Individual and Relational Well-Being

Gaming is an incredibly popular leisure activity, not only for the estimated 98% of American adolescents who play (Lenhart et al., 2008), but also for the approximately 160 million American adults who regularly play games on their phones, computers, and consoles (e.g., Xbox; ESA, 2019). Gaming is also a notably relational leisure activity; 63% of American adults play games with other people, both in-person and online, and 57% of gaming parents play video games with their kids at least once a week (ESA, 2019). As such, gaming has been examined as a predictor of psychosocial functioning with a focus on both adverse outcomes (e.g., aggressive thoughts and emotions for children, adolescents, and adults; Calvert et al., 1991) and more recently, adaptive processes and outcomes, such as cognitive improvements (e.g., visuo-spatial problem-solving skills; Bavelier et al., 2012), prosocial behaviors (Jin & Li, 2017), and improved mood and self-esteem (Ryan et al., 2006). Despite these investigations, meaningful work is still needed to better understand how games are linked to psychosocial outcomes, and how gamers perceive this activity as beneficial or detrimental to their well-being.

The majority of the research on gaming is quantitative in nature, emphasizing the etic perspective in scientific exploration (i.e., the outsider looking in). According to qualitative methodology, the etic perspective centers on the researcher or observer and their understandings and interpretations of the emic (i.e., the insider's perspective), the experience of the participant or object of study (Daly, 2007). Therefore, in quantitative studies, expression of the participant's insider experience is limited because they are generally only representing themselves through

numeric or categorical scales. Because most gaming literature is quantitatively focused, there is an imbalance between researcher-centered (i.e., etic) and participant-centered (i.e., emic) video game research. This could be problematic in that researchers and scientists may approach gaming and psychosocial functioning in a manner that is not aligned with gamers' experiences. For example, in a qualitative study comparing clinical diagnostic criteria for internet-gaming disorder and gamers' perspectives of gaming addiction (Colder Carras, Porter, et al., 2018), participants agreed with some aspects of diagnosis and disagreed with others. Specifically, gamers agreed with diagnostic criteria like neglecting needs in everyday life (e.g., jobs) and continuing game use after recognizing deleterious effects but disagreed that using games as a habit to destress or frequently thinking about games were indicative of problematic or addictive play. Additionally, gamer perspectives were useful to clarify potential symptoms as reinforcement cycles, such as when individuals choose games *because* they are socially anxious, leading to exacerbated social isolation, which would then increase social anxiety.

These findings indicate that gaining more information from the emic (i.e., participant) perspective is important for understanding how games are related to psychosocial functioning. Furthermore, finding useful ways to combine both the emic and etic perspectives may elucidate links between gaming and well-being in a manner that neither approach can do in isolation. To that end, the current study seeks to combine emic and etic perspectives by using a mixed method approach to understand perceptions of the benefits and detriments of gaming and examine how these perceptions are associated with psychosocial functioning in a community sample of adult gamers. The results from the current analysis could yield rich detail in understanding how gamers phenomenologically experience benefits and detriments from play, and how these perspectives are associated with validated, quantitative measures of well-being.

Theoretical Foundations

This study is founded on concepts adopted from life course theory (Elder, 1977) and symbolic interactionism (Stryker, 1980). Life course theory provides a framework for understanding the variation in trajectories observed between individuals and families. As such, the life course perspective seeks to examine how sociocultural, interpersonal, and chronological contextual factors interact to shape development across the lifespan; for this study, three life course theoretical considerations guide the investigation: age-specific roles and demands, linked-lives, and meaning-making. According to Elder (1977), individuals experience different stages and transitions as they age, and each stage is marked by choices made in the face of competing demands with limited resources. These demands are partially determined by the roles that individuals are expected to assume. For example, in adolescence, a teenager may be expected to apply time and other resources to roles typically expected of someone at that developmental level, such as being someone's child and a high-school student. As an adult, however, different role expectations suggest that resources be divided among needs that are expected of adults (e.g., being someone's parent, a long-term romantic partner, an employee).

The concept of linked-lives suggests that how these demands are met at each stage can have long-term ripple effects, not only for the individual, but for their family members and social networks. Therefore, from a gaming perspective, gaming behaviors and outcomes are likely different based on developmental stage. For example, adolescent gamers may be more likely than adults to sacrifice their education or work to play video games (Griffiths et al., 2004), in part, because these kinds of sacrifices could result in more serious career, financial, and relational detriments for adults, particularly if done in excess (e.g., divorce; Northrup & Shumway et al., 2014). Finally, meaning-making refers to the dynamic process of determining

the meaning of roles based on social and historical context (Elder, 1977). Therefore, perceptions of demands on individuals and the appropriate way to address those demands are influenced by social context.

Symbolic interactionism is a helpful theoretical perspective for understanding the meaning-making process in more detail, and in describing how meanings may influence psychosocial functioning. Symbolic interactionism (Stryker, 1980) prioritizes individual perceptions of meaning but moves outward as those meanings are shaped through interactions with relationships and with broader societal standards. Based on how the individual's perceptions align with broader social understandings, people may "play" a role or "make" a role. Playing a role aligns more with broader societal expectations of what that role entails, whereas making a role indicates that the individual's behaviors misalign with these expectations. Role conflicts tend to arise when individuals experience stress through competing demands for different roles. Therefore, in the example listed above about gaming in adulthood, adults likely perceive themselves as occupying various roles with competing demands (e.g., spouse, employee, "gamer"). These competing demands vie for the limited resources a person has, and adults may feel compelled to distribute these resources in socially expected ways. When individuals seek to *make* their role by acting in a manner different than what is expected, they may experience stress and role conflict. Additionally, social interactions can influence the meaning of gaming as a positive or negative experience. For example, adult gamers report feelings of "guilt" if they allocate too much time to play (Griffiths & Lewis, 2011), signaling a conflict between "playing the role" and "making the role" of a responsible gaming adult. Additionally, gamers may report the loss of "offline" friends or spousal relationships, while

forming and maintaining "online" relationships (Northrup & Shumway, 2014). This reflects the dynamic nature of meaning-making depending on the context of social interaction.

Taken together, these theoretical foundations suggest that gaming is experienced by individuals in different ways depending on life stage and the perceived meanings of gameplay, and that these experiences could have important intra- and interpersonal outcomes. To that end, this study examines the perceptions of gaming as potentially beneficial and detrimental to intrapersonal (i.e., mental health and general well-being) and interpersonal (i.e., relationships with friends, family, and romantic partners) well-being.

Beneficial and Detrimental Perceptions of Gaming

Although the vast majority of research on gaming approaches the subject from a quantitative (i.e., etic) perspective, some qualitative explorations of gaming perceptions (i.e., emic) have been undertaken. Several of these investigations have examined qualitative reports from individuals who felt they were addicted to playing. For example, Chappell and colleagues (2006) examined qualitative reports from online gaming addiction forums. Participants on these forums reported stories of how gaming dominated their life, causing them to neglect important social and career responsibilities as they felt unable to stop playing. Beranuy and colleagues (2013) performed a grounded theory analysis of nine individuals (aged 17-26 years old) in treatment for gaming addiction. They found that gamers felt the online relationships formed through gaming reinforced the "addiction" and many of them reported escapism as a motivation for play. These behaviors led to feelings of guilt and poorer performance at school and work. Northrup and Shumway (2014) performed a phenomenological study of 10 gamer "widows" (current or former spouses of gaming "addicts"). They reported that their partner changed after becoming addicted to games in that they neglected other responsibilities and became irrationally

angry and defensive when their gaming behavior was challenged. The "widows" also reported feeling deep anger, resentment, and frustration toward their partner concerning their behaviors as well as increased conflicts, financial problems, and reductions in emotional and physical intimacy. Even in non-clinical samples, gamers report losing track of time, obsessive tendencies in play, and/or neglecting important relationships or self-care because of gaming (Griffiths et al., 2011; Hussain & Griffiths, 2009; Oswald et al., 2014).

Importantly, some gaming research has homed in on identifying both the *benefits* and *detriments* of gaming concurrently. In a qualitative study of 71 online gamers (n = 52 men; Hussain & Griffiths, 2009), participants reported that games offer opportunities for social interaction, can promote proficiency with computers, and are an excellent outlet for frustrations and escaping from everyday stressors, while also noting the potential for addictive or problematic play. Wood and colleagues' (2007) examination of 280 adult gamers (n = 202 men) revealed themes of de-stressing and relaxation alongside difficulties in the form of arguments with significant others or missing out on sleep because of gaming. Oswald and colleagues (2014) explored the meanings of gameplay for college students and gamers from online forums (N = 173; n = 101 men). Overall, the participants' perceptions of games were that they stimulated feelings of fun, humor, relaxation, and stress relief as well as frustration, anxiety, and obsessive tendencies. Taken together, these findings indicate that the meaning of gaming includes both benefits and detriments, and these are often experienced in parallel.

Collectively, these studies provide insights into how perceptions of personal gaming behaviors are associated with personal and relational outcomes, but some limitations and opportunities for further development remain. First, many of these studies approach gaming from a clinical perspective on problematic or addictive behavior even though research has highlighted

the two-dimensional reports of gameplay as beneficial *and* detrimental; thus, solely examining perceptions of addiction is too restrictive. Indeed, attitudes towards a variety of experiences are frequently two-dimensional (for review, see Thompson et al., 1995) and can be made up of seemingly contradictory perspectives of positives and negatives. Therefore, it is important to understand gaming from a balanced viewpoint regarding beneficial and detrimental effects simultaneously. Additionally, even the studies of non-clinical samples were frequently drawn from online forums for games. As a result, these findings may not be applicable to community samples of gamers who do not participate with gaming to the same degree (e.g., play excessively, participate in online communities about the game). Second, many of the previous study samples were composed primarily of men, indicating that the results may not be as transferrable to women gamers. Third and finally, none of these studies examined how the perceptions of gaming were associated with quantitative measures of psychosocial functioning. As a result, it is unclear if the beneficial or detrimental consequences reflected in participant reports are statistically associated with validated measures of well-being.

The Current Study

The current study seeks to address these limitations by using a mixed methods approach, combining both quantitative (e.g., latent profile analysis, analysis of variance) and qualitative (e.g., phenomenology) approaches to understand the beneficial and/or detrimental effects of gameplay on psychosocial functioning in a community sample of gamers (54.4% Women). The data for the current study were collected using an *embedded* research design (Maruyama & Ryan, 2014), meaning that though most of the information is quantitative in nature, qualitative prompts were also included to provide more detail concerning participants' experiences.

First, using a latent profile analysis provides an opportunity to explore the emic perspective in that this analytic approach is a participant-oriented strategy for sample clustering and categorization (Nylund-Gibson & Choi, 2018; Petersen et al., 2019). Latent profile analyses enable the identification of latent (i.e., not directly measured or observed) subgroups within a sample based on observed (i.e., directly measured) variables (for review, see Collins & Lanza, 2010). In other words, this analysis prioritizes participant responses, rather than researcher specified criteria, to cluster similar participants together. In this study, latent profile analysis was utilized to cluster participants based on their quantitative perceptions of beneficial and/or detrimental outcomes from gaming. This approach allows for participant clustering based differing patterns of perceptions, which include the potential for participants to view games as beneficial and detrimental in a variety of domains (e.g., personal, relational) simultaneously. Then, a phenomenological approach was used to examine qualitative responses from participants (grouped by their latent profiles) on their perceptions of benefits and/or detriments of gameplay. Finally, an analysis of variance (ANOVA) was used to compare group differences (based on latent profile membership) in quantitatively measured psychosocial outcomes including depressive symptoms, perceived stress, loneliness, life satisfaction, and perceived social support. Accordingly, the following research questions (RQs) were addressed:

- RQ1: In a community sample, are there differing groups of gamers as classified by their perceptions of benefits and/or detriments of gameplay?
- RQ2: In their own words, what are gamers' perceptions of beneficial and detrimental effects of video game play on their personal and relational functioning?
- RQ3: Do gamers with differing perceptions of beneficial and detrimental effects of gameplay vary in their quantitative reports of personal and relational functioning?

Method

Measures

A full list of the items for each measure can be found in Appendix B. Means, standard deviations, and bivariate correlations for the quantitative variables can be found in Table 3.

Latent Class Indicators

Quantitative Perceptions of Positive and Negative Effects of Video Game Use. Four items were created for this study to assess perceptions of positive and negative effects from video game participation. These items allow for the possibility that participants could experience both positive and negative impacts from game engagement in multiple life domains simultaneously; in other words, it was not assumed that these constructs reflect a continuum where the presence of positive effects of game play negate the possibility of negative effects (and vice versa). Respondents indicated their agreement with the following statements: 1) Video games have a *positive effect* on my mental health and general well-being, 2) Video games have a *negative effect* on my mental health and general well-being, 3) Video games have a *positive effect* on my relationships (e.g., friends, family, romantic partners), and 4) Video games have a *negative effect* on my relationships. Participant responses ranged from *strongly disagree* (1) to *strongly agree* (4) for each question. Higher scores indicate greater agreement with each statement. Because there are only two items for each construct (i.e., positive effects, negative effects), reliability is not reported. Responses from these items were used for the latent profile analyses.

Qualitative Responses

Qualitative Perceptions of Positive and Negative Effects of Video Game Use. Qualitative prompts were included after each of the above statements regarding positive and

negative effects of video games on individual and relational well-being. This type of research design is referred to as an embedded approach to mixed methods research (Maruyama & Ryan, 2014), such that the dataset is primarily quantitative in nature but includes qualitative prompts to acquire greater depth regarding participant experiences. This study included four qualitative prompts. Each prompt was optional and asked participants to describe their perceptions of video games as beneficial or detrimental to their personal well-being (e.g., "In your own words, how have video games had a positive effect on your mental health and general well-being?") and their relationships. If participants indicated complete disagreement with the quantitative prompt, a skip logic for the survey was enacted and the participant was not provided with the qualitative prompt. For example, if a participant completely disagreed that games were positive for their mental health and well-being, it did not make sense to then ask the participants to describe how games had been beneficial in these domains. Detailed information on missing data for this measure can be found on Table 4. Responses on these items provide depth and context for describing the participants' experiences and were used for the phenomenological analyses.

Outcome Variables

Depressive Symptoms. Depressive symptoms were measured using the 10-item Center for Epidemiological Studies Depression (CES-D) Scale Short Form (Irwin et al., 1999). Participants were asked to rate their symptoms over the past week on indicators such as, "I felt that everything I did was an effort" and "I was lonely." Participants responded with either a *yes* (1) or *no* (0). Two items were reverse scored because they contraindicated depressive symptoms (e.g., "I was happy" and "I enjoyed life"). Scores for this measure were summed with higher scores indicating more depressive symptoms. This measure has demonstrated good criterion validity and appears to be comparably valid to the larger version of the scale (Irwin et al., 1999).

Additionally, Irwin and colleagues suggest that a score of ≥ 4 may indicate clinically significant depressive symptoms. Accordingly, 38.6% of the sample reported depressive symptoms which may indicate clinical diagnosis of depression.

Perceived Stress. Participants responded to the Perceived Stress Scale Short Form (PSS-4; Warttig et al., 2013) to indicate how frequently they experienced stressful circumstances in the previous month on a scale of *never* (1) to *very often* (4). Examples include, feeling "unable to control important things in your life" and that "difficulties were piling up so high that you could not overcome them." Two items were reverse coded because they contraindicated stressful experiences (e.g., "felt that things were going your way" and "felt confident about your ability to handle your personal problems"). Responses to this measure were averaged to create mean scores with higher values indicating more stress. The PSS-4 has demonstrated adequate reliability ($\alpha = 0.77$; Warttig et al., 2013) and has been recommended for studies where respondent burden prohibits the use of longer scales (Leung et al., 2010).

Loneliness. Loneliness was measured using the Three-Item Loneliness Scale (Hughes et al., 2004). Participants rated how frequently they experienced symptoms of loneliness in their lives on a scale from *hardly ever* (1) to *often* (3). Example items include, "How often do you feel that you lack companionship?" and "How often do you feel left out?" Responses were averaged to create mean loneliness scores with higher values indicating more loneliness. This scale has demonstrated both convergent and discriminant validity (Hughes et al., 2004).

Life Satisfaction. The Single-Item Satisfaction with Life measure has demonstrated good criterion validity compared to longer life satisfaction measures (Cheung & Lucas, 2014) and asks participants to rate how satisfied they are with their life on a scale from *very satisfied* (1) to *very dissatisfied* (4). This measure was reverse coded; higher scores indicated more life satisfaction.

Perceived Social Support. Perceived social support was measured using the 12-item Multidimensional Scale of Perceived Social Support (Zimet et al., 1988). Participants indicated their agreement with statements concerning support from friends, family members, and significant others on a scale from *very strongly disagree* (1) to *very strongly agree* (7). Example items include, "There is a special person around when I am in need" and "I can count on my friends when things go wrong." A mean score was calculated indicating total perceived social support by averaging responses across all items. Higher values indicate higher levels of social support. This scale has demonstrated moderate construct validity (Zimet et al., 1988).

Reflexivity Statement

Qualitative methodology emphasizes that the researcher's experience and biases are inherently related to scientific analysis (Creswell, 2007). A step toward acknowledging this bias is to reflect and describe personal characteristics and experiences that could influence the data interpretation. Therefore, I want to describe some personal aspects that could unintentionally be reflected in this examination. First, I am a 34-year-old, white, middle-class, cis-gender man. These demographic aspects have certainly affected my development and perspectives and can influence my interpretation of data. That being said, I believe my history with gaming is more proximally related to the study at hand. I have been playing video games since some of my earliest memories. I regularly played video games by myself, with friends, and with family members when I was growing up. Games have been an important linking mechanism for me to form and stay connected with my older brother and/or friends who are geographically distant. Therefore, I tend to think of games in a positive light. Yet, I have also experienced negative effects from gaming – namely lost time and the tendency to procrastinate through gaming. I can also recognize the allure of gaming over other hobbies or opportunities for different kinds of

leisure. As such, I recognize that games can be both positive and negative.

Finally, my history with gaming has informed my expectations for how games relate to individual and relational functioning. I have seen media reports and scholarly investigations describe gaming in hyperbolically negative ways (e.g., causing gun violence), and I have heard the cultural narratives of socially awkward gamers who are in a state of arrested development. I do not feel these are accurate representations of my gaming experience. Additionally, I have personally witnessed gaming used to raised millions of dollars for charity and seen how individuals can use gaming to entertain others and create community. As a result, I am skeptical of allegations that gaming is inherently related to poorer outcomes. However, because of the negatives I have personally experienced and witnessed through other mediums (e.g., research), I want to refine understanding of *how* and *when* games are related to beneficial and detrimental outcomes in a systematic and scientific manner. I want to be open to finding the truth but can also recognize that my bias is to see games as a positive force.

To address these potential biases and strengthen the analyses, I utilized a coding team composed of an undergraduate research assistant and an established scholar, both with backgrounds in human development and family science. Coding teams promote diverse perspectives and a collaborative context for processing data to develop meaningful themes.

Plan of Analysis

Descriptive statistics, bivariate correlations, and missingness analyses for the quantitative variables were conducted in SPSS 24. Little's MCAR test (Little, 1988) was used to examine if there were nonrandom patterns of missing data in the outcome variables. Then, a series of latent profile analyses were conducted in Mplus Version 8.4 (Muthén & Muthén, 2017) to address RQ1. In this study, latent profiles were derived from different patterns in the participants'

perceptions of beneficial and detrimental effects of video games on personal and relational functioning. First, a single profile solution was tested to establish baseline levels of each fit index (described below). Then, a two-profile solution was tested and evaluated for improved fit. The process of adding profiles and testing for fit continued until it was apparent that statistical model fit was degrading with the addition of more profiles; in addition to an analysis of the fit indices, these profile structures were simultaneously assessed in light of theoretical and empirical considerations. Model fit statistics included the Akaike Information Criteria (AIC; Akaike, 1974), Bayesian Information Criteria (BIC; Schwarz, 1978), sample size adjusted Bayesian Information Criteria (SABIC; Sclove, 1987), and relative entropy (Ramaswamy et al., 1993). Profile solutions with lower values of the AIC, BIC, and SABIC indicate better fit. Relative entropy ranges from 0 to 1 with higher scores indicating better fit. Finally, the bootstrapped ratio likelihood test (BLRT; Nylund et al., 2007) was used to verify the number of profiles and has demonstrated better performance compared to similar tests (e.g., the Lo-Mendell-Rubin; Nylund et al., 2007). The BLRT verifies the number of profiles by comparing improvements in model fit between the k profile solution and the $k - 1$ profile solution, with a significant p value indicating that the k profile solution is a better fit than the k -1 solution. Then, using the graphing features in Microsoft Excel, the selected profile structure was examined and analyzed.

After each participant was categorized into their latent profile, qualitative responses regarding the beneficial and detrimental effects of video game play were examined using a phenomenological approach to address RQ2. More specifically, these qualitative responses were interpreted by profile; the data from individuals within the same profile were collectively analyzed for qualitative themes. Phenomenology prioritizes an individual's perceptions of meaning in their daily lived experiences (for review, see Daly, 2007). As such, no *a priori*

assumptions were made regarding the specific reports that participants made about the beneficial or detrimental effects of video games on their lives. A modified version of the recommendations laid out by Creswell (2007, p. 159) was performed to conduct the phenomenological analysis:

1) I, alongside a research assistant, read and reread the participants' responses to identify "significant statements." These are statements that describe the participants' perceptions of the benefits and detriments of gaming. Each statement was treated as equally meaningful in the description of the participants' experiences. These statements were identified independently.

2) I and the research assistant suggested themes for each participant's response based on the significant statements. I grouped subthemes together under larger theme headings based on similarities. I consulted with a senior researcher during this process.

3) Themes were described for each qualitative prompt and verbatim examples of participants responses were provided.

4) Then, the textual descriptions (i.e., "what" the participants literally said regarding the effects of video games) were combined with structural descriptions (i.e., "how" the experiences occurred alongside contextual information) to create statements of "essential experience" for each profile group (which are described in the discussion).

Finally, the latent profiles were compared on quantitative measures of well-being (i.e., depressive symptoms, perceived stress, loneliness, quality of life, and perceived social support) to answer RQ3. An analysis of variance (ANOVA) was used to compare group differences on psychosocial outcomes. The significance level for group differences was set at $p < .05$. The discussion section presents key takeaways regarding the integration of the qualitative and quantitative results overall and by profile.

Results

Preliminary Results

Descriptive statistics and bivariate correlations are presented in Table 3. Little's MCAR test (Little, 1988) indicated that the missing data in the outcome variables were missing completely at random, $\chi^2 = 6.49$ (10), $p = .77$. Six participants had missing data on all quantitative measures of positive and negative impacts of gaming. As a result, the final analytic sample was 220 gaming adults.

Latent Profile Analysis Results

First, a single profile solution was examined to establish baseline estimates for the AIC, BIC, and SABIC. Entropy and the bootstrapped ratio likelihood test (BLRT) are not estimated for single profile solutions. Next, a two-profile solution was tested, followed by three-, four-, and five-profile solutions. A full list of the information criteria, entropies, BLRTs, and profile sizes (numbers and percentages) are provided in Table 5. The five-profile solution was rejected because one of the latent profiles contained approximately 7% of the total sample. Recent recommendations are not definitive regarding the appropriate size of subgroups, but several cautions have been issued regarding small subgroups and their interpretability. For example, in a review of common practices for latent profile analyses, Spurk and colleagues (2020) suggest that profiles can be as small as 3% of the total sample, but likely should not contain less than 25 participants. However, they also note that many studies do contain profiles with less than 25 people, and therefore, the percentage cutoff of 3% of the total sample is preferred. In the current study, the smallest subgroup in the four-profile solution contained 23 participants (2 participants less than the recommendation) but was 10% of the total sample (considerably higher than the suggested 3%). The smallest subgroup in the five-profile solution was approximately 7% of the sample but only had 15 participants. Based on recent recommendations and given the relatively

small overall sample size, it was decided that the fifth profile was too small for trustworthy comparison with the other subgroups.

Therefore, the four-profile solution was deemed to be the best fitting solution for the sample. This was based on theoretical and empirical evidence indicating that attitudes towards games are varied and can be positive and negative appraisals simultaneously (Thompson et al., 1995), alongside information criteria, entropy, and the bootstrapped ratio likelihood test. See Figure 5 for a visual representation of the four profiles. To verify the validity of the four-profile solution, post-hoc analyses of variance tests were conducted to evaluate if the mean scores for each indicator were significantly different across the profiles. The Games-Howell post-hoc test was utilized due to heterogeneity of variance. The results indicated that the profiles were significantly different from one another with regard to at least one indicator (see Table 7). These findings suggest that the four profiles are meaningfully different from one another and represent unique subgroups of gamers in this community sample. The four profiles were labeled as follows: 1) *Benefits with Personal Detriments*, 2) *Benefits, Few Detriments*, 3) *Benefits, Very Few Detriments, and 4) More Detriments than Benefits.* Demographic information for each profile group is provided in Table 6.

Profile Descriptions

The first profile identified was *Benefits with Personal Detriments* (n = 25; 11.36% of sample). This group agreed that games were both beneficial *and* detrimental for their mental health and general well-being. They also agreed that games were beneficial for their relationships. This group was an even split between men and women, with one non-binary participant, and was slightly younger than the other three profiles (M age = 30.72 years). Though

this subgroup was mostly White (56%), it had the largest Asian-American and Asian/Pacific Islander population (24%) compared to any other group.

The second profile identified was *Benefits, Few Detriments*, and it was the second largest group with 74 (33.64% of sample) participants. This group agreed that games were relatively beneficial for their mental health, well-being, and relationships. Further, video games seemed to have relatively low levels of perceived detriment on their mental health and well-being or relationships. The participants in this subgroup were 32.05 years old on average, were mostly women (58.1%) and were majority White (83.8%).

Benefits, Very Few Detriments was the third profile identified and was the largest group with 98 participants (44.55% of sample). The participants in this group agreed that video games yielded benefits for their mental health and well-being and were the only group to completely disagree that games had a detrimental effect on this category. They also agreed that video games were beneficial for their relationships with very few perceived relational detriments. The participants of this group were slightly older than the other groups with an average age of 33.52 years and were mostly women (54.1%). Though they were majority White participants (78.6%), they were the only group to have representation in every racial/ethnic category.

The final profile identified was *More Detriments than Benefits*, and it was the smallest group with 23 participants (10.45% of sample). This group was unique in that they were the only respondents to report that gaming was more detrimental than beneficial for their mental health, well-being, and relationships. This subgroup was almost evenly split between the genders but had slightly more men (52.2%) than women and had the least representation among racial/ethnic categories.

Phenomenological Results

For the qualitative analyses, the written responses were grouped together by latent profile, read multiple times, and examined for significant statements. All responses included enough information for significant statements to be identified. As these statements were selected, potential themes were also recorded. Then, potential themes were grouped together into larger themes based on similarities. In the following paragraphs, themes, subthemes, and verbatim participant quotations are provided for each of the four qualitative prompts. *Themes* are capitalized and italicized, and "subthemes" are listed in quotation marks. The most common themes across the profile groups are described, followed by less common and/or unique themes by profile, if available. It should be noted themes do not strictly exclude other concepts or subthemes, but rather, are meant to highlight a specific emphasis or meaning for the participants. For example, there are experiential similarities between playing games for *Stress Relief* and playing games for *Entertainment,* but the emphasis for the former is on video games providing a way to manage stress rather than the fun or entertaining aspects of play described in the latter. Statements of "essential experiences" for each latent profile group are provided in the discussion.

How Have Video Games had a Positive Effect on Your Mental Health and Well-being?

Common Themes Across All Profiles. All four profiles reported that video games were beneficial for their mental health and general well-being through the following themes: *Stress Relief, Cognitive and Emotional Stimulation, Entertainment, and Competence*.

Stress Relief. For all four groups, video games signified a way to "destress," "relax," "release negative emotions," "enjoy 'me' time," "wind down," "zone out," "decompress," and "escape" from daily stressors. Some of these stressors are daily challenges like work or school. Other participants noted that video games were particularly beneficial distractions from their

mental health challenges. This theme was reported by 59% of the sample, making it the most commonly reported theme regarding personal benefits of playing video games.

- "Playing video games is how I unwind. I am a graduate student of advanced age. Sometimes I play video games instead of watching TV. It is relaxing and diverts my mind." (Latent Profile [LP] 3, #152)
- "Video games serve as an outlet for me after stressful, tiring, or boring activities. They often help me relax at the end of the day." (LP4, #64)
- "I suffer from major depression, and without the escapism and mental exercise, I don't know what I would do." (LP1, #31)

***Cognitive and Emotional Stimulation*.** Next, games were perceived as beneficial because they created opportunities for "mental exercise," "fantasy," "creativity," "insight," and "empathy" through "problem-solving," "relatable characters," and "compelling art/stories." This theme was reported by 21% of the sample.

- "There is a lot of research about how reading fiction can make you more empathetic. I believe that could translate to some video games, particularly visual novels. Visual Novels are some of my favorite games and give me the same or sometimes even a greater satisfaction than reading a good book because this story I had some control over, or even was able to see different versions of it…Some games like the Sims can provide a bit of a creative outlet for me…" (LP1, #14)
- "They allow me to rest while still being mentally active which helps my mind stay sharp and learn new things easily…" (LP3, #3)

Entertainment. Put simply, the next theme was about how games are "fun," a "happy place," helpful forms of "recreation," and great ways to avoid "boredom." This theme was reported by 13% of the sample.

- "They make me happy. I have something to look forward to doing all the time." (LP1, #100)
- "I'm not exactly sure, they are fun to play and that makes me happy." (LP3, #171)

Competence. The next theme, reported by 12% of the sample, centered on how games satisfied a desire for "challenge," "accomplishment," "competition," being "productive," and exercising "autonomy."

- "Video games give me an opportunity to engage in recreation that is enjoyable, and just the right amount of challenging so that I am engaged without being overwhelmed. I feel accomplished when I win a game, and honestly a little giddy." (LP4, #74)
- "They provide a challenge outside of real life and you get loads of rewards which makes you feel good when a level is completed." (LP2, #42)

Less Commonly Reported Themes. Participants from all profiles except *More Detriments than Benefits* noted that video games provided a benefit for their *Physical Health.* This theme was reported by 3% of the total sample and included subthemes like "exercise" and being "outside."

- "From a slightly older example, Pokemon Go came out just after I had my second child and right before my older child turned 6. The walking incentives in the game, and the need to go to locations for gyms/stops got us out of the house and walking without complaint every single day. This is important as I was at high risk for both PPD [postpartum depression] and PPA [postpartum anxiety] and the combination of active

engagement, outside activity, and light but productive exercise following birth all help with both PPD and PPA. Ongoing, both walking incentives for Pokemon Go and Harry Potter have me taking long walks (up to 3+ miles a day) with my dog and pre-schooler to meet certain goals." (LP2, #176).

Unique Themes. Variation between the profiles primarily arose from a last theme titled *Other*. These responses were relatively unique with little (if any) replication between and within groups. Of note, three participants in the *Benefits, Few Detriments* profile noted that games provide opportunities to "reset," "refocus," and "reassess" real life challenges.

- "It has helped me escape, temporarily, issues that I have faced in real life. It's also provided me with the opportunity to reassess those situations from a different angle." (LP2, #43)

How Have Video Games had a Negative Effect on Your Mental Health and Well-being?

Common Themes Across All Profiles. This question was unique in that the *Benefits, Very Few Detriments* group uniformly and strongly disagreed that video games had a negative effect on their mental health and well-being. As a result, there is no qualitative data from this group regarding this question. However, there was consistency among the other three profiles on the themes of *Negative Escapism, Compulsive Play*, *Negative Emotional Experiences*, and *Physical Health Impacts.*

***Negative Escapism*.** There were several ways that escapism was described including "avoidance," "procrastination," "neglecting relationships," "neglecting responsibilities," and "maladaptive distraction." These behaviors were often engaged in when participants felt stressed or overwhelmed in their lives, but some noted how this escapism exacerbated their challenges. Additionally, negative escapism had impacts on relationships and work responsibilities. The

theme of negative escapism was reported by 25% of the sample, making it the most frequently reported theme of video games as detrimental to personal well-being.

- "I play video games when I am stressed as a means of procrastination, which only compounds my overall stress." (LP4, #21)
- "I am less likely to want to work at my professional job and forgo extra work to play. I find that I will play during scheduled working hours when I should be working." (LP2, #67)
- "[Video games] keep me home alone when I should be out being social." (LP1, #34)

Compulsive Play. This theme is related to "lost time," "excessive play," and "addictive" aspects of gaming. This theme was reported by 13% of the sample.

- "It is easy to lose much more time than intended in a game and regret how I've spent my time. Feel a compulsion to stay up to date on games and buy games I know I won't play much. And in multi-player games, pressure to improve my skills to be a better teammate, demanding more time than would otherwise spend." (LP2, #32)
- "Sometimes I can play too much. I used to play a game on Facebook called Game of Thrones Ascent and it took up way too much of my time. I felt a little addicted to it." (LP4, #195)

***Negative Emotional Experiences*.** Participants also noted that their individual well-being was negatively affected through increases in "negative mood," "frustration," "anger," and "guilt." Sometimes, gaming also resulted in poorer "mental health." This theme was reported by 10% of the sample.

- "I went through a long period of severe depression that was caused by multiple factors, but spending too much time playing video games was one of them" (LP1, #208).

- "They can cause frustration and anger when unable to beat an objective. As a perfectionist this can happen frequently as game designs are not perfect and can play a role in not completing the objective (e.g., glitch turning in a quest). Also, after turning off the system and coming back to reality, thoughts of how I could have spent my time better run through my mind (e.g., I could have worked out, explored, went hiking). These thoughts feel like a product of spending hours on a game in which I am frustrated and angry." (LP4, #154)

Physical Health Impacts. Seven percent of the sample noted that gaming negatively affected their health through "neglect" and "lack of sleep" as well as a result from frustrating experiences.

- "It's not uncommon to run into hopeless players in video games. The frustration comes when they under-perform tasks/objectives. This is especially true when it's coming from your friends or yourself. It's difficult to [provide constructive] criticism when the adrenaline is high and you prefer not to step on anyone's toes. No one wants to be told that they suck at something, either from others or from themselves. TL;DR [too long; didn't read], I'm prone to migraines, so this type of thinking [frustration at others and self] has especially had a negative impact on my health." (LP1, #8)
- "…Sometimes I lose track of time playing games and delay eating or sleeping at appropriate times." (LP2, #56)

Unique Themes. There was considerable overlap among the profiles regarding the negative impact of gaming on individual well-being. However, two participants from the *More Detriments than Benefits* reported a unique theme of *Prioritizing the Game World Over Real*

Life. Though related to aspects like negative escapism and compulsive play, this theme reflected a sense that it was hard to prefer real life to gaming.

- "Using gaming as an escape from reality was one of the reasons I went from playing several times a week, to maybe once or twice a month. Sometimes games became overstimulating and I found myself needing to replicate the rush of excitement in other aspects of life. This lead to difficulty accepting aspects of reality and to many addictive behaviors." (LP4, #126)

How Have Video Games had a Positive Effect on Your Relationships?

Common Themes Across All Profiles. All four profiles reported that video games had a positive effect on their relationships through the following themes: *Shared Activity and Interest, Bonding and Intimacy, Connections,* and *Games Make it Easier to be Social.*

Shared Activity and Interest. This theme, reported by 42% of the sample, specifically signifies how games were interpreted as a way for people to have "fun together," enjoy "shared topics, interest, activities," have "common ground," and engage in "teamwork." It was the most reported theme regarding playing video games as beneficial for relationships.

- "It's kind of like sharing any other interest. A lot of party games really force you to be close and start inside jokes like the Jackbox Party Packs. Within my relationship with my partner, I get a ton of joy sharing my weirdo indie games with him and he loves that I can sit down and play Call of Duty with him or something similar." (LP3, #85)
- "My romantic partner and I regularly spend time together playing video games. We take time to support one another in game tasks and appreciate the other's accomplishments. Video games keep a playful element in our relationship that can be hard for couples to maintain." (LP4, #74).

Bonding and Intimacy. Though similar to *Shared Activity and Interest* and *Connections* this theme specifically highlights the ways that games have facilitated closer relationships. Subthemes indicate that video games are a way to "bond," develop "intimacy," share "quality time," and "deepen relationships." This theme was reported by 35% of the sample.

- "It strengthens mine and my husband's bond. We play games together and will often share strategies and finds in the game. He and I will often play multiplayer games with his cousin and my brother and it is a good way for us to hang out when we can't be in person." (LP3, #183)
- "Introducing my cousin to Dragon Age Origins helped us be closer than ever before. We hang out because we want to spend time together, but usually our uniting activity is video games…" (LP1, #14)

Connections. This theme reflects how games provide the ability to "connect" and "interact" with other people, especially in the context of "long-distance relationships." Playing games allowed gamers to "stay connected," "keep in touch," "reconnect," and "update" friends and family members. This theme was reported by 20% of the sample.

- "Video games have allowed me to keep in contact with friends from long ago and it has … served as a bridge for me to be able to see them again. My closest group of friends was made to play games, and if it wasn't for that group, I do not believe I would be the person that I am today." (LP2, #86)
- "With my romantic partner, video games are how we stayed together while we were [a] long distance [apart] for education. Our game nights were opportunities for us to talk and spend time together, and made the distance (approx. 1,000 miles) more bearable." (LP3, #206)

Makes it Easier to be Social. For a small percentage of participants (4%), playing video games enabled social interactions. Subthemes include games as "something to focus on," a "distraction that helps with social interaction," and a "platform for relationships." Though comparatively less common than other themes, all four profiles reported this as a relational benefit of playing games, and it seems to represent a meaningful experience in social gaming.

- "Video games can be a platform to connect, a "reason" to converse and interact with each other. Competition and cooperation can function to set people at ease and foster communication, although sometimes conversation never moves beyond the game being played." (LP4, #129)
- "I'm more likely to talk for extended periods of time if I'm also occupied playing a game..." (LP3, #3)
- "My best friend is autistic and her obsession is Pokemon. We play Pokemon together and it helps keep her comfortable with the social interaction." (LP2, #210)

Less Commonly Reported Themes. Two more themes were identified by all but one profile (*Benefits with Personal Detriments*): 1) *Better Individual, Better Relationships*, 2) and *New Relationships and Opportunities*.

Better Individual, Better Relationships. This theme describes how playing games improves "mental health" and "mood" which translates into better relational functioning. This theme was reported by 9% of the sample.

- "It is something I enjoy doing and my wife enjoys reading. I strongly feel everyone should do what they enjoy doing as it makes them an enjoyable person to be around." (LP3, #215)
- "They allow me to recharge and relax making me a better wife and mom." (LP4, #207)

***New Relationships and Opportunities*.** In this theme, playing video games has facilitated "exploration," "new opportunities," and "environments," and chances to "meet new people." This theme was reported by 4% of the total analytic sample.

- "Playing virtual reality games such as Pokémon Go has gotten me out and about like I never had before. Prior to this I only knew the road between my house and my job." (LP2, #67)
- "I've met some of the most kind, generous people through connections forged by video game time." (LP3, #17)

Unique Themes. The *Benefits, Very Few Detriments* subgroup provided the most numerous unique subthemes. Two participants in this profile reported that games assist with "catharsis" and "emotional redirection."

- "I'm not a 'talk out all your problems' kind of guy. Video games have given me a cathartic outlet for my feelings that I then don't take out on my family." (LP3, #186)

How Have Video Games had a Negative Effect on Your Relationships?

Common Themes Across All Profiles. All four profiles reported that games were detrimental for their relationships in ways signifying *Conflict* and *Displacement and/or Disengagement*.

***Displacement and/or Disengagement*.** This theme notes how engagement or time spent in video game play means that time and engagement is not being distributed to other aspects of life. Accordingly, video games were detrimental for relationships when participants experienced a "lack of quality time" or "distance" with others, were "distracted," or "missed out" on social opportunities. This theme was reported by 20% of the sample.

- "Occasionally will skip IRL [in real life] things to play video games, however I will usually play with my online friends causing me to neglect my IRL friends." (LP2, #93)
- "Video / phone games originally bonded my husband and I but after our children were born I stopped playing to raise my kids. He kept playing. Now that my kids are older I often am on my phone playing games instead of spending time with them. We did play Pokémon Go together and I'm trying to get them into Wizards Unite." (LP4, #57)

Conflict. Participants noted that video games had negatively impacted their relationships through experiences such as "short term conflict," "frustration with others," "anger expression," or "damage to marriage." This theme was reported by 14% of the sample.

- "I sometimes disagree with my romantic partner about how much of a priority video game time should be. We have had conflicts because I felt unimportant in comparison to my partner's gaming, or because I felt he was neglecting responsibilities." (LP4, #74)
- "It doesn't happen often, but video games can sometimes be a point of frustration within my marriage. There are times where I chose to play a game and it may not be the best decision at the time. This is mainly brought on by selfishness on my part." (LP2, #130)
- "If my partner or I get upset at the game but speak harshly to each other (when we're playing together), it stings." (LP3, #206)

Unique Themes. Though there were some unique responses, not enough were replicated to qualify as themes.

ANOVA Results

A one way, between groups analysis of variance (ANOVA) was conducted to examine differences in depressive symptoms, perceived stress, loneliness, life satisfaction, and social support between the four profiles. First, a Levene's test was performed and verified that there

was homogeneity in variance between the groups on all five outcome variables. As a result, the Tukey HSD test was chosen for the post-hoc analyses.

Results from the ANOVA indicated that there were significant differences between the profiles on depressive symptoms [$F(3, 206) = 4.98$, $p = .002$], perceived stress [$F(3, 204) = 3.34$, $p = .02$], and loneliness [$F(3, 199) = 5.63$, $p = .001$], but not for life satisfaction [$F(3, 198) = 1.18$, $p = .32$] or social support [$F(3,197) = 1.41$, $p = .24$]. Means, standard deviations, and significant mean differences between profile groups can be found in Table 7. Generally speaking, the *Benefits, Very Few Detriments* profile had the lowest depressive symptoms, perceived stress, and loneliness comparatively, but it is important to note that their reports of depressive symptoms, stress, and loneliness did not significantly differ from the *More Detriments than Benefits* profile, thus indicating some similarity between those two profiles. Regarding depressive symptoms, the *Benefits, Very Few Detriments* profile had significantly fewer depressive symptoms ($M = 2.38$, $SD = 2.42$) than the *Benefits with Personal Detriments* ($M = 4.16$, $SD = 2.72$) and *Benefits, Few Detriments* ($M = 3.52$, $SD = 2.53$) profiles. Regarding perceived stress, the *Benefits, Very Few Detriments* profile had a marginally lower stress ($M = 2.05$, $SD = .68$) than the *Benefits with Personal Detriments* profile ($M = 2.42$, $SD = .74$). Regarding loneliness, the *Benefits with Personal Detriments* group reported significantly more loneliness ($M = 2.03$, $SD = .65$) than both the *Benefits, Very Few Detriments* ($M = 1.52$, $SD = .56$) and *Benefits, Few Detriments* ($M = 1.57$, $SD = .48$) profiles.

Discussion

This study advances the field of video game research in a number of important ways, particularly concerning insights into individual and relational well-being. Regarding the first goal, four distinct subgroups emerged from the data indicating that, within a community sample

of gamers, there were diverse experiences and perceptions regarding the benefits and detriments of gameplay. Based on their reports of how gaming impacted their lives, the profiles were termed (1) *Benefits with Personal Detriments,* (2) *Benefits, Few Detriments,* (3) *Benefits, Very Few Detriments,* and (4) *More Detriments than Benefits.* Of note, this is one of the first studies to utilize a latent profile analysis in adult gamers to examine psychosocial outcomes (also see Demetrovics et al., 2012; Pontes et al., 2014) and may be the first to use both beneficial and detrimental video game perceptions as profile indicators. The second goal was accomplished by utilizing a phenomenological approach to understand the meanings of gameplay as a positive or negative influence on the lives of gamers; most themes emerged across all four profiles, but some unique themes by profile were also identified. Two of the most common beneficial themes across all profiles described how video games were useful to relieve stress and were a shared activity that people could enjoy with their friends, romantic partners, and other family members. Two of the most common detrimental themes across profiles were that games were a maladaptive distraction from life and responsibilities and that time with video games necessarily took the place of alternative opportunities or relationships. Though previous studies have examined gaming experiences from a phenomenological perspective (Northrup & Shumway, 2014), this is one of the first to use a community sample (i.e., is not experiencing pathological or addictive gameplay) with a demographic makeup of nearly half women, compared to samples that are majority men (Hussain & Griffiths, 2009; Wood et al., 2007). Finally, differences between the profiles on validated measures of psychosocial functioning were examined to address the third goal; two profiles, *Benefits, Few Detriments* and *Benefits, Very Few Detriments,* had comparatively fewer indicators of depressive symptoms, stress, and loneliness.

Because of the mixed methods nature of this study, the latent profile and phenomenological analyses provide rich, nuanced detail into how the diverse perceptions and experiences of gamers are associated with psychosocial outcomes. To facilitate this synthesis of the qualitative and quantitative data, the following sections describe the detailed "essential experiences" (Creswell, 2007) of gamers in relation to their psychosocial functioning, providing insights across the whole sample and noting meaningful differences across profiles.

Essential Experiences

Though not reflective of every gamer's individual reports and experiences, the following paragraphs describe themes that were consistently identified across subgroups, unless otherwise specified. For all four profiles, gaming was interpreted as a benefit to their personal well-being and relationships. The themes suggested that gaming was a fun distraction from work, school, or everyday hassles, that provided an opportunity to wind down and destress. Games provided opportunities to feel competent through the accomplishment of in-game challenges, and they were perceived as helpful mediums for mental exercise through utilizing problem-solving skills and creative thinking. Gamers also felt emotionally engaged as they were immersed into rich fantasy worlds filled with interesting, relatable characters.

From a relational perspective, playing video games helped many stay connected with friends and family who lived far away, providing them something to do together or to talk about. Gaming also helped them go deeper in their relationships, strengthening cohesion and intimacy. For some, gaming facilitated social interactions, serving as a helpful point of focus while they talked with others. While true of every profile, the *Benefits, Very Few Detriments* group reported these benefits alongside relatively rare negative experiences. This group did not agree that games had negatively affected their personal well-being and seldom reported that games caused

detrimental neglect or conflict in their relationships. Correspondingly, this group reported generally lower levels of depressive symptoms, stress, and loneliness compared to the other profiles.

For the other three profiles, the benefits of gaming also came with detrimental experiences, although the extent of those experiences varied meaningfully across profiles. Qualitative reports of beneficial and detrimental outcomes occurring in tandem align with previous explorations of gamer's experiences (Hussain & Griffiths, 2009; Wood et al., 2007; Oswald et al., 2014). The participants from the *Benefits, Few Detriments* profile were very similar to the *Benefits, Very Few Detriments* profile regarding relational boons, but experienced fewer personal benefits from gaming. They also indicated that gaming had occasional negative consequences for their personal well-being and relationships; sometimes gaming was used for procrastination and, in other cases, gamers reported playing for longer time periods than intended. Occasionally, video games would cause frustration or anger when competitions were lost or gaming challenges were not completed. Also, there was an acknowledgement that time spent playing video games could not be invested in other areas of life, which sometimes caused relational issues. However, on the whole, those in the *Benefits, Few Detriments* profile reported that games were mostly beneficial, and experienced comparatively low stress and loneliness.

The *Benefits with Personal Detriments* group rarely felt that games negatively impacted their relationships but did report several problems with personal well-being. Games seemed to be a maladaptive distraction from life and responsibilities which caused members of this profile to lose time. The compulsion to play was difficult to resist, sometimes at the cost of getting adequate sleep. Though they reported the occasional relational conflict or disengagement with others, these experiences were relatively rare, especially compared to the much more often

reported detriments to personal well-being. This group generally reported higher levels of depressive symptoms, stress, and loneliness comparatively.

Gamers in the *More Detriments than Benefits* profile were the only participants to report that games had more negative than positive effects on their personal and relational well-being. They reported the same kinds of benefits as every other group, but more strongly agreed with the negative experiences. For these participants, games could be a compulsive time sink and when used as a distraction, stress in real life got worse. They were the only profile to report that sometimes real life was harder to prefer over the gaming world. Games also resulted in displaced time, disengagement from others, conflicts, misunderstandings, and damage to their close relationships. Counterintuitively, this profile did not report different levels of depressive symptoms, perceived stress, or loneliness compared to any other subgroup, reporting generally poorer outcomes than the *Benefits, Very Few Detriments* and *Benefits, Few Detriments* gamers but better outcomes than the *Benefits with Personal Detriments* gamers.

Notably, significant differences emerged across the profiles on the three indicators of poor psychological functioning (i.e., depressive symptoms, stress, and loneliness), but no differences emerged regarding the indicators of well-being, specifically, life satisfaction and social support. Further research is needed to examine this discrepancy, but it may correlate with the fact that all four profiles identified some personal and relational benefits of gaming.

Symbolic Interactionism, Role Conflict, and the Negative Effect of Ambivalence

Though no a priori assumptions were made about which profiles would experience poorer psychosocial outcomes, it makes intuitive sense that the *Benefits, Very Few Detriments* group reported generally better psychosocial outcomes compared to the other profiles.[3] The reasons for

[3] The description of these findings in "general" terms is for the purpose of narrative simplicity but is not meant to overstate or ignore the nuanced findings already discussed in the results and discussion thus far.

this may be that they experienced internal harmony in the role of being an adult gamer. As a reminder, symbolic interactionism (Stryker, 1980) highlights how individuals can be pulled between "playing a role" (i.e., performance which aligns with current sociocultural expectations) and "making a role" (i.e., behaving in a manner incongruent with current sociocultural expectations), and conflict between these two role performances can create internal distress. Therefore, gamers in the *Benefits, Very Few Detriments* profile may have experienced the least internal conflict related to gaming as an adult and reported generally better psychosocial outcomes. This may also explain why the *Benefits with Personal Detriments* profile and, to some extent the *More Detriments than Benefits* profile, reported generally poorer psychosocial outcomes. These groups may have experienced role conflict due to similar perceptions of beneficial and detrimental gaming experiences and felt distressed by the ambivalent meaning that gaming represented in their lives. Though commonly mistaken for indifference, attitudinal ambivalence occurs when an individual holds strong, but conflicting viewpoints towards the same object (e.g., person, symbol, activity) and it has been linked with negative affect, and thereby poorer outcomes (for review, see Rothman et al., 2017; van Harreveld et al., 2009). Therefore, gamers that simultaneously feel that gaming is good and bad for them may feel internal strain and ambivalence towards gaming which is realized through poorer psychosocial symptoms. However, more research is needed to replicate these findings to elucidate the mechanisms at work between gamers' attitudes and their personal and relational well-being.

Implications

The current work presents some key implications for practical, clinical, and empirical use. Given the unique demands of young-to-middle-aged adulthood (Elder, 1977), particularly regarding romantic and familial connections, it is important for adult gamers to incorporate

gaming in a manner harmonious with their other roles and responsibilities. Accordingly, for those who perceive similarly high levels of benefits and detriments from gaming, it may be helpful to examine and resolve ambivalent attitudes towards this recreational activity. For some gamers, this ambivalence may be resolved by reducing video game play or replacing it with a leisure pursuit that produces less internal conflict with their other roles and responsibilities. However, most participants in this study reported beneficial experiences from gaming and may wish to address their ambivalence while continuing to play. Alternative methods for addressing ambivalence around gaming may be especially important in a world affected by COVID-19, given the widespread lockdowns which limited opportunities for leisure experiences outside of the home. It is possible that gaming became an even more valuable way to destress and socially connect with others that could not be seen face to face during the pandemic. Therefore, it is important to address attitudinal ambivalence for those who wish to continue playing or are unable to participate in other forms of recreation due to extenuating circumstances. A simple behavioral step would be to identify when and how games create negative outcomes (e.g., when used to avoid responsibilities, in excess, or at the expense of important relationships) and taking steps to specifically address those scenarios. Others may benefit from utilizing mindfulness to tolerate attitudinal ambivalence around gaming. For example, Haddock and colleagues (2017) found that practicing mindfulness buffered the association between attitudinal ambivalence and negative feelings, serving as a protective factor. Additionally, assuming a non-judgmental stance during mindful practice has been linked to lower depression and stress (Cash & Whittingham, 2010). Therefore, gamers who learn to tolerate ambivalent attitudes around this leisure experience may buffer themselves against negative psychosocial effects.

Regarding clinical work, interventionists may benefit from using a structural therapy model (Minuchin, 1974) to examine and rebalance boundaries between gaming, work, and social relationships, particularly for those who report disengagement from other aspects of life because of gaming. From a research perspective, it is important to recognize that for most of the participants, gaming represented a largely positive effect on their lives. As a result, it is recommended that research be tailored around the potential for positive and negative outcomes simultaneously. It is also important to incorporate more opportunities to hear directly from gamers in research ostensibly designed to describe their experiences. Finally, the current study suggests that more mixed methods analyses of gaming adults are warranted to replicate and extend findings that provide rich detail in understanding gamers' experience and provide helpful implications.

Limitations and Future Directions

This study contributes to the literature in several ways, but there are some notable limitations to be aware of when interpreting and applying the findings. First, though it was a novel approach to use gamers' perceptions as indicators for latent profiles, the questions utilized for that purpose were created for this study and have not been psychometrically validated. Additionally, the sample was strengthened by representing a community population of nearly half women, but it was also comparatively small for use in a latent profile analytical approach. Recent recommendations (Spurk et al., 2020) indicate a general standard of 500 participants. However, this standard was arrived at through a median estimate based on sample sizes used in previous latent profile analyses, some of which had considerably smaller samples (e.g., $N = 131$) than the one used in the current study ($N = 220$). Because the profiles discussed in this examination displayed good differentiation based on established fit criteria, and because post-hoc

analyses revealed significant differences between groups on the indicators and psychosocial outcomes, this sample demonstrated good evidence for profile validation. However, replication in larger samples with validated measures of attitudes that can be applied to video game contexts would help establish potential subpopulations. Additionally, due to the convenience sampling techniques, it is difficult to rule out concerns regarding interdependence in the data. Future studies would benefit from intentionally collecting data from multiple reporters within families and romantic relationships and examining this information in a manner which accounts for interdependence. Secondly, the methods for the phenomenology were adapted from Creswell's (2007) recommendations, but there are some notable differences between this study and typical phenomenological analyses. Namely, the qualitative data for this study were short responses in an online survey, as opposed to in-depth interviews with more contextual detail. Although several of the themes identified in the current study match findings from previous works (Hussain & Griffiths, 2009; Wood et al., 2007), some themes may not be fully representative of gamers' experiences due to lack of information. Thirdly, it is hypothesized that negative psychosocial outcomes are the result of ambivalence in gamers' attitudes, but this was not specifically measured. Future work including distress caused by such ambivalence as a mediator may help explain these associations. Finally, due to the cross-sectional nature of the study, perceptions of the benefits and detriments of gaming may be the product of poorer psychosocial functioning, rather than the outcome. Studies that utilize longitudinal data and analytical designs (e.g., growth mixture modeling) examining the links between attitudes and psychosocial outcomes are needed to verify causal hypotheses.

Conclusion

This findings from the current study highlight the potential importance of perceptions and attitudes in understanding how video games are related to psychosocial functioning. Gamers with more positive perceptions of gaming tended to report better psychosocial health. This is one of the first gaming studies to utilize a mixed methods analytical design and demonstrates how combining quantitative and qualitative data yields a more complete picture of gamers' experiences and outcomes than one methodological approach could provide alone.

Table 3

Means, Standard Deviations, and Bivariate Correlations for Study 2 (N = 226)

Variable		1	2	3	4	5	6	7	8	9	10	11
1	Age	1.00										
2	Income	.43***	1.00									
3	Personal Benefit	-.01	-.01	1.00								
4	Relational Benefit	-.14*	-.02	.36***	1.00							
5	Personal Detriment	-.10	-.08	-.45***	-.15*	1.00						
6	Relational Detriment	.10	-.02	-.27***	-.32***	.50***	1.00					
7	Depressive symptoms	-.10	-.12	-.05	.03	.21**	.10	1.00				
8	Perceived Stress	-.14*	-.20**	-.13	.05	.21**	.12	.54***	1.00			
9	Loneliness	-.19**	-.22**	-.04	-.02	.20**	.07	.53***	.53***	1.00		
10	Life Satisfaction	.02	.14	.01	.03	-.04	-.01	-.49***	-.58***	-.50***	1.00	
11	Social Support	.06	.15*	-.06	.10	-.10	-.03	-.42**	-.36***	-.51***	.43***	1.00
Range		19-69	1-5	1-4	1-4	1-4	1-4	0-10	1-4	1-3	1-4	1-7
Mean		32.6	2.88	3.22	2.99	1.78	1.61	3.03	2.19	1.61	1.73	5.55
SD		8.78	1.27	.70	.75	.81	.80	2.51	.66	.56	.66	1.12

Note: "Personal" refers to the participants' mental health and general well-being. "Relational" refers to the participants' relationships.

†$p < .10$. *$p < .05$. **$p < .01$. ***$p < .001$.

Table 4

Present and Missing Qualitative Responses for Positive and Negative Perceptions of Video Gameplay

Prompt	Data Present (*n*)	Skipped Qualitative Prompt (*n*)	Truly Missing Data (*n*)
Positive Effects on…			
Mental Health & Well-Being	187	34	5
Relationships	180	39	7
Negative Effects on…			
Mental Health & Well-Being	98	96	32
Relationships	76	119	31

Note: Qualitative prompts were skipped for participants who indicated complete disagreement with the associated quantitative prompt.

Table 5

Fit Indices for the Latent Profile Models Based on Positive and Negative Perceptions of Gaming on Mental Health, Well-being, and Relationships (N = 220 Gamers from a Community Sample)

Model	AIC	SABIC	Entropy	BLRT	Profiles: *n*, %
1 Profile	1993.061	1994.56	N/A	N/A	1. *n* = 220, 100%
2 Profile	1864.81	1867.73	.77	$p < .001$	1. *n* = 164, 74.55%
					2. *n* = 56, 25.46%
3 Profile	1432.30	1436.35	.97	$p < .001$	1. *n* = 99, 45.00%
					2. *n* = 73, 33.18%
					3. *n* = 48, 21.82%
4 Profile	**1408.23**	**1413.40**	**.95**	$p < .001$	**1. *n* = 25, 11.36%**
					2. *n* = 74, 33.64%
					3. *n* = 98, 44.55%
					4. *n* = 23, 10.46%
5 Profile	1380.50	1386.79	.93	$p < .001$	1. *n* = 15, 6.82%
					2. *n* = 83, 37.73%
					3. *n* = 22, 10.00%
					4. *n* = 26, 11.82%
					5. *n* = 74, 33.64%

Note: **Bolded text indicates the selected profile solution**; AIC = Akaike Information Criterion; SABIC = Sample Size Adjusted Bayesian Information Criterion; BLRT = Bootstrap Likelihood Ratio Test; N/A = not available.

Table 6

Demographic Characteristics for Each Latent Profile Group

	Benefits with Personal Detriments (*N* = 25)	**Benefits, Few Detriments (*N* = 74)**	**Benefits, Very Few Detriments (*N* = 98)**	**More Detriments than Benefits (*N* = 23)**
	M (*SD*) *n* (%)	*M* (*SD*) *n* (%)	*M* (*SD*) *n* (%)	*M* (*SD*) *n* (%)
Age	30.72 (9.33)	32.05 (7.22)	33.52 (9.61)	33.26 (8.88)
Gender				
Men	12 (48%)	31 (41.9%)	45 (45.9%)	12 (52.2%)
Women	12 (48%)	43 (58.1%)	53 (54.1%)	11 (47.8%)
Non-Binary	1 (4%)	N/A	N/A	N/A
Race/Ethnicity				
African American/ Black	2 (8%)	2 (2.7%)	5 (5.1%)	N/A
Asian-American	4 (16%)	2 (2.7%)	4 (4.1%)	N/A
Asian/Pacific Islander	2 (8%)	2 (2.7%)	3 (3.1%)	1 (4.3%)
Bi-Racial	2 (8%)	1 (1.4%)	3 (3.1%)	3 (13%)
White	14 (56%)	62 (83.8%)	77 (78.6%)	19 (82.6%)
Hispanic/LatinX	1 (4%)	3 (4.1%)	3 (3.1%)	N/A
Native American	N/A	N/A	2 (2%)	N/A
Other	N/A	2 (2.7%)	1 (1%)	N/A
Student				
Yes	7 (28%)	17 (23%)	20 (20.4%)	6 (26.1%)
No	18 (72%)	57 (77%)	78 (79.6%)	17 (73.9%)
Employment				
Unemployed/in school	2 (8%)	1 (1.4%)	7 (7.1%)	3 (13%)
Unemployed/no school	N/A	3 (4.1%)	5 (5.1%)	N/A
Part-time employment	4 (16%)	15 (20.3%)	14 (14.3%)	3 (13%)
Full-time employment	15 (60%)	41 (55.4%)	61 (62.2%)	13 (56.5%)
Self-employed	2 (8%)	8 (10.8%)	7 (7.1%)	2 (8.7%)
Retired	N/A	1 (1.4%)	2 (2%)	N/A
Other	2 (8%)	5 (6.8%)	2 (2%)	2 (8.7%)
Income				
Less than $10,000	7 (28%)	15 (20.3%)	14 (14.3%)	5 (21.7%)
$10,000 –$ 29,999	5 (20%)	11 (14.9%)	23 (23.5%)	3 (13%)
$30,000 – $59,999	6 (24%)	25 (33.8%)	26 (26.5%)	8 (34.8%)
$60,000 - $99,999	4 (16%)	16 (21.6%)	20 (20.4%)	5 (21.7%)
$100,000 or more	3 (12%)	7 (9.5%)	15 (15.3%)	2 (8.7%)
Relationship Status				
Single	10 (40%)	15 (20.3%)	22 (22.4%)	2 (8.7%)
Dating/Married	13 (52%)	58 (78.3%)	79 (73.5%)	21 (91.3%)
Divorced/Separated/Widowed	2 (8%)	1 (1.4%)	4 (4.1%)	N/A

Table 7

ANOVA Results for Latent Profile Indicators and Outcome Variables

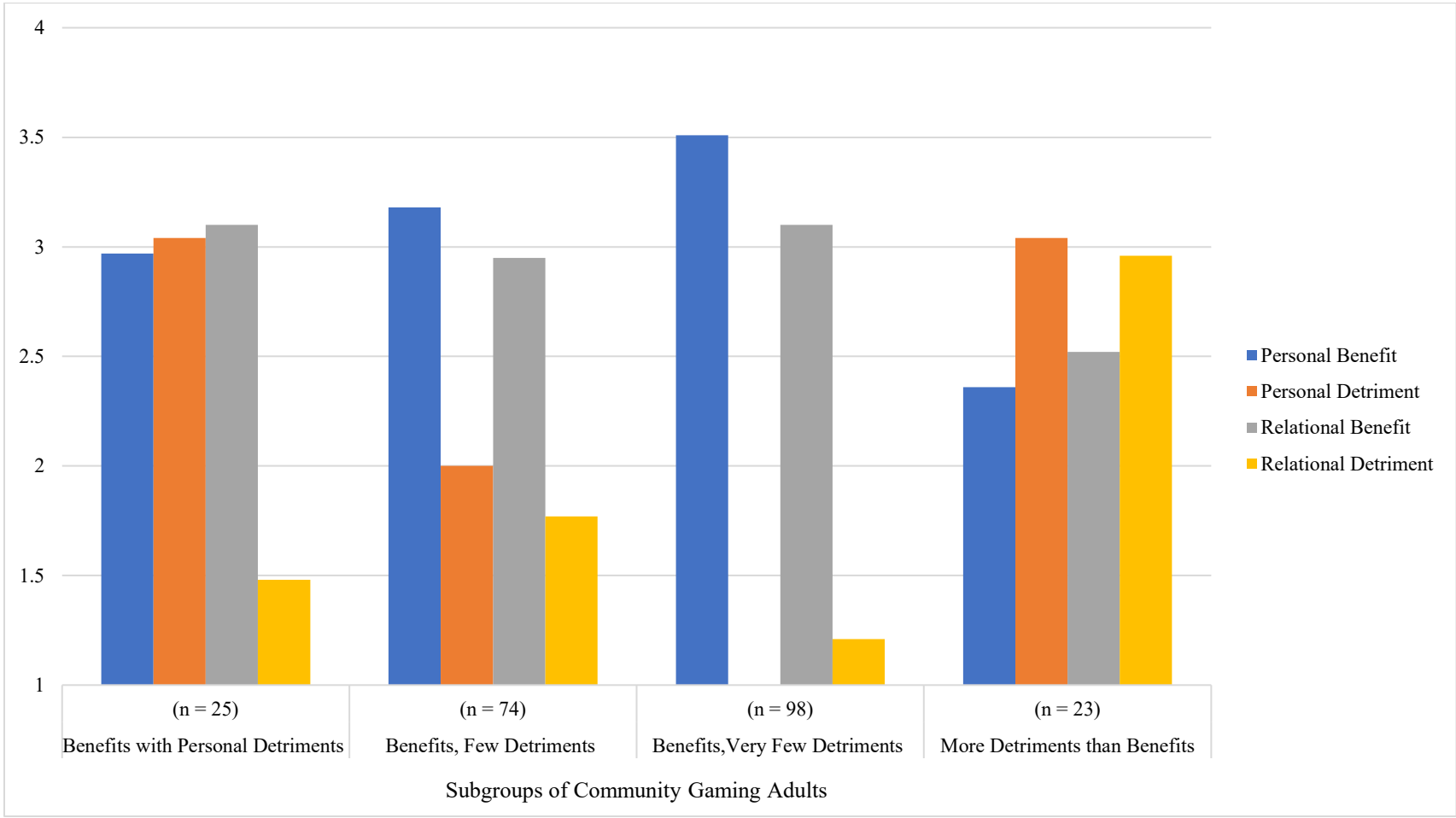
Variable	**Profile 1** *Benefits with Personal Detriments M (SD)*	**Profile 2** *Benefits, Few Detriments M (SD)*	**Profile 3** *Benefits, Very Few Detriments M (SD)*	**Profile 4** *More Detriments than Benefits M (SD)*	*F*	*p*
Latent Profile Indicators						
Personal Benefit	2.96 (.61) [a,b]	3.18 (.53) [c,d]	3.52 (.61) [a,c]	2.35 (.78) [b,d]	25.56	.000
Relational Benefit	3.12 (.60) [a]	2.95 (.66) [b]	3.10 (.84) [c]	2.48 (.59) [a,b,c]	4.84	.003
Personal Detriment	3.04 (.20) [a,b]	2.00 (.00) [a,c]	1.00 (.00) [b,d]	3.05 (.21) [c,d]	5000.36	.000
Relational Detriment	1.48 (.51) [a]	1.76 (.65) [b,c]	1.21 (.56) [b,d]	3.05 (.58) [a,c,d]	60.87	.000
Outcome Variables						
Depressive Symptoms	4.16 (2.72) [a]	3.52 (2.53) [b]	2.38 (2.42) [a,b]	3.09 (1.90)	4.98	.002
Perceived Stress	2.42 (.74) [†]	2.25 (.58)	2.05 (.68) [†]	2.39 (.59)	3.34	.020
Loneliness	2.03 (.65) [a,b]	1.57 (.48) [a]	1.52 (.56) [b]	1.62 (.51)	5.63	.001
Life Satisfaction	3.04 (.81)	3.32 (.53)	3.28 (.72)	3.35 (.49)	1.18	.321
Social Support	5.13 (1.08)	5.56 (1.13)	5.65 (1.17)	5.65 (.83)	1.41	.241

Note: "Personal" refers to the participants' mental health and general well-being. "Relational" refers to the participants' relationships.

Means in the same row with the same superscripts differ significantly at $p \leq .05$ except for †$p \leq .10$.

Figure 5

Four Profile Solution of Positive and Negative Perceptions of Gaming on Mental Health, Well-being, and Relationships



Note: "Personal" refers to the participants' mental health and general well-being. "Relational" refers to the participants' relationships.

Chapter 4

General Discussion

The purpose of this dissertation was to advance the video game literature, specifically regarding the role of gaming in individual and relational functioning from a human development perspective. Two investigations of video game engagement were conducted which both utilized the Study of Electronic Gaming in Adults (SEGA) dataset, a community sample of young-to-middle-aged adult gamers in the United States (U.S.). The first study used structural equation modeling to examine the interactions between motivations for play, social gaming, and coping behaviors to understand their association with psychosocial distress. The second study implemented a latent profile analysis to distinguish subgroups of gamers based on their perceptions of benefits and detriments derived from gameplay. Then, utilizing a mixed methods approach, a phenomenological analysis provided rich detail about their specific experiences. Key findings from these studies are highlighted below.

Study 1: Coping Behaviors as Moderators of the Association between Gaming Motivations and Social Context with Individual Psychosocial Distress

- The links between diversion motivated gaming and greater psychosocial distress are amplified when gamers practice more self-distraction coping behaviors outside of gaming contexts.
- Active coping was associated with lower psychosocial distress but did not interact with diversion motivated gameplay to impact psychosocial outcomes.
- Nuanced findings between fantasy motivation, social interaction motivation, and social gaming with individual psychosocial outcomes (e.g., depression, stress) warrant further examination.

Study 2: “Playing Video Games Is How I Unwind”: A Mixed Methods Analysis Examining Positive and Negative Perceptions of Video Games on Adult Gamer’s Individual and Relational Well-Being

- Multiple, unique subgroups of gamers were identified based on differences in perceived benefits and detriments of gameplay.
- Specific gameplay benefits reported by most gamers included stress relief, entertainment, and shared experiences with friends and family that deepened connections. Specific detriments included maladaptive distraction, compulsion to play, and conflicts in close relationships.
- The subgroups reported meaningfully different experiences in a variety of psychosocial outcomes (e.g., depressive symptoms, perceived stress). Specifically, profiles who reported more benefits and less detriments generally experienced better outcomes.

These studies can be synthesized and interpreted together utilizing the bioecological model human development (Bronfenbrenner & Morris, 2007; Rosa & Tudge, 2013). According to this theoretical perspective, game engagement is considered a proximal process (i.e., the main drivers of human development) in that video game usage reflects an ongoing, systematic interaction between an individual and their environment that is positioned to shape aspects of development and functioning (e.g., depressive symptoms, stress, loneliness, life satisfaction). As proximal processes, the strength and direction of effect are determined, in part, by individual characteristics (Bronfenbrenner & Morris, 2007; Rosa & Tudge, 2013). In the two studies presented, the individual characteristics of motivations for play, coping behaviors, and attitudes toward video games all demonstrated significant and meaningful influences on how gaming was

associated with psychosocial functioning. Additionally, these examinations took developmental stage into consideration by studying young-to-middle-aged adults, one of the largest (ESA, 2019), but least studied populations of gamers. Beyond novelty, studying the associations between gaming and psychosocial functioning produces important implications not just for the individuals involved, but also their social and familial connections. As emerging evidence demonstrates connections between multiple facets of game engagement and individual adult outcomes, it is important to expand the scope of study to understand the influences of gameplay on relationships and families.

The Impacts of Gaming on Individuals and Families

Gaming has at least two notable pathways for influencing family development and well-being. The first pathway concerns the potential for games to affect individual psychosocial functioning (as described in the studies conducted here). Developmental perspectives, such as life course theory (Elder, 1977) and family systems theory (Becvar & Becvar, 2000), describe interdependence as a key aspect of family functioning. Interdependence emphasizes bidirectional interactions between individuals and subsystems to understand individual and relational development in the broader family system context. Therefore, interdependence indicates that changes in individuals can produce differential outcomes in the family system, suggesting a mediating effect of gaming and family well-being through individual functioning. Although the current studies did not explore such a proposed mediational or indirect link, they did examine associations between gaming and individual psychosocial outcomes, further establishing the connection between gaming and outcomes that are important to consider for relational well-being (e.g., mental health, social support).

The second pathway is through gaming as a relational or family activity. The ecology of family experiences framework (Melton et al., 2020) was designed to explain how family and leisure activities interact to create individual and family outcomes. According to this framework, family leisure experiences can result in immediate responses, including positive and negative thoughts and emotions, as well as longer-term implications for the family through shared memories and meaning making. Estimates from the Entertainment Software Association (2019) indicate that 57% of American parents play video games with their children at least once a week, positioning gaming as a family leisure activity that is likely already resulting in positive and negative outcomes for family members. Gaming is also a context where romantic partners participate together, although less data are available to specifically indicate how frequently this occurs (Yee, 2006; Ahlstrom et al., 2012). Because of the increasing popularity of gaming and the ways that game engagement is related to individual and family development and well-being, it is vital to refine our collective understanding of how games are associated with beneficial and detrimental outcomes for families.

Future Directions

Next steps for this area of study include replication in larger, more diverse samples and gathering data from multiple informants via longitudinal designs. Though it is comparatively rare to see community datasets of gamers that include a proportional number of men and women, this dataset still contains an ethnically homogeneous sample of gaming adults. Furthermore, with the advent of the COVID-19 pandemic, it is possible that video games became more salient in the daily lives of gamers and their families for enhancing personal well-being and facilitating social connections through online play. Therefore, retrospective and prospective data collected from samples of gamers post-pandemic is a necessary next step in understanding the role of gameplay

in our daily lives. Additionally, as gaming becomes a domain of study within the context of relationships and families, information from multiple informants is needed to better capture the interdependent interactions of gamers within families and families that game together, as well as family level outcomes (e.g., cohesion, conflict management, attachment). The ecology of family experiences framework (Melton et al., 2020) could be an ideal theoretical perspective for such examinations. Finally, longitudinal data are needed to better understand causal mechanisms between gameplay and individual and relational functioning. In an example using findings from the first study, designs that include multiple time points for data collection and employ cross-lagged analyses could illuminate potential cycles of causality between gaming motivations, coping behaviors, and psychosocial distress.

Conclusion

As video games become a more ubiquitous aspect of daily life for more and more individuals (Clement, 2021b) and demonstrate clear associations between real and perceived personal and relational outcomes, furthering knowledge on gaming for individuals and families will be a particularly fruitful and helpful research endeavor.

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Appendix A – Measures for Study 1

Video Game Uses and Gratifications Instrument (Sherry et al., 2006)

Scale:
7 pt. Likert (1-7)

- Strongly Disagree = 1
- Moderately Disagree = 2
- Disagree a Little = 3
- Neither Agree nor Disagree = 4
- Agree a Little = 5
- Moderately Agree = 6
- Strongly Agree = 7

Please, indicate the response that best describes your experience when playing video games.

Subscales	**Alpha**	**Items**
Competition	.86	I like to play to prove to my friends that I am the best.
		When I lose to someone, I immediately want to play again in an attempt to beat him/her
		It is important to me to be the fastest and most skilled person playing the game.
		I get upset when I lose to my friends.
Challenge	.80	I feel proud when I master an aspect of a game.
		I find it very rewarding to get to the next level.
		I play until I complete a level or win a game.
		I enjoy finding new and creative ways to work through video games.
Social Interaction	.81	My friends and I use video games as a reason to get together.
		Often, a group of friends and I will spend time playing video games.
Diversion	.89	I play video games when I have other things to do.
		I play video games instead of other things I should be doing.
Fantasy	.88	I play video games because they let me do things I can't do in real life.
		Video games allow me to pretend I am someone/somewhere else.
		I like to do something that I could not normally do in real life through a video game.
		I enjoy the excitement of assuming an alter ego in a game.
Arousal	.85	I find that playing video games raises my level of adrenaline.
		Video games keep me on the edge of my seat.
		I play video games because they stimulate my emotions.
		I play video games because they excite me.

Family Leisure Activity Profile (Zabriski & McCormick, 2001)

Individual Play

Do you ever play video games by yourself? In other words, do you ever play video games while **physically** alone, or without using online social platforms (e.g., Console Party Chat/Discord/Skype/etc.) or in-game chatting features?

- Yes = 1
- No = 2

Skip: If No is selected, skip to end of block

How often do you play video games by yourself?

- At least daily = 1
- At least weekly = 2
- At least monthly = 3
- At least annually = 4

When you play video games by yourself, about how long are your play sessions?

- Less than 1 hour = 1
- 1-2 Hours = 2
- 2-4 Hours = 3
- 4-8 Hours = 4
- 8+ Hours = 7

How satisfied are you with playing video games by yourself?

- Very dissatisfied = 1
- Somewhat dissatisfied = 2
- Neutral = 3
- Somewhat satisfied = 4
- Very satisfied = 5

Play with Family Members

Do you play video games with a family member (e.g., parent, sibling, cousin, kid)? For the purposes of this question, **do not include** romantic partners. This can include cooperation and/or competition, and can be while in the same room, or through an internet connection (e.g., Console Party Chat/Discord/Skype/etc.).

- Yes = 1
- No = 2

Skip: If No is selected, skip to end of block

How often do you play video games with a family member?

- At least daily = 1
- At least weekly = 2
- At least monthly = 3
- At least annually = 4

Which family members do you play with? Select all that apply.

- Parents = 1
- Siblings = 1
- Cousins = 1
- Your children = 1
- Extended family = 1

Note: Because more than one can be selected, each option is listed as a one in SPSS

When you play video games with your family members, about how long are your play sessions?

- Less than 1 hour = 1
- 1-2 Hours = 2
- 2-4 Hours = 3
- 4-8 Hours = 4
- 8+ Hours = 5

How satisfied are you with playing video games with your family members? (circle one)

- Very dissatisfied = 1
- Somewhat dissatisfied = 2
- Neutral = 3
- Somewhat satisfied = 4
- Very satisfied = 5

Play with Friends

Do you play video games with friends? This can include cooperation and/or competition, and can be while in the same room, or through an internet connection (e.g., Console Party Chat/Discord/Skype/etc.)? For the purposes of this question, **do not include** romantic partners or family members that you may also consider yourself "friends" with.

- Yes = 1
- No = 2

Skip: If No is selected, skip to end of block

How often do you play video games with your friends?

- At least daily = 1
- At least weekly = 2
- At least monthly = 3
- At least annually = 4

When you play video games with your friends, about how long are your play sessions?

- Less than 1 hour = 1
- 1-2 Hours = 2
- 2-4 Hours = 3
- 4-8 Hours = 4
- 8+ Hours = 5

How satisfied are you with playing video games with your friends?

- Very dissatisfied = 1
- Somewhat dissatisfied = 2
- Neutral = 3
- Somewhat satisfied = 4
- Very satisfied = 5

Play with Romantic Partners

Do you play video games with your romantic partner? This can include cooperation and/or competition, and can be while in the same room, or through an internet connection (e.g., Console Party Chat/Discord/Skype/etc.).

- Yes = 1
- No = 2

Skip: If No is selected, skip to end of block

How often do you play video games with your romantic partner?

- At least daily = 1
- At least weekly = 2
- At least monthly = 3
- At least annually = 4

When you play video games with your romantic partner, about how long are your play sessions?

- Less than 1 hour = 1
- 1-2 Hours = 2
- 2-4 Hours = 3
- 4-8 Hours = 4
- 8+ Hours = 5

How satisfied are you with playing video games with your romantic partner?

- Very dissatisfied = 1
- Somewhat dissatisfied = 2
- Neutral = 3
- Somewhat satisfied = 4
- Very satisfied = 5

Brief Coping Orientation to Problems Experienced (Carver, 1997)

Scale: 3 pt. Likert Scale

- I haven't been doing this at all = 1
- I've been doing this sometimes = 2
- I've been doing this a lot = 3

We are interested in how people respond when they confront difficult or stressful events in their lives. There are lots of ways to try to deal with stress. These statements are examples of what people do to manage or cope with stressful events. Obviously, different events bring out somewhat different responses, but think about what you usually do when you are under a lot of stress.

Subscales	**Alpha:**	**Items**	
Active Coping	α =.68	1.	I've been concentrating my efforts on doing something about the situation I'm in
		2.	I've been taking action to try to make the situation better
Humor	α =.73	9.	I've been making jokes about it
		10.	I've been making fun of the situation
Using Emotional Support	α =.71	13.	I've been getting emotional support from others
		14.	I've been getting comfort and understanding from someone
Using Instrumental Support	α =.64	15.	I've been trying to get advice or help from other people about what to do
		16.	I've been getting help and advice from other people
Self-Distraction	α =.71	17.	I've been turning to work or other activities to take my mind off things
		18.	I've been doing something to think about it less, such as going to the movies, watching TV, reading, daydreaming, sleeping, or shopping

10-item Center for Epidemiological Studies Depression (CES-D) Scale Short Form (Irwin et al., 1999)

Please read the following statements, and indicate if you agree with each statement regarding your experiences in the **past week**. Please, mark your agreement as either True or False.

Dichotomous scale (Yes/No Responses)

- Yes = 1
- No = 2 (recoded to 0)

Items: (α = .92)

1. I felt depressed
2. I felt that everything I did was an effort
3. My sleep was restless
4. I was happy
5. I felt lonely
6. People were unfriendly
7. I enjoyed life
8. I felt sad
9. I felt that people disliked me
10. I could not get going

Reverse Coding: 4 and 7 are reverse coded

Perceived Stress Scale Short Form (PSS-4; Warttig et al., 2013)

Never = 1
Almost Never = 2
Fairly Often = 3
Very Often = 4

We would like to get some information about how stressful things have been lately for you. Please carefully read each item in the list. Indicate your experience by clicking the response you feel is most appropriate.

Items:

1) In the last month how often have you felt you were unable to control the important things in your life?
2) In the last month how often have you felt confident about your ability to handle your personal problems? – *Reverse Scored*
3) In the last month how often have you felt that things were going your way? – *Reverse Scored*
4) In the last month how often have you felt difficulties were piling up so high that you could not overcome them?

Three-Item Loneliness Scale (Hughes et al., 2004)

Scale:

- Hardly Ever = 1
- Some of the Time = 2
- Often = 3

The next questions are about how you feel about different aspects of your life. For each one, record the response that best matches how often you feel that way.

Items:

1) First, how often do you feel that you lack companionship?

2) How often do you feel left out?

3) How often do you feel isolated from others?

Single-Item Satisfaction with Life (Cheung & Lucas, 2014)

In general, how satisfied are you with your life?

- Very satisfied = 1
- Somewhat satisfied = 2
- Somewhat dissatisfied = 3
- Very dissatisfied = 4

Appendix B – Measures for Study 2

Video Games and Perceptions of Well Being

Please, indicate your agreement or disagreement with the following statements. Depending on your answer, you may be asked a follow up question to briefly describe your experience.

1) Video games have a **positive** effect on my mental health and general well-being.

- Strongly disagree = 1
- Somewhat disagree = 2
- Somewhat agree = 3
- Strongly agree = 4

If strongly disagree was selected, skip logics were used to move participants to question 2a.

1a) In your own words, how have video games had a positive effect on your mental health and general well-being?

- *Open-Ended Response*

2) Video games have a positive effect on my relationships (e.g., friends, family, romantic partners).

- Strongly disagree = 1
- Somewhat disagree = 2
- Somewhat agree = 3
- Strongly agree = 4

If strongly disagree was selected, skip logics were used to move participants to question 3.

2a) In your own words, how have video games had a **positive** effect on your relationships (e.g., friends, family, romantic partners)?

- *Open-Ended Response*

3) Video games have a **negative** effect on my mental health and general well-being.

- Strongly disagree = 1
- Somewhat disagree = 2
- Somewhat agree = 3
- Strongly agree = 4

If strongly disagree was selected, skip logics were used to move participants to question 4.

3a) In your own words, how have video games had a **negative** effect on your mental health and general well-being?

- *Open-Ended Response*

4) Video games have a **negative** effect on my relationships (e.g., friends, family, romantic partners).

- Strongly disagree = 1
- Somewhat disagree = 2
- Somewhat agree = 3
- Strongly agree = 4

If strongly disagree was selected, skip logics were used to move participants to end of question block.

4a) In your own words, how have video games had a **negative** effect on your relationships (e.g., friends, family, romantic partners)?

- *Open-Ended Response*

10-item Center for Epidemiological Studies Depression (CES-D) Scale Short Form (Irwin et al., 1999)

Please read the following statements, and indicate if you agree with each statement regarding your experiences in the **past week**. Please, mark your agreement as either True or False.

Dichotomous scale (Yes/No Responses)

- Yes = 1
- No = 2 (recoded to 0)

Items: ($\alpha = .92$)

1. I felt depressed
2. I felt that everything I did was an effort
3. My sleep was restless
4. I was happy
5. I felt lonely
6. People were unfriendly
7. I enjoyed life
8. I felt sad
9. I felt that people disliked me
10. I could not get going

Reverse Coding: 4 and 7 are reverse coded

Perceived Stress Scale Short Form (PSS-4; Warttig et al., 2013)

Never = 1
Almost Never = 2
Fairly Often = 3
Very Often = 4

We would like to get some information about how stressful things have been lately for you. Please carefully read each item in the list. Indicate your experience by clicking the response you feel is most appropriate.

Items:
1) In the last month how often have you felt you were unable to control the important things in your life?
2) In the last month how often have you felt confident about your ability to handle your personal problems? – *Reverse Scored*
3) In the last month how often have you felt that things were going your way? – *Reverse Scored*
4) In the last month how often have you felt difficulties were piling up so high that you could not overcome them?

Three-Item Loneliness Scale (Hughes et al., 2004)

Scale:

- Hardly Ever = 1
- Some of the Time = 2
- Often = 3

The next questions are about how you feel about different aspects of your life. For each one, record the response that best matches how often you feel that way.

Items:
1) First, how often do you feel that you lack companionship?
2) How often do you feel left out?
3) How often do you feel isolated from others?

Single-Item Satisfaction with Life (Cheung & Lucas, 2014)

In general, how satisfied are you with your life?

- Very satisfied = 1
- Somewhat satisfied = 2
- Somewhat dissatisfied = 3
- Very dissatisfied = 4

Multidimensional Scale of Perceived Social Support (Zimet et al., 1988)

We are interested in how you much you feel your friends or family support you (either in person or through online interactions). Please, read each statement carefully and indicate how you feel with the choices provided.

Scale: 7 pt. Likert Scale

	Very Strongly Disagree	Strongly Disagree	Mildly Disagree	Neutral	Mildly Agree	Strongly Agree	Very Strongly Agree
1. There is a special person who is around when I am in need.	1	2	3	4	5	6	7
2. There is a special person with whom I can share joys and sorrows.	1	2	3	4	5	6	7
3. My family really tries to help me.	1	2	3	4	5	6	7
4. I get the emotional help & support I need from my family.	1	2	3	4	5	6	7
5. I have a special person who is a real source of comfort to me.	1	2	3	4	5	6	7
6. My friends really try to help me.	1	2	3	4	5	6	7
7. I can count on my friends when things go wrong.	1	2	3	4	5	6	7
8. I can talk about my problems with my family.	1	2	3	4	5	6	7
9. I have friends with whom I can share my joys and sorrows.	1	2	3	4	5	6	7
10. There is a special person in my life who cares about my feelings.	1	2	3	4	5	6	7
11. My family is willing to help me make decisions.	1	2	3	4	5	6	7
12. I can talk about my problems with my friends.	1	2	3	4	5	6	7