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How do you feel about your friends? Understanding situational envy in online social networks

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ABSTRACT

Online social networks (OSNs) offer a stream of information that readily provides comparison opportunities, often resulting in feelings of envy. Two factors that drive OSN-situational envy (OSN-SE) are a user's personality and needs. Leveraging the five-factor model of personality and uses and gratifications theory, we explore how personality traits and OSN use affect OSN-SE. Data from 625 survey responses indicate that Facebook users experience greater OSN-SE when they exhibit neuroticism and use Facebook to gratify needs to gather information, seek attention, or pass time, suggesting that envy-prone users should use OSN for specific purposes and avoid passive pursuits.

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1. Introduction

Envy has been defined as "a negative emotional response to another person's superior quality, achievement or possession, in which the envier either desires the advantage or wishes that the envied person lacks it" [1 p. 284]. Envy has long been believed to be one of the most universal human emotions to create discontent [2]. The universality of envy is demonstrated by the fact that most cultures have a word for it [2]. Envy is based on upward comparisons and such comparisons are easy to make because there is always someone, real or imagined, that can be deemed to possess better items or experiences than oneself [1].

Online social networks (OSNs) provide a constant and easily accessible stream of information about other's lives that provides the opportunity for a user to continuously make social comparisons. The environment provided by OSNs, such as Facebook, not only offers constant access to social comparison information, but it has also been found that individual's online representations often consist of "highly socially desirable identities individuals aspire to have offline but have not yet been able to embody for one reason or another" [3,p. 1830]. Thus, information individuals present on OSNs may be purposefully more socially desirable than reality.

These characteristics turn OSNs into upward social comparison-rich environments that may easily stimulate envy.

It has been noted that "in the Internet era, the social world includes both the online and offline environments, and an important skill people need to learn is how to coordinate these two realms" [3,p. 1831]. Although envy has been studied in the social sciences, most notably by Smith et al. [2], it has not been widely studied in the context of OSNs. One exception to this is Krasnova et al. [4], who studied characteristics of envy incidents on Facebook and determined that the passive following of others on Facebook (i.e., simply looking at content rather than actively participating by posting content) exacerbated envy, and that envy, in turn, decreased life satisfaction. However, Krasnova et al. [5] suggested that future researchers should consider different types of OSN user behaviors (e.g., a variety of active, as well as passive uses) when examining the impact of OSN use on individuals.

Our study aims to contribute to the existing body of literature in two primary ways: (1) by contextualizing a situational envy scale to explore OSN envy and (2) by granularly exploring the influence of two classes of user characteristics (personality and OSN user activities) on OSN-situational envy (OSN-SE). In doing so, we fill gaps in existing literature by answering the question: *What user characteristics are associated with higher levels of OSN situational envy?*

Krasnova et al. [4] provided the impetus to examine user activity at a more granular level, and we did so by applying uses and gratifications theory, which suggests that people use various

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media to fulfill different needs [6]. Uses and gratifications theory has previously been employed to examine why people use OSNs [e.g.,7,8], but it has not been linked previously to emotional outcomes of OSN use, such as envy. Similarly, personality traits have also been utilized to explore OSN use [e.g.,9,10] but have not been widely studied in the context of OSN envy. Therefore, we fill this gap in the literature by examining how two classes of user characteristics, (1) personality and (2) uses and gratifications, may increase or decrease the likelihood of OSN-SE.

The remainder of the paper is structured as follows. First, we review literature on OSNs and emotion on OSNs and further define and describe situational envy. Second, we present our research model and discuss how an OSN user's personality traits and activities may impact his or her susceptibility to OSN-SE. Third, we present the methodology that we used to investigate these relationships. Fourth, we present the results of our analysis. Next, we discuss our results and offer some implications for research and practice. Finally, we highlight the limitations of the current research, discuss potential future research areas, and provide concluding statements regarding our findings.

2. OSN use, emotions, and envy

OSN use, and Facebook in particular, is pervasive worldwide. In fact, the Pew Internet Project [11] reports that as of January 2014, 74% of adults that go online use an OSN and as of September 2014, 71% use Facebook. Facebook counts more than 1.13 billion active daily users as of June 2016, with 84.5% of these users located outside the United States and Canada [12]. Such a phenomenon warrants investigation and explains why Facebook is generally used in OSN studies as the operational context.

As use has increased, OSN functionality and features have as well, offering users choices in how they spend their time on the OSN and the ability to customize their use experience [8]. Early studies on OSNs primarily focused on the factors influencing use [e.g.,7,9,13], with many researchers exploring the characteristics (most notably personality traits) of the users themselves [9,14] [e.g.,9,14]. Studies that explore advanced dynamics of OSN use, such as the adaptation of emotion to such an environment, are only now beginning to appear in the literature [e.g.,15]. For example, it has been suggested that Facebook use makes some people unhappier [16], specifically in terms of how users feel from moment to moment and their perceived satisfaction with their own lives. However, another study found no link between Facebook use and clinical depression [17]. Furthermore, another study found that happiness can actually spread from person to person over a social network [18]. These varied findings clearly show that there is much to learn about the relationship between OSN use and emotions, such as envy.

Envy can be defined as an unpleasant and often painful blend of feelings characterized by inferiority, hostility, and resentment caused by a comparison with a person or group of persons who possess something we desire [19]. It has been suggested that envy can be both dispositional and situational. Dispositional envy is considered to be a relatively stable property that reflects an individual's tendency to experience envy (i.e., have negative feelings related to another person's advantage) [2]. In contrast, situational envy is believed to originate from factors present in a specific environment [20]. In our study, we are investigating "OSN-SE" instantiated on the dominant OSN platform Facebook, which refers to the envious feelings that can occur when visiting Facebook as a result of thinking about other people in relation to oneself (i.e., "Facebook-situational envy").

Jealousy is a concept that is often confused with envy [21]. Envy involves two individuals and occurs when one person wishes he or she had something that the other person has, whereas jealousy occurs when one person fears that he or she will lose something (i.e., jealousy) or someone (i.e., romantic jealousy) to the other person [19]. Muise et al. [22] found that increased Facebook use leads to increased Facebook romantic jealousy. More recent studies have shown that user characteristics play a role in predicting Facebook jealousy, such as females are more prone to Facebook jealousy than males [23], and that attachment anxiety and avoidance predicted Facebook jealousy [24]. Such studies have provided richer insight into the particulars of emotions in the OSN context. The current study extends this line of inquiry by contextualizing situational envy and examining how user characteristics influence OSN-SE.

It has been suggested that envy may be one of the most common emotions resulting from OSN use [4]. Envy is "caused by a comparison with a person or group of persons who possess something we desire" [19,p. 49]. Envy results from upward social comparisons that occur when people compare themselves to someone else and conclude that the other person has an advantage over them or is superior in an area that they value [25]. Envy is often "characterized by negative affective reactions to the superior fortune of others" [19,p. 47].

An enormous amount of information is available on OSNs for social comparison, which creates an extraordinarily fertile ground for the cultivation of envy. This is enhanced by the fact that people are generally more motivated to share the positive aspects of their personal lives online than their negative life events, which provides an abundance of opportunity for upward social comparisons. OSNs further amplify this problem because they provide ways for narcissistic individuals to overstate their accomplishments, exaggerate their self-importance, and show off in ways meant to enhance their positive self-presentation [26]. Furthermore, in general, there is no real manner for verifying that the information presented on an OSN is an accurate portrayal of another person's reality. OSNs make it all too easy to compare and "benchmark" oneself against peers who are likely to over-emphasize their achievements [4].

OSN's social information-rich environment makes it tempting for people to read about the positive aspects of other's lives, use that information to make comparisons to their own situations, and inappropriately conclude that their own circumstances are inadequate. Research suggests that people are biased when they judge other people's lives because they tend to underestimate the negative experiences of others and overestimate the positive experiences [27]. The resulting envy can produce a wide variety of negative outcomes ranging from loneliness [27] to damage to one's sense of well-being [19]. A recent study even showed a direct link between envy and depression [28], suggesting that OSN envy is a serious problem that needs to be better understood so that preventative measures can be taken.

Although OSN envy has not received much attention in the information systems (IS) literature in general, Krasnova et al. [5] found that envious feelings are common on Facebook and can result in reduced cognitive and affective well-being. They also found that some users seem more susceptible to envy than others and suggested that envy may be a common response to social information consumption (i.e., passive Facebook use). Their results suggest that there may be a conceptual difference in how active and passive uses of an OSN may impact a users' likelihood of experiencing envy, and they call for future studies to take different types of user behaviors into account. Our study addresses Krasnova et al.'s [5] call by drawing on uses and gratifications research to identify four primary uses (both active and passive) of Facebook and by investigating how each usage type increases or decreases the likelihood of situational Facebook envy. Krasnova et al. [5] also established a link between extraversion and situational Facebook envy, but we consider other personality traits as well.

The focal point of our study is Facebook-situational envy, which occurs when a user is exposed to information about other people's lives on Facebook and feels covetous of the other's experiences and/or possessions. Our study contributes to the literature by investigating user characteristics that may be linked to Facebook-situational envy. By exploring specific gratifications and personality traits, we build on previous findings to provide a more granular explanation of the factors contributing to Facebook-situational envy. The next section presents the research model and then explains how the model and hypotheses were derived from previous research.

3. Research model and hypotheses

Fig. 1 presents our research model. In exploring user tendencies toward Facebook-situational envy, we considered both personality traits and OSN uses and gratifications as possible influences. The sections that follow will provide the theoretical justification for the paths included in the model.

3.1. Personality Theory and the Five-factor Model

Mainstream IS research had largely ignored the role that personality might play in IS adoption and use until several years ago when a few top journals recognized the importance of investigating the impact of dispositional factors in predictive models [e.g.,29–33]. It is widely believed that many researchers had avoided studying dispositional factors, such as personality, because 30 years ago Huber [34] suggested that they were not largely applicable to the study of IS design. Although Robey [35] swiftly countered Huber's argument, researchers still avoided studies involving personality factors for many years.

McElroy et al. [31] were one of the first to investigate the role of personality in an IS context. The goal of their research was to compare the relative usefulness of both personality and cognitive style on Internet adoption and use. Their general finding was that personality factors significantly added to the predictive capabilities of Internet adoption but cognitive factors did not. Another personality study by Devaraj et al. [29] followed soon after. Their study investigated the relationship between personality and technology acceptance and found that personality was a useful predictor of both user attitudes and beliefs. Another study by

Venkatesh et al. [33] examined the ability of personality to predict e-Government portal use. A recent study by Shropshire et al. [32] found that the personality traits of conscientiousness and agreeableness moderated the relationship between intent and actual use of security software. Finally, Johnston et al. [30] established the role of two personality meta-traits in moderating the impact of situational factors on the intention to violate information security policies. All five of these studies used the five-factor model (FFM) of personality, which is also known as the "Big Five" personality model [36]. Their findings support the idea that personality traits can be used to investigate relationships in the IS domain. The theoretical approach to personality classification that is known as the FFM can be used to provide a concise yet comprehensive framework for studying personality [29].

The FFM proposes that there are five dimensions that can be used to evaluate an individual's personality. These dimensions are openness to experience, conscientiousness, extraversion, agreeableness, and neuroticism [36]. The first trait, openness to experience, represents the extent to which an individual is creative and curious. The second trait, conscientiousness, refers to whether an individual is thorough, is well organized, follows norms and rules, and is achievement-oriented. Extraversion relates to whether a person typically exhibits positive emotions, such as being cheerful, enthusiastic, optimistic, and energetic. The fourth dimension, agreeableness, measures characteristics such as altruism, nurturance, caring, and emotional support. Finally, neuroticism, reflects the tendency of an individual to experience nervous tension, depression, frustration, guilt, and self-consciousness [37].

The FFM represents a convergence of empirical research into personality factors [e.g.,38] and some have claimed that the five factors should be considered as an empirical fact, just as it is a fact that there are seven continents on earth [39]. However, others have criticized the FFM by saying that it suffers from a lack of an overall theoretical explanation [e.g.,40] and have even gone so far as to say that the dimensions "exist as polyglot generic arenas with fuzzy, overlapping boundaries" [41,p. 339–340]. Jensen-Campbell and Graziano [39] suggest that one way to approach the concerns about the atheoretical nature of the FFM is to develop theoretical accounts of each personality factor. McAdams [42] proposes that the five factors exert their influence on behavior and cognition through a person's use of contextualized strategies and motives.
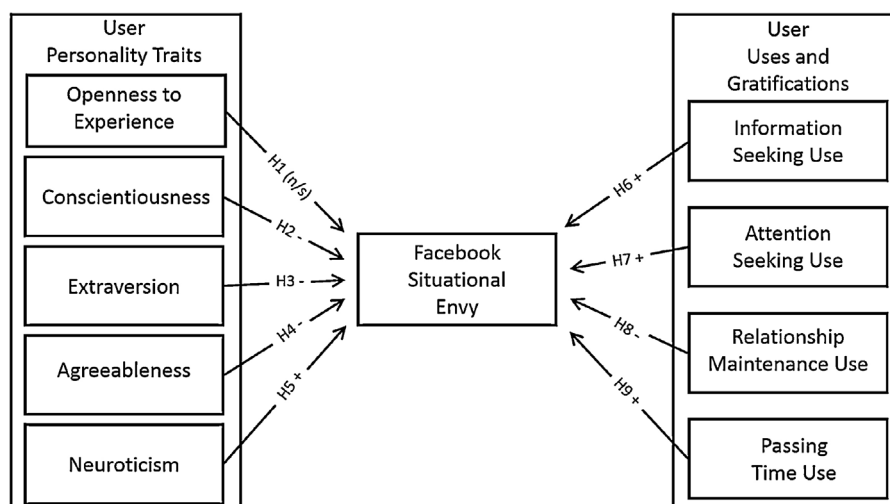

Fig. 1. Research Model.

Similarly, Denissen and Penke [43] suggest that the FFM can be interpreted as a conceptual model where the dimensions represent stable individual differences in people's reactions to certain types of environmental stimuli. In other words, personality differences may lead individuals to have different "sensitivities" to certain classes of situations even when they are embedded in the same social network [43]. This may include a relationship between personality traits and differing emotional responses. There is a growing body of research that has investigated the idea that personality traits and emotion are linked [e.g.,44]. Thus, conceptual and empirical work is needed to relate each of the five factors to specific strategies and motives that an individual may develop to navigate their circumstances in an OSN environment (e.g., individuals high on agreeableness will be motivated to minimize interpersonal conflict) [39]. Our research attempts to meet this call by investigating whether individuals may respond differently in their development of Facebook-situational envy depending on their personality traits.

There has been a consistent stream of research investigating the relationship between an individual's personality traits and his and her OSN use [e.g.,9,10,14,45], although the vast majority of this research has centered on simple use measures such as frequency of use and size of social network rather than linking personality to more complex constructs, such as emotional outcomes of use. However, researchers have shown that there are some significant relationships between the five personality traits and OSN use characteristics. Much of the research has centered on the use of Facebook, given its current dominance in the world of OSNs. We are attempting to expand this stream of research by suggesting how personality differences can go beyond simple usage characterizations to predict how individuals with certain personality types may be more or less susceptible to Facebook-situational envy. The following paragraphs use the five factors of personality, as described by the FFM, to predict how we would expect an individual's personality to affect his or her likelihood of experiencing Facebook-situational envy.

3.1.1. Openness to experience

Individuals who exhibit the openness-to-experience personality trait are willing to try new things, seek out new experiences [46], and engage in learning experiences [47]. Individuals who score low on this dimension prefer stability and status quo [29]. Openness to experience has been linked to trying out new methods of communication, such as an OSN [14,48]. One study reported that individuals who score high on openness to experience use more Facebook features than individuals with low openness scores [9]. Another study showed that individuals with high levels of openness to experience spend more time on Facebook and have more friends [49]. However, the overall role that openness to experience might play for Facebook users is not very clear since Facebook has become a mainstream tool and may not be considered a "unique" experience any more [13,45].

Although one study showed that openness to experience was a significant predictor of Internet use [31], there is little in the literature to suggest that individuals who vary widely on this scale would differ in their susceptibility to Facebook-situational envy. In fact, many studies have found a lack of any significant relationships between this dimension and any sort of technology or OSN use [e.g.,29]. Thus, we propose that there will be no significant relationship between openness to experience and Facebook-situational envy.

H1. Openness to experience will <u>not</u> have a significant relationship with Facebook-situational envy

3.1.2. Conscientiousness

High levels of conscientiousness have been shown to be negatively related to Internet use [48], possibly because conscientious individuals seem to be more focused on their daily tasks and may regard the Internet (and Facebook in particular) as a distraction from achieving their immediate goals [50]. One study showed a significant negative correlation between time spent on Facebook and conscientiousness [10] and another study showed that individuals who scored higher on the conscientiousness scale were more likely to quit Facebook altogether [50]. Kuss and Griffiths [51] suggest that conscientious people tend to grow their online and offline friendships without needing to share too much personal information publicly.

Conscientious individuals exhibit high levels of tenacity in the pursuit of their goals and they will control the amount of time that they spend on Facebook [43]. Thus, we propose that because conscientious individuals are more careful about managing the time they spend on Facebook, they will not be likely to experience envy from using Facebook. This leads to the following hypotheses:

H2. Conscientiousness will have a <u>negative</u> relationship with Facebook-situational envy

3.1.3. Extraversion

Extraverts appear to use OSNs for social enhancement, whereas introverts use it for social compensation [51]. Studies have shown that extraverted users were more likely to use Facebook for social enhancement by belonging to significantly more Facebook groups than those with lower extraversion levels [45]. Introverted users appear to be compensating for their social preferences by using Facebook to increase their online popularity [52]. It has also been found that extraverts are likely to have more Facebook friends [9] and experience more benefits from their Internet use than introverts [53].

A review of several theoretical approaches to the FFM concluded that extraversion was linked to a predisposition to experience social interactions as rewarding [43]. Furthermore, Krasnova et al. [4] found a significant negative relationship between extraversion and envy. We suggest that because extraverted individuals find the social aspect of Facebook rewarding, there will be significant negative relationships between higher levels of extraversion and Facebook-situational envy. Thus, we propose the following:

H3. Extraversion will have a <u>negative</u> relationship with Facebook-situational envy

3.1.4. Agreeableness

A review of the theory driving the motivations of an "agreeable" individual reveals that these individuals are motivated by demonstrating altruistic behavior and minimizing interpersonal conflict in a wide variety of social situations [39,43]. OSN's are often characterized by a wide variety of conflicts and competing interpersonal forces, thereby providing an environment in which an agreeable personality type may find many opportunities to adjust to conflict. Agreeable people have been shown to be motivated to maintain positive relationships with other people, and this motivation causes the agreeable person to assign positive perceptions and feelings to what would otherwise be considered provocative behavior [43]. As such, we suggest that agreeable individuals will be less likely to experience OSN-SE as they have developed coping mechanisms for maintaining a positive perception of all of their social interactions. This leads to the following hypothesis:

H4. Agreeableness will have a <u>negative</u> relationship with Facebook-situational envy

3.1.5. Neuroticism

Individuals who exhibit the neuroticism personality trait are characterized as being anxious, moody, and worried [54]. Neurotic individuals have been found to use the Internet to avoid loneliness [48], perceive low levels of social support [55], and have a strong interest in using the Internet for communication [56]. Neurotic individuals were also apt to use different Facebook features than those who scored low on the neuroticism scale [45].

A review of the various theoretical conceptualizations of neuroticism shows that it is clearly linked to an individual's ability to handle stress [57], particularly when social relationships are threatened [43]. Research suggests that people who score higher on the neuroticism scale will be more sensitive to signs of social exclusion, leading to negative affect and anxiety in reaction to a perceived social threat [43]. We suggest that Facebook's extreme social nature coupled with the neurotic individual's sensitivity to social exclusion will cause those with neurotic tendencies to be more susceptible to Facebook-situational envy. Thus, we propose that individuals who rate higher on the neuroticism scale will be more likely to exhibit envy from Facebook use, leading to the following hypotheses:

H5. Neuroticism will have a <u>positive</u> relationship with Facebook-situational envy

3.2. Uses and gratifications theory

Uses and gratifications theory was originally developed by mass communication researchers to explain why people choose to use one particular type of media over another [6]. Previous research suggests that individuals often select a media type to meet specific needs (i.e., to achieve gratifications and fulfill certain motivations) [6]. More recently, researchers have applied uses and gratifications theory to better understand why individuals might participate in an OSN [e.g.,7,58] such as Facebook [e.g.,59].

Dholakia et al. [58] conducted one of the first studies to apply uses and gratifications theory to virtual community participation. They executed their study in a variety of virtual community settings including e-mail lists, Usenet groups, and web-based chat rooms. They did not include any of the OSN's, such as Facebook, that are more common today because they were just beginning to come into existence at that time. However, their results certainly have implication for OSNs. They identified five key values or motivations for virtual community use. The first was purposive value, which is "the value derived from pre-determined instrumental purpose (including giving or receiving information)" [58]. The second was self-discovery, which involves a better understanding of oneself. The third was maintaining interpersonal connectivity, such as establishing and maintaining contact with others. The fourth was social enhancement or value from gaining the acceptance and approval from other community members and enhancing one's reputation. Finally, entertainment value comes from using the community for fun and relaxation [58].

The study by Dholakia et al. [58] also focused on whether use type varied by small group-based versus larger network-based virtual communities. They found that purposive value was more important in larger networks (e.g., e-mail lists, website bulletin boards, and Usenet newsgroups) than in small group networks (e.g., real-time online-chat systems, web-based chat rooms, or multiplayer virtual games and multiuser domains) because the individuals in large networks did not have as many close personal relationships and were more motivated by information obtained from their use of the network. They also found that social factors (maintaining interpersonal connectivity and social enhancement) and entertainment were more important in the small group networks.

Cheung et al. [7] examined the relationship between these same five uses and We-intention to use Facebook. "We-intention" refers to an individual's intention to perform an act as part of an informal agreement among users of a social network to engage in a joint action [60]. Cheung et al. [7] found that social enhancement and entertainment were significant in predicting use as it related to We-intention to use Facebook. Their findings are similar to Dholakia et al. [58] in that they suggest that social aspects of use are the most important motivators for individuals using an OSN. However, because they approached it from a group perspective (by measuring We-intention rather than I-intention), there is reason to believe that the findings might differ when focusing on an individual's independent motivations for use.

Sofiah et al. [61] found that the five most important motives for Facebook use were social interaction, passing time, entertainment, companionship, and communication. They also found that there was a significant relationship between these five motivations and Facebook addiction. We believe that, like addiction, Facebook envy could be related to the gratifications associated with the various uses of Facebook. More recently, Ryan et al. [62] performed a comprehensive review of the literature related to the uses and gratifications of Facebook and found that the most popular motivations for Facebook use were relationship maintenance, passing time, entertainment, and companionship.

It has been suggested that those who perform passive activities on Facebook may be more likely to have feelings of envy than those who actively engage on the network [4,5]. Passive uses include activities such as browsing news feeds, reading stories, and looking to see what contacts and friends are "up to" [4,59]. Active uses include posting something, sharing thoughts, feelings or impressions, reacting or commenting on what friends post, etc. [63]. Other researchers have also noted significant differences between active and passive uses of social networks [e.g.,64]. In their review of the previous uses and gratifications Facebook literature, Ryan et al. [62] concluded that individuals who passively engage in looking at user-generated content on Facebook return to the site more often than those who engage actively and thus may be more prone to Facebook addiction. These findings suggest that passive uses and gratifications may be more likely to promote negative consequences (e.g., envy) than active uses.

Facebook began as a way to share profile information between users. That is, an individual developed a profile describing his or herself that others could find and read. Thus, one of the original purposes of Facebook was as a medium to seek information about others. The other use of the profile is as a means to advertise oneself. Filling out details of a profile and releasing it to the OSN, as well as posting status updates or commenting on content, are all ways in which a user creates and maintains his or her identity on the OSN and are done for the primary purpose of receiving attention from other users. Although the profile serves as a means for information and attention seeking, everyday use of the OSN centers on socialization and entertainment. Following our literature review, socialization in the form of relationship maintenance is one of the most popular uses of Facebook. Entertainment on an OSN can take on many forms (browsing the news feed, chatting, playing games, etc.). For our purposes, we generalize this use to the "passing time" gratification referenced in prior literature because it encompasses any set of activities a user undertakes for the purpose of relaxing or assuaging boredom. Starting from the constructs in Cheung et al. [7], our pilot testing revealed four strong factors representing the following gratifications: information seeking, attention seeking,

relationship maintenance, and passing time. These four uses and gratifications are all well represented in the literature and provide coverage for the primary uses of Facebook. Each of these four uses is described below along with a hypothesis describing the impact we would expect the use to have on Facebook-situational envy. Two of these uses are considered passive uses and two are considered active uses.

3.2.1. Information-seeking use

Information-seeking use is similar to "purposive use," which has been defined as "the value derived from accomplishing some pre-determined instrumental purpose" [58,p. 244]. This could include giving or receiving information, accomplishing a task, or coordinating an activity. Many researchers have identified a similar "information-seeking" factor specifically related to Facebook use [e.g.,65], although the label "information seeking" is typically restricted to situations where users are passively engaging with the content on Facebook rather than taking an active participatory role. Information seeking typically refers to Facebook users who want to see what other people are "up to," how they look, and how they behave [59]. As such, to remain in line with Krasnova et al.'s [4] findings regarding passive uses and increased envy, we propose the following:

H6. Information-seeking use will have a <u>positive</u> relationship with Facebook-situational envy

3.2.2. Attention-seeking use

Dholakia et al. [58] referred to attention-seeking use as "social enhancement" and described it as the value that a network member receives from garnering the acceptance and approval of other members. Cheung et al. [7] found that social enhancement was positively related to members' intentions to use Facebook with a group of their friends (i.e., We-intention to use). We believe that members would also use Facebook at an individual level to seek attention and enhancement from their peers. Such use would require active participation as it would involve posting status updates, photos, etc. to garner attention from other users. Attention seeking is a narcissistic behavior that occurs when one relies on external sources for affirmation [66]. This type of narcissistic behavior often leads to envy because the individuals seeking attention need to perceive themselves as superior to others, and when they are exposed to others "better" in some way, it can result in upward social comparisons and envy [67].

Although attention seeking could be classified as an active use (thus suggesting a negative relationship with envy), we suggest that individuals who are focused on receiving social recognition from other users on the network are may be highly tuned into the social status of other users and more prone to envy other users who appear to be gaining possessions and experiences they would like to have. This leads us to propose the following:

H7. Attention-seeking use will have a <u>positive</u> relationship with Facebook-situational envy

3.2.3. Relationship maintenance use

The use of Facebook for maintaining relationships or interpersonal connectivity is one of the most commonly cited uses of Facebook [e.g.,7,13,62,65] and involves using Facebook to actively interact with members of an individual's existing offline social network. Ryan et al. [62] found that the vast majority of researchers who had examined the uses and gratifications of Facebook had reported on the importance of relationship maintenance in the context of continuing offline relationships. When Facebook was originally developed, it was limited to college campuses, and the primary use was to facilitate social interaction among campus classmates. In this regard, Facebook is quite different from many other types of virtual communities (e.g., bulletin boards) that often rely on communications with strangers, such as those studied by Dholakia et al. [58].

The conceptualization of the use of Facebook for relationship maintenance as having an offline-to-online social focus [13] also suggests a more active use of Facebook where the users are dynamically engaging with others on the site, as they would in real life. Because this use involves deepening social interactions with people they are familiar with, it is more likely that users can better discern whether the information they are viewing is a realistic portrayal of their friends' lives. As such, they are less likely to engage in upward social comparisons because they may be privy to negative information about their friends' lives that is not being shared publicly. As such, we propose the following:

H8. Relationship maintenance use will have a <u>negative</u> relationship with Facebook-situational envy

3.2.4. Passing time use

Large numbers of researchers have noted that one of the most popular uses of Facebook is for passing time or, in other words, using Facebook when bored [e.g.,62,65]. Joinson [59] used the term "surveillance gratifications" to describe activities where users are passively engaging with social or entertainment-related content, such as browsing the news feed to look for status updates. Tandoc et al. [28] operationalized a construct called "surveillance use" which consisted of reading the news feed, status updates, viewing photos, and browsing timelines. These are all passive uses of Facebook that a user may perform when bored or passing time. They found a positive relationship between this type of surveillance/passive use and Facebook envy [28]. This leads to our final hypothesis:

H9. Passing time use will have a <u>positive</u> relationship with Facebook-situational envy

4. Research methods

We employed existing scales to develop the instrument for the current study. The Big Five Inventory [68] is well recognized in the social sciences as an accepted standard to measure the FFM of personality. The Big Five Inventory consists of a 44-item scale, and we used this scale without modification of the items. The uses and gratifications scales were obtained from Dholakia et al. [58] and used by Cheung et al. [7]. The items from the original scales were refined in our pilot tests. The scale used to measure Facebook-situational envy was obtained from Smith et al. [2], adapted to our context, and refined during the pilot tests. Accepted procedural methods for the adaptation of the scales were rigorously followed [69]. We will detail the process subsequently. The resulting items are shown on the left side of Table 3.

In the first step, we adapted, where necessary, the items to the Facebook context. An expert panel of experienced Facebook users, consisting of approximately 10 college-educated individuals who all frequently use Facebook, was then convened to provide feedback on the items. The expert panel was provided the survey and a brief description of the constructs. They were asked to evaluate the items for comprehensibility, voice, and grammar. Their comments were compiled and evaluated by the researchers. Their feedback resulted in some rephrasing of the use and envy items. Expert panels are employed as a means to lessen common method bias [70].

Following the implementation of the modifications suggested by the expert panel, an electronic survey was developed to facilitate the data collections. The survey was built using the

Qualtrics platform (http://www.qualtrics.com). Qualtrics allowed us to administer the survey online through a link provided to the respondents. The survey items were randomized, which is useful in diminishing common method bias [70]. Qualtrics enabled the collection of data from respondents. Respondents were informed that the survey was anonymous and no identifying information was collected from the respondents. Ensuring anonymity is another technique to reduce common method bias [70] because it lessens the tendency of the respondents to provide answers that they think may best meet the expectations of the researchers.

In the second step of the survey development, we pilot tested the instrument. The first pilot test was conducted in the fall of 2013 at a large southeastern university. During this first data collection, 143 responses were obtained, of which 115 were usable. In assessing the measurement model (with SmartPLS Version 3.2.1), the analysis revealed that a few of the personality items did not load on the expected factor. However, because the FFM scales are widely used in the literature, the items were retained as they were written for the full data collection. The scales for envy and the uses and gratifications loaded primarily on the expected factors. Minor grammatical modifications were made to a couple of items to help ensure appropriate factor loadings in the next data collection round.

The final data collection resulted in 713 responses and was conducted at two large southeastern universities. Of those responses, seven participants did not complete the entire survey and were excluded. We required the respondents to be Facebook users to meet the desired demographic, so a filter question to determine this was posed at the beginning of the survey. There were 28 respondents who did not have a Facebook account and were excluded. "Attention check" questions were used to ensure that the respondents were cognitively engaged in the task [71]. That is, questions were inserted into the survey that asked the respondent to select a particular answer. Responses in which the indicated answer was not selected were excluded from the dataset. This resulted in 53 more responses being eliminated. The final dataset included 625 responses.

Demographic characteristics of the sample are provided in Table 1. There were more male respondents than female: 60% to 40%. Caucasian/White was the ethnicity reported by over half of the respondents. The majority of the sample was between 18 and 22, which is to be expected given the use of university students. University students are heavy users of Facebook and thus squarely fit within our desired demographic. Prior research has indicated that the use of university students is appropriate for contexts familiar to that demographic, such as Facebook use [e.g.,72]. Because we needed to survey individuals who were proficient and relatively long-term users of Facebook, the use of university students for our study is appropriate. The technical characteristics provided in Table 2 demonstrate that our respondents were indeed proficient long-term Facebook users. The majority of our respondents had used Facebook for more than 2 years (96%) and

had more than 300 Facebook friends (84%). Furthermore, the majority of respondents (92%) reported intermediate or advanced proficiency on Facebook.

5. Analysis and results

5.1. Convergent validity, discriminant validity, and reliability

Convergent validity, discriminant validity, and reliability were used to assess the construct validity and consistency of the measures. As a result, several items from the original personality scales were removed to improve scale reliability. The factor loadings and associated *t*-values for the remaining items are provided in Table 4. Factor loadings above 0.70 are recommended, but for a sample size of 350 or more, any factor loading exceeding 0.30 is sufficient [73]. All of the items had a loading of >0.30, with most exceeding 0.70. In addition, the *t*-values were all >1.96, which indicates that all loadings are significant at $p > 0.05$.

Convergent validity demonstrated that all the items for a construct that should be related were related. Table 4 illustrates that this is the case for our instrument. All the factor loadings were significant and greater than that recommended for our sample size, which indicates convergent validity. This finding is reinforced by the fact that there are no cross-loadings where the difference between the loading on the primary factor and the highest cross-loading is less than 0.20, as can be seen in Table 4. If cross-loadings exist, the difference between the loading and the cross-loading should be greater than 0.20 [74]. Together, these findings indicate convergent validity.

Discriminant validity establishes that items that should not be related are not. There are no noteworthy cross-loadings in Table 4, which is indicative of discriminant validity. To further examine discriminant validity, Table 5 shows the square root of the average variance extracted (AVE) (the value underlined in the diagonal of the correlation matrix) and the construct correlation matrix. All of the correlations in a column should not be greater than the square root of the AVE underlined at the beginning of that column. This is true for all of the constructs in the model, which indicates discriminant validity.

Table 5 also shows the Cronbach's alpha (CA), composite reliability (CR), and AVE values for each construct in the model. The recommended value for the CA is 0.70 or greater [73]. The CAs for all but two of the constructs exceeded this recommended value, but the CAs for conscientiousness and agreeableness were slightly below the recommended value (0.68 and 0.69). It is recommended that the AVE should be greater than 0.50 and that the CR value should be greater than the AVE [73]. The AVEs for agreeableness were below 0.50 (0.49), but the CR value was above the AVE, and the CA was approximately at the recommended value of 0.70 (0.69). All CR values exceeded the AVE for every construct. The AVE for conscientiousness was above the 0.50 recommendation, and the CR exceeded the AVE. These findings confirm the reliability of our scales.

As a further check for common method bias, latent variable correlations can be examined. The latent variable correlations should not exceed 0.90, and as shown in Table 5, all the latent variable correlations for our model are well below this threshold. In addition, we conducted a Harman's single factor test, which resulted in 39 distinct factors, the largest one accounting for only 14.7% of the variance, which indicated that common method bias is unlikely.

5.2. Structural model

The structural model was tested using SmartPLS Version 3.2.1 [75]. PLS uses partial least squares regression to examine multiple

Table 1
Sample Demographics.

Gender		Age		Ethnicity	
Male	373	18	97	Caucasian/White	474
Female	252	19	146	African American/Black	72
		20	187	Latino/Hispanic (white, black)	48
		21	101	Pacific Islander	3
		22	52	Native American/Indian	1
		23	19	Middle Eastern	9
		24	6	Latino	11
		25–30	11	Other	7
		31 or over	6		

Table 2
Domain Characteristics of Sample.

Computer Proficiency		Facebook Proficiency		Length of Time on Facebook		Number of Friends on Facebook	
Novice	40	Novice	49	Less than 6 months	5	1–30	6
Intermediate	410	Intermediate	328	5 months to 1 year	9	31–100	11
Advanced	175	Advanced	248	1–2 years	10	101–300	86
				2–4 years	112	301–500	120
				4 or more years	489	501–1000	235
						1001+	167

Table 3
Items.

Item	Mean	Std. Dev.
Agreeableness		
tends to find fault with others	3.18	1.12
starts quarrels with others (R)	4.11	1.01
can be cold and aloof (R)	3.56	1.15
is sometimes rude to others (R)	3.55	1.14
Extraversion		
is talkative	3.71	1.08
is reserved (R)	2.82	1.13
tends to be quiet (R)	3.02	1.26
is sometimes shy, inhibited (R)	2.77	1.20
is outgoing, sociable	4.06	0.98
Neuroticism		
is relaxed, handles stress well (R)	2.38	1.06
worries a lot	3.22	1.24
is emotionally stable, not easily upset (R)	2.18	1.07
remains calm in tense situations (R)	2.26	1.00
Conscientiousness		
can be somewhat careless (R)	3.08	1.06
tends to be disorganized (R)	3.22	1.24
tends to be lazy (R)	2.18	1.07
is easily distracted (R)	2.26	1.00
Openness to Experience		
is original, comes up with new ideas	3.74	0.90
is ingenious, a deep thinker	3.78	0.95
has an active imagination	4.02	0.93
is inventive	3.49	0.98
Information-Seeking Use		
I primarily use Facebook to get information.	3.46	1.00
I primarily use Facebook to know what others are doing.	3.32	1.10
I primarily use Facebook to keep up to date about what is going on with other people.	3.52	1.10
Attention-Seeking Use		
I primarily use Facebook to get attention.	1.87	0.94
I primarily use Facebook to impress.	2.00	0.93
I primarily use Facebook to feel important.	1.86	0.86
Relationship Maintenance Use		
I primarily use Facebook to stay in touch with people.	3.58	1.04
I primarily use Facebook to maintain relationships with others.	3.18	1.15
I primarily use Facebook to communicate with people.	3.39	1.12
Passing Time Use		
I primarily use Facebook to pass time.	3.62	1.08
I primarily use Facebook when I am relaxing.	3.44	1.06
I primarily use Facebook when I don't have anything else to do.	3.73	1.03
Facebook-Situational Envy		
I sometimes think people on Facebook lead more interesting lives than I do.	2.48	1.19
I sometimes wish that I could do what I see people on Facebook doing.	2.86	1.17
Sometimes I think that it would be nice to have the life experiences that people on Facebook appear to have.	2.74	1.17
Sometimes I think that people on Facebook have a better life than I do.	2.28	1.16
I think people on Facebook have better experiences than I do.	2.26	1.05

Note: (R) denotes items that are reverse coded. The means shown in this table reflect the value after the data was recoded.

relationships between several dependent and independent variables simultaneously [76]. From SmartPLS, the path coefficients, *t*-values, and *p*-values for each relationship can be obtained. SmartPLS also provides *r*-squared (R^2) values for any endogenous variables in the model.

Fig. 2 shows the resulting model with the path coefficients. The R^2 for Facebook-situational envy is 0.29, which indicates that an acceptable amount of the variance is explained. The path between

conscientiousness (-0.08, $p < 0.05$), extraversion (-0.14, $p < 0.001$), agreeableness (-0.09, $p < 0.01$), neuroticism (0.10, $p < 0.05$), and Facebook-situational envy are all statistically significant. As expected, no significant relationship was found between openness to experience and Facebook-situational envy.

The paths for information-seeking use (0.23, $p < 0.001$), attention-seeking use (0.24, $p < 0.001$), and passing time use (0.16, $p < 0.001$) are all large and significant. The path between

Table 4
Outer Loadings and t-values.

	Agree	Extravert	Conscient	Neurotic	Openness	Relation	Pastime	InfoSeek	AttSeek	Envy	t-value
Agree1	0.85	0.09	0.20	−0.11	0.07	−0.03	0.00	−0.05	−0.08	−0.17	12.89
Agree2	0.60	−0.02	0.23	−0.13	0.01	0.06	0.11	0.08	−0.12	−0.05	4.50
Agree3	0.71	0.27	0.24	−0.11	0.04	0.07	0.07	0.05	−0.08	−0.11	6.81
Agree4	0.61	−0.04	0.30	−0.15	0.07	0.05	0.07	0.07	0.03	−0.06	4.37
Extravert1	0.07	0.74	−0.10	−0.04	0.07	0.01	0.04	0.03	0.03	−0.09	15.65
Extravert2	0.06	0.70	−0.06	0.00	−0.06	−0.05	−0.04	0.00	−0.01	−0.11	15.36
Extravert3	0.11	0.85	−0.04	−0.02	−0.03	−0.06	0.01	−0.05	−0.07	−0.14	35.45
Extravert4	0.11	0.83	0.04	−0.10	0.00	−0.03	−0.05	−0.08	−0.07	−0.19	29.46
Extravert5	0.19	0.78	0.02	−0.12	0.10	−0.01	0.04	−0.05	−0.06	−0.16	19.79
Conscient1	0.27	−0.06	0.72	−0.11	0.07	0.02	0.01	0.06	−0.02	−0.10	8.13
Conscient2	0.19	−0.04	0.63	−0.10	0.05	0.04	0.05	0.07	−0.04	−0.05	5.43
Conscient3	0.28	0.05	0.80	−0.20	0.13	−0.06	−0.03	0.00	−0.07	−0.13	11.08
Conscient4	0.13	−0.04	0.69	−0.20	0.11	−0.02	−0.01	0.00	−0.09	−0.09	7.22
Neurotic1	−0.12	−0.04	−0.19	0.81	−0.17	0.04	0.09	0.14	0.11	0.17	24.60
Neurotic2	−0.14	−0.12	−0.14	0.78	−0.08	0.00	0.15	0.14	0.10	0.20	19.28
Neurotic3	−0.13	−0.05	−0.18	0.70	−0.14	−0.04	0.00	0.02	0.13	0.16	14.05
Neurotic4	−0.05	0.01	−0.17	0.66	−0.17	−0.04	0.01	0.03	0.05	0.11	11.12
Openness1	0.07	0.06	0.12	−0.19	0.82	0.05	−0.04	0.02	−0.08	−0.09	7.31
Openness2	−0.01	−0.11	0.12	−0.08	0.71	0.03	0.00	0.00	−0.04	−0.08	5.28
Openness3	0.04	0.09	−0.01	−0.12	0.71	0.03	−0.01	0.06	−0.08	−0.06	4.60
Openness4	0.10	0.03	0.13	−0.13	0.71	0.01	−0.02	0.01	−0.01	−0.07	4.60
Relation1	0.06	0.01	0.02	0.06	0.06	0.83	0.35	0.42	0.11	0.14	23.55
Relation2	0.04	−0.03	−0.04	−0.03	0.02	0.86	0.29	0.44	0.21	0.19	26.93
Relation3	−0.03	−0.06	−0.02	−0.04	0.03	0.80	0.29	0.38	0.17	0.15	18.27
Pastime1	0.02	0.01	0.00	0.10	−0.05	0.31	0.85	0.39	0.14	0.25	33.73
Pastime2	0.09	−0.05	−0.01	0.06	0.00	0.31	0.80	0.45	0.14	0.27	28.28
Pastime3	0.04	0.05	0.00	0.07	−0.02	0.29	0.82	0.35	0.09	0.21	27.93
InfoSeek1	0.00	−0.07	0.01	0.06	0.07	0.31	0.27	0.64	0.14	0.20	12.90
InfoSeek2	0.01	−0.03	0.03	0.11	0.04	0.40	0.42	0.90	0.30	0.37	75.93
InfoSeek3	0.01	−0.04	0.05	0.11	−0.03	0.49	0.47	0.87	0.18	0.30	50.15
AttSeek1	−0.07	0.00	−0.08	0.11	−0.04	0.15	0.10	0.22	0.85	0.28	37.86
AttSeek2	−0.05	−0.03	−0.07	0.11	−0.10	0.15	0.16	0.24	0.84	0.27	37.58
AttSeek3	−0.11	−0.11	−0.05	0.13	−0.06	0.21	0.14	0.22	0.87	0.35	54.01
Envy1	−0.15	−0.17	−0.14	0.22	−0.12	0.18	0.31	0.31	0.29	0.88	81.51
Envy2	−0.07	−0.07	−0.08	0.11	−0.07	0.18	0.26	0.38	0.21	0.73	29.50
Envy3	−0.12	−0.16	−0.10	0.19	−0.08	0.18	0.26	0.35	0.31	0.84	60.97
Envy4	−0.18	−0.19	−0.12	0.23	−0.07	0.11	0.21	0.26	0.35	0.86	61.61
Envy5	−0.15	−0.13	−0.13	0.16	−0.07	0.14	0.20	0.22	0.29	0.80	36.70

Note: In all Tables: Agree –>Agreeableness, Extravert –>Extraversion, Neurotic –>Neuroticism, Conscient –>Conscientiousness, Openness –>Openness to Experience, InfoSeek –>Information-Seeking Use, AttSeek –>Attention-Seeking Use, Relation–>Relationship Maintenance Use, Pastime –>Passing Time Use

Table 5
Validity and Reliability.

	CA	CR	AVE	Agree	Extravert	Neurotic	Conscient	Openness	InfoSeek	AttSeek	Relation	Pastime	Envy
Agree	0.69	0.79	0.49	0.70									
Extravert	0.84	0.89	0.61	0.14	0.78								
Neurotic	0.73	0.83	0.55	−0.16	−0.08	0.74							
Conscient	0.68	0.80	0.51	0.31	−0.02	−0.23	0.71						
Openness	0.72	0.83	0.54	0.07	0.02	−0.18	0.13	0.74					
InfoSeek	0.74	0.85	0.66	0.01	−0.05	0.12	0.04	0.03	0.81				
AttSeek	0.82	0.89	0.73	−0.09	−0.06	0.14	−0.08	−0.07	0.26	0.86			
Relation	0.77	0.87	0.69	0.03	−0.04	−0.01	−0.02	0.04	0.50	0.20	0.83		
Pastime	0.77	0.86	0.68	0.06	−0.00	0.09	−0.00	−0.03	0.49	0.15	0.37	0.82	
Envy	0.88	0.91	0.68	−0.17	−0.18	0.22	−0.14	−0.10	0.37	0.35	0.19	0.30	0.82

relationship maintenance use and Facebook envy, however, is not significant. A post hoc power analysis calculated with nine indicators, an R^2-value of 0.29, a 95% significance level, and a sample size of 625 results in an observed statistical power of 1.0, which is sufficient. A summary of the results, along with the path coefficients, t-values, and p-values, is shown in Table 6.

6. Discussion

The structural model reveals that both types of user characteristics (personality traits and user activities) play an important role in determining an individual's propensity to experience Facebook-situational envy. Table 6 provides an overview of the model statistics and hypothesis tests.

Significant negative relationships were found between Facebook-situational envy and conscientiousness ($−0.08$, $p < 0.05$), extraversion ($−0.14$, $p < 0.001$), and agreeableness ($−0.09$, $p < 0.01$). A positive relationship was found between neuroticism and Facebook-situational envy (0.10, $p < 0.05$), although as hypothesized, there was no observed significant relationship between openness to experience and Facebook-situational envy.

Our findings demonstrate that several personality traits (i.e., conscientious, extraverted, and agreeable) decrease the tendency toward Facebook-situational envy. The socialization characteristics
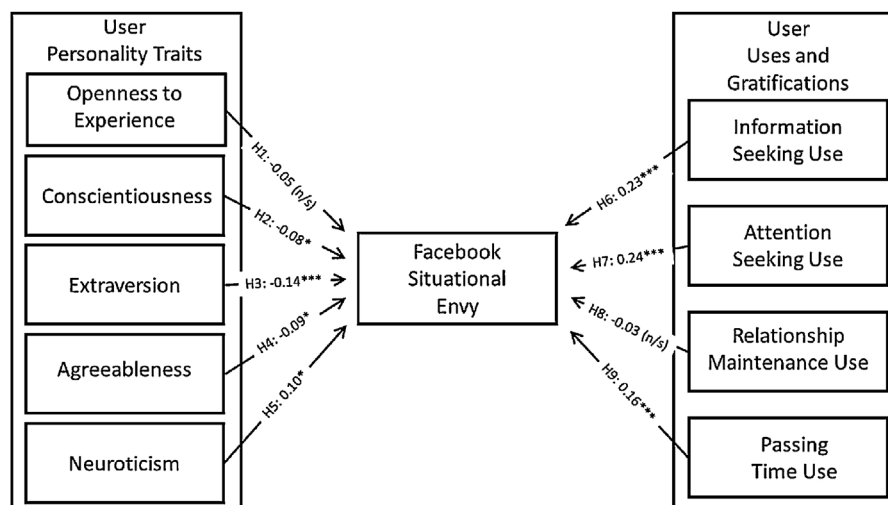
Fig. 2. Path Model.

Table 6
Summarized Results.

Hypothesis	Coefficient	*t*-value	*p*-value
H1: Openness to experience will not have a significant relationship with Facebook-situational envy.	ns	–	–
H2: Conscientiousness will have a negative relationship with Facebook-situational envy.	−0.08	2.42	0.016
H3: Extraversion will have a negative relationship with Facebook-situational envy.	−0.14	3.79	<0.001
H4: Agreeableness will have a negative relationship with Facebook-situational envy.	−0.09	2.66	0.008
H5: Neuroticism will have a positive relationship with Facebook-situational envy.	0.10	2.52	0.012
H6: Information-seeking use will have a positive relationship with Facebook-situational envy.	0.23	5.33	<0.001
H7: Attention-seeking use will have a positive relationship with Facebook-situational envy.	0.24	6.98	<0.001
H8: Relationship maintenance use will have a negative relationship with Facebook-situational envy.	n/s	–	–
H9: Passing time use will have a positive relationship with Facebook-situational envy.	0.16	3.94	<0.001

common to these types of individuals may lead to healthier OSN use with regard to resulting emotions such as Facebook-situational envy. For example, individuals who exhibit a conscientious personality factor may be, by nature, more careful about controlling their behavior and limiting the time they spend on Facebook. Limiting the time spent on Facebook is likely to be useful in reducing the tendency toward Facebook-situational envy. Similarly, studies have shown that extraverted individuals place more value on social interactions than introverts [77]. Because they value the interaction, possibly more than the information, an extraverted person may spend less time focusing on what other individuals have that they do not, thus also reducing their tendency to experience Facebook-situational envy. Finally, agreeable people tend to be described as kind and friendly. Thus, rather than envy other people's experiences and possessions, agreeable individuals may be genuinely happy for others' good fortune. Agreeable individuals tend to have a positive perception of their social interactions, and our findings suggest that this personality trait helps reduce the likelihood of experiencing Facebook-situational envy.

Neurotic individuals are described as being anxious, moody, and stressed [43]. They have also been described as more sensitive to social cues. Our results indicate the more neurotic an individual is, the more likely they are to experience Facebook-situational envy. This suggests that individuals with a tendency toward neuroticism should limit the time they spend on Facebook or try to transition to using Facebook in ways that de-emphasize social comparisons (e.g., blocking some users from display in one's news feed) to reduce the likelihood of experiencing Facebook-situational envy.

Of the four uses and gratifications in our model, three have significant and strong positive relationships with Facebook-situational envy. Information seeking (i.e., searching for information on Facebook) has a strong and significant relationship with Facebook-situational envy (0.23, $p < 0.001$). This activity requires users to spend a lot of time browsing the news feed or searching for and reading other people's pages. In fact, Krasnova et al. [4] found that "passive following" (i.e., browsing news feeds and people's pages) was strongly associated with Facebook envy. Therefore, we expected that the more time people spent collecting information or browsing the OSN for information, the more likely they would be to experience Facebook-situational envy. This is indeed what the structural model results show. This may indicate that uses in which individuals are more likely to experience others' lives but not to actively participate in the community may be emotionally counterproductive.

Attention-seeking use also has a significant and strong relationship with Facebook-situational envy (0.24, $p < 0.001$). This indicates that individuals who use Facebook to get attention or feel important are more likely to experience Facebook-situational envy. Using Facebook to garner attention may point to individual proclivities that are more likely to result in emotionally negative outcomes. In fact, seeking attention may be considered a maladaptive use of the OSN that provides rich opportunity for downward social comparisons. Individuals who seek out attention or fulfillment from other's perceptions of them may be more likely to pay attention and possibly overvalue other's experiences in comparison to their own.

Using Facebook to pass time (i.e., something to do for fun or when bored) also has a positive relationship with Facebook-

situational envy (0.16, $p < 0.001$). Using Facebook when bored is suggestive of passive, nonpurposeful use. In other words, the user is attempting to pass time rather than perform a specific task, such as communicating with a friend. Passing time on an OSN is often considered a source of entertainment when bored, similar in nature to browsing a magazine.

Relationship maintenance use does not have a significant relationship with Facebook-situational envy. It appears that people who use Facebook as a communication platform (i.e., in a more active way) do not experience a significantly increased or decreased propensity toward Facebook-situational envy. Considered along with the strongly significant findings for the other three uses and gratifications, this suggests that some usage behaviors are less likely to result in Facebook-situational envy than others. One of the most intuitive uses of Facebook is to establish and maintain relationships with geographically dispersed friends and family. Because participating in positive interpersonal relationships is often shown to be beneficial, this Facebook use is one that should be strongly encouraged. Using Facebook to communicate with others in a more active, community-oriented manner appears to be a healthy approach, at least in terms of avoiding Facebook-situational envy.

7. Implications for research and practice

7.1. Implications for research

Previous research has suggested that "outcomes of SNS [social network sites] participation are a function of user behavior" [4,p. 12], which suggests that there may be variation in the uses and gratifications that lead to increased Facebook-situational envy. Although prior research had applied the lens of uses and gratifications theory to examine *why* individuals use an OSN, it had not previously been leveraged to determine if different usage types might affect a user's likelihood of experiencing negative emotions, such as OSN-SE. Our research confirms this relationship by demonstrating that certain uses of an OSN lead to stronger feelings of situational envy. The results indicate that individuals who use Facebook to gratify information seeking, attention seeking, and passing time needs are more likely to experience Facebook-situational envy. Thus, it does appear that the motivation for Facebook use is crucial for determining the OSN-SE outcome of the user, and future research models should take a variety of uses and gratifications into account when investigating the outcomes of OSN use.

Furthermore, the strength of the findings for passing time and information-seeking use also lends support to the proposition that passive use is more likely to lead to Facebook-situational envy. Using Facebook for relationship maintenance (i.e., an active, social purpose) does not increase or decrease the likelihood of Facebook-situational envy, which suggests that active social use of Facebook may be a healthier use than other uses. Prior research indicates that there may be distinctions between passive and active uses of an OSN and the resulting emotional outcomes [e.g.,5], and our results confirm this relationship, at least as it relates to the emotion of envy.

By drawing on the large body of research related to the FFM of personality, we also demonstrated that certain personality types are more or less likely to experience envy in an OSN environment. Conscientious, agreeable, and extraverted individuals are less likely to experience Facebook-situational envy, whereas neurotic users are more likely to experience Facebook-situational envy. These results suggest that personality traits do, in fact, predict the likelihood of Facebook-situational envy. This lends support to the importance of including dispositional factors when examining the antecedents to

OSN-SE. Our combined focus on dispositional antecedents of envy (i.e., personality) and situational antecedents (i.e., uses) suggests that both are important and warrant investigation as the body of research into OSN envy grows and develops.

7.2. Implications for practice

Our findings have several implications for OSN users. Studies have demonstrated that there are detrimental outcomes of envy, such as depression and reduced well-being [e.g.,19,28], so being aware of contributing factors to envy, such as personality traits, can help users become aware of a potential problem and take steps to counteract it. OSN users who have tendencies toward neuroticism may consider limiting the time they spend on Facebook as they may be more "at risk" of experiencing envy than users who have personalities that are extraverted, agreeable, and conscientious.

Individuals who espouse the personality traits of conscientiousness, agreeableness, and extraversion are less likely to experience Facebook-situational envy. Therefore, personal strategies or interventions designed to reduce Facebook-situational envy could incorporate the behaviors of these personality types. Individuals who do not possess these personality traits may purposefully tailor their OSN use to mimic strategies of conscientious, agreeable, and extraverted people. For example, an individual could "check-in" with Facebook less frequently or perform activities that promote socialization (e.g., post status updates more often and send personal messages to Facebook friends).

Intervention techniques may be able to assist envy-prone individuals in changing their Facebook use. For example, we show that certain uses of Facebook increase the likelihood of experiencing situational envy (e.g., information seeking, attention seeking, and passing time). Therefore, refocusing high-risk users toward more active, social, and purposeful pursuits could help to produce more favorable emotional outcomes of use and move them away from feelings of situational envy and its negative downstream effects.

Our findings also have implications for organizations. There has been significant research into the use of social media in organizations to allow knowledge sharing, idea exchanges, and so on [e.g.,78]. The sites used in organizations for these purposes share many similarities with OSNs and can have many similar problems for its users. Envy is a common occurrence in organizations [79], and thus, our findings apply to organizational online networks as well. Companies may want to consider limiting their employee use of such sites to active interactions rather than passive browsing. However, future research should delve into some of the unique uses of organizational social networks as they relate to our findings.

8. Limitations and future research

Our study is not without its limitations. First, the context used for the study was Facebook, one of the world's most popular OSNs. However, the findings could certainly differ in other OSNs and warrant exploration by future research. Second, we limited our investigation to four primary Facebook uses and gratifications that have been commonly cited in the literature as motivating Facebook use. There are other more granular uses that could also be considered in future work. For example, the use of Facebook for active entertainment (e.g., games and videos) was not directly considered in our study. Some researchers have conceptualized entertainment to be an active use of Facebook (e.g., playing games), whereas others have treated it as a more passive use (e.g., scanning status updates and news feeds for amusing information). We did

not operationalize specific forms of entertainment in this study, but we did find differences between active and passive uses of Facebook and their impact on the likelihood of experiencing Facebook-situational envy. These differences should be investigated in future research.

Third, our respondents were young students, who were appropriate for our context. However, future research can investigate how demographics such as age and education impact emotional outcomes on OSNs. Another potential avenue for further exploration is to explore the differentiation of OSN-SE levels among various other demographic groups, including gender and ethnicity. Although this was outside our scope and we did not specifically control for all such factors, it may be instrumental to assess the role of demographics, cultural factors, regional variation, and other factors on the development of situational envy. Our data were only from US respondents, but a similar study exploring OSN-SE in other countries with other cultures might yield interesting results.

We had no theoretical reason to consider the interaction between personality dimensions and use motivations. However, we conducted post hoc analysis to determine whether any mediation effects might come into play when predicting Facebook-situational envy. We did not find any significant effects between personality types and the four Facebook usage types included in our study, but future research might consider whether there are ways to alter Facebook use based on personality type to reduce the likelihood of experiencing Facebook-situational envy.

It is possible that tie strength (relationship closeness) could come into play in the nonsignificant finding for relationship maintenance use and Facebook-situational envy. Previous studies have shown that feelings of envy may not be as strong toward close friends as they are for distant acquaintances or strangers in an envy-eliciting situation [80]. In other words, when a close friend has a positive accomplishment or experience, we may feel happy for them, but if the same thing were to happen to a distant acquaintance or to a stranger, we may be more likely to feel envy. Future research should investigate relationship strength and OSN-SE as it applies to both close friends and others with more distant ties in an OSN environment. Interactions with different categories of individuals (e.g., friends, family, and groups) may influence the extent to which a user experiences OSN-SE.

Finally, there are other, more detailed, measures related to Facebook (or other OSNs) that may be interesting to investigate in future research. For example, the privacy settings of users can affect who is able to view their information and posts. These settings could affect the extent to which users experience OSN-SE if certain information is hidden from them. Similarly, users can choose to emphasize certain people's information on Facebook (e.g., using a close friend's option) or hiding other people's information (e.g., "unfollowing" other users). Future studies can show if these settings can be used strategically to decrease the occurrence of OSN-SE.

9. Conclusions

We investigated how user characteristics influenced the propensity of individuals to experience Facebook-situational envy. Specifically, we applied the FFM of personality to examine the influence of five personality traits (openness to experience, conscientiousness, extraversion, agreeableness, and neuroticism) on Facebook-situational envy. We also employed uses and gratifications theory to examine the relationship between Facebook-situational envy and the four primary uses and gratifications (information-seeking use, attention-seeking use, relationship maintenance use, and passing time use).

Overall, the results indicated that uses and gratifications, especially those that are passive, are important positive drivers of Facebook-situational envy. Furthermore, several personality traits are shown to have a negative impact on Facebook-situational envy, with only neuroticism positively influencing the emotion. The model indicates activities that are less embedded in community functions, less active, and perhaps more individually motivated increase the tendency toward Facebook-situational envy. In particular, the results lend support to the argument that users should attempt purposeful, social, active, and constrained use to help avoid Facebook-situational envy. Moreover, adopting behaviors that may come more naturally to certain personality types (e.g., constrained and focused use likely by conscientious individuals) may also help avoid Facebook-situational envy. Employing features or uses that may help mimic natural characteristics of agreeable, extraverted, or conscientious personality types (e.g., removing posts by users that may agitate a nonagreeable person and adopting a more interactive style of use befitting an extravert) may ease Facebook-situational envy for those prone to such emotion. Furthermore, promoting an overall awareness by all users that other users are likely to post positive items more than negative items may also be helpful in reducing upward social comparisons and Facebook-situational envy.

Because Facebook is so heavily integrated into many people's daily life and socialization behaviors, it is important to understand the intricacies of how emotions transfer to the OSN environment. Our study has investigated, in a granular manner, the impact of different use motivations and personality traits on an undesirable emotion linked to Facebook use—Facebook-situational envy. We found that there are many factors that impact the likelihood of Facebook-situational envy in quite differing ways. The results suggest that the development of personalized strategies to mitigate negative emotional outcomes of OSN use may be necessary and useful. Socialization on and emotional adaptation to an online environment are rich areas of study as the use of OSNs continues to rise. Our study illustrates that the dynamics of emotions online can be complex and attention should be paid to discover the intricacies to promote healthy socialization and use.

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