“It’s Not Me, It’s You”: The Mechanisms and Process of Perceiver Effects in People with Interpersonal Problems

by

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A thesis submitted in conformity with the requirements for the degree of Master of Arts
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Abstract

Interpersonal problems are intrinsic to personality disorders. However, there is still little known about the mechanisms underlying interpersonal dysfunction. The purpose of the current thesis was to explore one likely mechanism: perceiver effects, idiosyncrasies in the way an individual tends to see other people. To determine whether interpersonal problems were linked to perceiver effects, two studies were conducted. In Study 1, participants rated the personality of four people in video-taped interactions. In Study 2, unacquainted classmates were assigned to groups that met throughout the semester and rated each group member at first impression and after four months of acquaintanceship. Study 1 showed largely null effects. Study 2 demonstrated that interpersonal problems predicted stable and mostly negative perceiver effects across time. The current program of research is the first to demonstrate that interpersonal problems predict a differentiated and stable profile of perceiver effects during social interactions, which has important clinical implications.
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1 Introduction

Interpersonal perceptions guide behaviour in social situations and, as such, have important social consequences (Catterson, Naumon, & John, 2015; Campbell, Miller, Lubetsky, & O’Connell, 2010; Nestler & Back, 2013; Srivastava, Guglielmo, & Beer, 2010). Indeed, well-adjusted individuals (e.g., high self-esteem, high satisfaction with life, high positive relation with others, low self-reported depression, etc.) typically form accurate impressions suggesting that accuracy is adaptive (Albright, Kenny, & Malloy, 1988; Hopwood et al., 2013; Human & Biesanz, 2011; Human, Sandstrom, Biesanz, & Dunn, 2013). At the same time, psychological adjustment is also linked to seeing others in a positive light (Human et al., 2013). For example, Human et al. (2013) demonstrated that positively-biased first impressions predicted greater liking both concurrently and longitudinally among groups of initially unacquainted students who met in-lab throughout a semester. Not only did positively-biased impressions predict greater liking but they also predicted more frequent social interaction between individuals and greater interest in continued contact at the end of the semester (Human et al., 2013). In sum, conceptual and empirical evidence suggest that psychologically-adjusted individuals are accurate about other people but also tend to see them in an overly positive light. These impressions have important implications for relationship development and quality.

Given that people who are well-adjusted tend to be more accurate and to expect the best in others, a logical assumption is that people who are less adjusted might have less accurate interpersonal perceptions and expect the worst in others. Indeed, the DSM-5 suggests that one form of psychopathology, personality disorders (PDs) are defined by a poor understanding of other people (American Psychiatric Association, 2013). This poor understanding arises from maladaptive cognitive schema that are formed early in childhood, guide one’s perceptions of everyday interpersonal experiences, and become increasingly rigid throughout the lifespan (Segal, 1988; Young & Lindemann, 1992). Some common cognitive distortions associated with PDs include an intense fear of abandonment and expectations of being hurt or cheated by others (Young & Lindemann, 1992). As a result, PDs are characterized by chronic interpersonal problems. However, those with personality pathology do not generally report intense subjective distress arising from their symptoms (Hirschfeld, 1993; Hopwood, Wright et al., 2013; Oltmanns & Turkheimer, 2009). More often, it is the people with whom these individuals regularly interact
(i.e. family members, romantic partners, co-workers, etc.) who experience distress as a result of these individuals’ maladaptive and socially inappropriate behaviours (Oltmanns & Turkheimer, 2009). Perhaps what is most concerning is that people with personality pathology are often blind to the profoundly negative impact they have on others and exhibit a tendency to attribute interpersonal difficulties to their interaction partners instead (Oltmanns, Gleason, Klonsky, & Turkheimer, 2005; Oltmanns & Turkheimer, 2009). This tendency to misattribute blame for interpersonal problems is one of the many distorted perceptions believed to be at the heart of personality pathology (American Psychiatric Association, 2013; Hopwood et al., 2013; Wright, Pincus, Hopwood, Thomas, Markon, & Krueger, 2012; Wright, Hallquist, Beeney, & Pilkonis, 2013). The main goal of the current thesis is to address the limited literature on idiosyncratic impressions, or perceiver effects, that people with interpersonal problems form. The following sections outline 1) the existing research on perceiver effects, 2) the possible mechanisms that cause them, 3) possible patterns of longitudinal change in perceiver effects, and 4) the proposed program of research that will address these notable gaps in the literature.

1.1 Individual Differences in How People Perceive Others: Perceiver Effects

In general, people hold idiosyncratic views of others (Kenny, 2004). These individual differences in perceptions of others’ personalities are known as perceiver effects (Kenny, 1988; Kenny, 1994; Srivastava et al., 2010; Wood et al., 2010). As such, perceiver effects are akin to a personality trait and indicate an individual’s generalized perception of others or “targets” (Albright et al., 1988). In comparison, target effects represent an individual’s actual reputation or the extent to which multiple perceivers’ judgments of the individual converge (Albright et al., 1988; Kenny, 1994). So, while target effects are concerned with the amount of variance in how others see one specific person, perceiver effects are concerned with the amount of variance observed across a single perceiver’s judgments of multiple targets (Albright et al., 1988; Kenny, 1994). Unlike target effects, perceiver effects do not provide information about what the target is truly like (Wood et al., 2010). Rather, perceiver effects are an index of how the perceiver tends to see other people in his or her social environment.

It is unclear whether perceiver effects represent a single positivity dimension (an evaluative halo) or have the same five-factor structure as the Big 5 model of personality (a
differentiated trait profile) (Srivastava et al., 2010; Wood et al., 2010). Because the Big 5 traits vary in their level of desirability (i.e. extraversion is a socially desirable trait while neuroticism is not) (Musek, 2007), perceiver effects can be considered valenced regardless of their structure. A negative perceiver effect would reflect a tendency to see the worst in people and to ascribe socially undesirable traits to others (i.e. low emotional stability, low agreeableness). A positive perceiver effect would reflect a tendency for perceivers to see the best in others and to attribute socially desirable qualities to those with whom they interact (i.e. high conscientiousness, high extraversion, etc.) (Srivastava et al., 2010).

As would be expected, positive perceiver effects are associated with favourable inter- and intrapersonal outcomes (Wood et al., 2010). For example, Wood et al. (2010) demonstrated that undergraduates who rated dormitory floor mates very positively reported being highly liked by others and also reported better fit with their same-age peers (Wood et al., 2010). The benefits of maintaining a positive perceiver effect were not exclusively experienced by the self either. Floor mates tended to like those with a positive perceiver effect more than other individuals (Wood et al., 2010). In addition to favourable interpersonal outcomes, positive perceiver effects were associated with greater life satisfaction and lower levels of depression as well (Wood et al., 2010). Thus, it would appear that positive perceiver effects are socially and psychologically adaptive.

While there has been some attention paid to perceiver effects in normative populations, the link between pathology and perceiver effects is quite under-researched. Of the few ecologically valid studies of perceiver effects that have been published to date, just one addresses the issue of pathology (Wood et al., 2010). Wood et al. (2010) demonstrated that personality pathology (with the exception of obsessive compulsive symptomatology) is associated with a less positive perceiver effect. However, the authors did not disentangle the extent to which this association was due to pathological personality traits or to a maladaptive style of interpersonal functioning (Wood et al. 2010). Both are fundamental components of PDs (American Psychiatric Association, 2013; Hopwood et al., 2013; Wright et al., 2012; Wright et al., 2013; Yam & Simms, 2014). As such, it is important to determine which of the two represents the driving force behind distorted interpersonal perceptions in order to develop effective targeted interventions (Bornstein, 2013; Lejeuz, Daughters, Nowak, Lynch, Rosenthal, & Kosson, 2003; Pincus, 2011;
Yam & Simms, 2014). As such, the goal of the current thesis is to determine whether people who endorse interpersonal problems maintain a perceiver effect and whether this interpersonal dysfunction moderates change in perceiver effects over time.

1.2 Personality Pathology and the Interpersonal Circumplex

Interpersonal problems are typically assessed in research and clinical settings using the interpersonal circumplex scales (IIP-C; Alden, Wiggins, & Pincus, 1990) The IIP-C is a circular plane structured around two orthogonal axes, dominance (vertical) and communion (horizontal) and which represent the two fundamental styles of interpersonal functioning (Alden et al., 1990; Wiggins, 1991). Broadly, dominance reflects themes of autonomy and represents the extent to which an individual demonstrates power, mastery and a sense of agency during social interactions (Bakan, 1966; Wiggins, 1979; Wiggins, 1991). Alternatively, communion represents an individual’s drive toward closeness with others and reflects his or her tendency to maintain friendliness and to seek out interpersonal intimacy (Bakan, 1966; Wiggins, 1979; Wiggins, 1991). Together, dominance and communion underlie the full gamut of interpersonal behaviours.

Not only do these dimensions describe interpersonal behaviours but they also encompass interpersonal problems. These problems are plotted along the dominance and communion axes in the interpersonal circumplex (Alden et al., 1990). Each dimension has two poles representing the extent to which dominance or communion contributes to the respondent’s interpersonal difficulties. One pole of the axis represents interpersonal behaviours that the respondent does excessively while the other represents interpersonal behaviours that the individual struggles to perform (Alden et al., 1990). Those who report problems at the high end of dominance generally act in a socially aggressive and domineering manner whereas those who report problems at the low end of dominance report difficulties due to their submissive tendencies (Alden et al., 1990; Wiggins, 1979). In comparison, respondents who report problems at the high end of communion endorse a clingy interpersonal style resulting in intrusive social behaviours while those who report problems at the low end of communion tend to maintain distance from others (Alden et al., 1990; Wiggins, 1979). All items from the interpersonal circumplex scales load on to a single, unipolar generalized distress factor which represents the overall level of discomfort that the individual experiences due to his or her interpersonal dysfunction (Tracey, Rounds, & Gurtman, 1996; Wright, Scott, Stepp, Hallquist, & Pilkonis, 2015). As has been noted in the literature, one
of the primary benefits of the IIP-C is that it differentiates between the type of interpersonal problem experienced (i.e. dominance versus communion) and the amount of distress it engenders (Wright et al., 2015). Thus, the IIP-C acknowledges that not all people who experience interpersonal dysfunction are troubled by it, which is a common feature of PDs (Hirschfeld, 1993; Hopwood et al., 2013; Oltmanns & Turkheimer, 2009; Wright et al., 2015).

1.2.1 Summary

Overall, very little research on perceiver effects has been conducted. While their existence has been confirmed, the mechanism that causes them still remains unclear. Is it the case that perceiver effects result from an individual’s misuse of physical and social cues provided by the target or are they due to self-fulfilling prophecy? Furthermore, while the literature has taken steps toward determining the extent to which perceiver effects remain stable over time, it has not yet addressed the direction of longitudinal change (i.e. do they become more positive or more negative?). Given that people with PDs have inflexible and maladaptive interpersonal schema, it is especially important to determine whether their impression of others remains stable or if they are able to adapt their impressions as acquaintanceship is strengthened.

The goal of the current thesis is to address these aforementioned gaps in the literature and to focus specifically on interpersonal problems as they relate to perceiver effects. Interpersonal problems are at the heart of pathology and while there has been some research on the personality correlates of perceiver effects, there has not yet been a study that investigates how maladaptive interpersonal styles are associated with this important component of interpersonal perception. Thus, the current thesis will isolate the role of interpersonal problems in perception and determine whether those who report interpersonal problems tend to see others in idiosyncratic ways.

1.3 The Mechanism of Perceiver Effects: Are Perceiver Effects the Result of Cue Misuse or a Self-Fulfilling Prophecy?

The existing literature has not fully elucidated the mechanism of perceiver effects and two possible explanations for these perceptual idiosyncrasies exist: 1) cue misuse and 2) self-fulfilling prophecy.
1.3.1 Cue Misuse: The Lens Hypothesis

The realistic accuracy model of interpersonal perception argues that perceivers generally attend to observable cues (i.e. body language, gender, and attractiveness) during social interactions (Funder, 1995). They then use these features to make inferences about a target’s personality or aptitude (Albright et al., 1988; Funder, 1995). For example, someone who tends to be loud might be perceived as extraverted since this quality is typically considered a sign of sociability (Funder, 1995). In this same way, an individual who speaks very quietly and averts their gaze during conversations will likely be perceived as introverted. Reliance on observable cues is especially helpful in low acquaintance situations when little information is known about the target and little information beyond the target’s appearance and mannerisms has been made available to the perceiver (Albright et al., 1988). People typically rely on physical characteristics to form impressions of others and these impressions are fairly accurate (Albright et al., 1988). For example, Albright et al. (1988) demonstrated that perceivers generally agree on target ratings of sociability and responsibility in low acquaintance situations. An association was found between ratings of sociability and targets’ perceived physical attractiveness just as ratings of responsibility were associated with targets’ perceived neatness of appearance (Albright et al., 1988). Albright et al. (1988) argue that one possible explanation for this association between a target’s appearance and certain unobservable traits might be the formation of stereotypes, which are then used as heuristics by perceivers during social interactions.

Unfortunately, not all cues are equally indicative of underlying individual differences. “Valid” cues are those features and behaviours that are reliably associated with personality traits (Funder, 1995). Thus, the formation of accurate impressions is contingent upon three conditions being fulfilled: 1) a sufficient number of valid cues must be available to the perceiver, 2) the perceiver must interpret these cues correctly, and 3) the perceiver must be able to differentiate between valid and invalid cues (Funder, 1995). Indeed, research demonstrates that despite the utility of cues for impression formation, perceiver effects still impact social judgments (Albright et al, 1988). For example, Albright et al. (1988) observed significant perceiver variance in judgments of agreeableness. This finding suggests that perceivers did not typically agree on who was high and low on this trait. One possible explanation is that when there are few valid and observable cues associated with a particular trait, perceivers tend to base their judgments on
invalid cues. Alternatively, they may rely on their own perceptual idiosyncrasies, or perceiver effects, to fill the gaps in their knowledge (Albright et al., 1988).

People with personality pathology and interpersonal problems frequently misuse observable cues during social interactions. For example, Daros, Uliazsek, & Ruocco (2014) found that individuals with borderline personality disorder (BPD) are generally less accurate in identifying emotional expressions compared to healthy controls. In particular, those with BPD tended to misperceive the intensity of mildly sad emotional expressions, instead identifying them as intensely sad (Daros et al., 2014). They were also more likely to perceive neutral expressions as happy (Daros et al., 2014). This finding is consistent with previous research which found that borderline pathology is associated with difficulty identifying expressions of anger and disgust (Daros et al., 2013). Generally speaking, individuals with borderline pathology report overall low levels of confidence in their ability to evaluate emotional body language (Kaletsch et al., 2014). Misperception of affective cues is not restricted to borderline pathology either. A similar phenomenon occurs in the context of avoidant personality disorder (AVPD). Rosenthal et al. (2011) observed that individuals with AVPD were less accurate in identifying fearful facial expressions compared to healthy controls during a facial expression morphing task. Overall, the literature indicates that those with personality pathology often misidentify the emotional expressions of others. As a result of misperceiving these affective cues, they are at greater risk of acting in socially inappropriate ways, which can result in frequent interpersonal conflict (Daros et al., 2014). The lens hypothesis posits the following: if those who endorse interpersonal problems are inaccurate in their perceptions of emotional cues, perhaps they also misinterpret behavioural cues typically used by people from normative populations to assess the personality of new interaction partners. This idiosyncratic perception of valid social cues might explain expected perceiver effects.

1.3.2 Self-fulfilling Prophecy: The Behavioural Reactivity Hypothesis

A self-fulfilling prophecy occurs when, “a perceiver’s inaccurate expectations lead to expectation-consistent behaviour” from others (Biesanz, Neuberg, Smith, Asher, & Judice, 2001). For example, if someone tends to think people are generally submissive, he or she might become domineering during conversations thus eliciting submissive behaviour from those with whom he or she interacts. This phenomenon has been observed among well-adjusted individuals
and is especially likely to occur if a perceiver is attending to multiple stimuli at once and
distracted as a result (Biesanz et al., 2001). People with personality pathology are especially
vulnerable to the effect of self-fulfilling prophecy given their chronic pattern of distorted
cognition (Young & Lindemann, 1992). As previously mentioned, these individuals have
maladaptive schema which typically develop due to strained relations with family and peers
during childhood and which result in pessimistic expectations of others during adulthood (Young
& Lindemann, 1992). For example, someone whose parent was cold and distant might feel a
pervasive fear of being abandoned and remain vigilant for signs of rejection from friends or
romantic partners (Young & Lindemann, 1992). In addition to excessively negative social
expectations, people with PDs are hypersensitive to threat and are quick to behave defensively
during seemingly benign social interactions (Hopwood et al., 2013; Young & Lindemann, 1992).
These unwarranted reactions generally provoke an undesirable response from interaction partners
(Young & Lindemann, 1992). For example, if Lisa suddenly erupts with anger during a
conversation, the person to whom she is speaking will likely withdraw. This withdrawal reaction
confirms and strengthens Lisa’s own distorted belief that she is unlovable and that others are
generally untrustworthy. Her pattern of behaviour not only results in interpersonal conflict but
creates a feedback loop which strengthens maladaptive schema and helps to maintain them
throughout the lifespan (Young & Lindemann, 1992). The behavioural reactivity hypothesis
argues that perceiver effects form when a perceiver’s own behaviours elicit reactions from others
that confirm their biased expectations of people in general.

1.3.3 Summary

The two major studies of perceiver effects that have been published to date (Wood et al.,
2010; Srivastava et al., 2010) have been unable to determine whether perceiver effects are due to
improper cue utilization or self-fulfilling prophecy. This is largely due to the research
methodologies they have employed. For example, Srivastava et al. (2010) conducted a cross-
sectional study and a longitudinal study in which unacquainted undergraduates interacted in
small groups and completed round robin ratings. Each participant rated their own personality and
that of each of their group members (Srivastava et al., 2010). Round robin ratings are typically
favoured for the study of interpersonal perception due to their high ecological validity (Kenny,
1994). However, because they are completed in person, it is unclear whether perceivers’ ratings
of the targets are based on observable cues or due to behavioural reactivity that takes place during in-lab activities.

In comparison, Wood et al. (2010) conducted a study in which dormitory floor mates were recruited to provide ratings of one another. Participants were randomly assigned to rate the personality of three individuals who lived on their dormitory floor using an online questionnaire (Wood et al., 2010). Initially, it would seem that having individuals rate one another online could restrict the effect of behavioural reactivity on their judgments. However, the perceivers and targets recruited in these studies were previously acquainted (Wood et al., 2010). Thus, they had a rich history of interaction upon which they could base their judgments of one another. Furthermore, the questions were answered by participants in isolation online so there was no opportunity for them to directly evaluate visual cues provided by the targets. In another study published by Wood et al. (2010), groups of friends were invited to complete ratings of one another in the laboratory. Friends completed their ratings together but did not interact at all during the experimental session (Wood et al., 2010). While this study design afforded participants the opportunity to attend to visual cues, once again, they were well-acquainted with one another and so their ratings likely reflected previously formed impressions. Additional research is needed to determine whether perceiver effects are due to cue misuse (the lens hypothesis) or self-fulfilling prophecy (the behavioural reactivity hypothesis) and to examine whether interpersonal problems are associated with perceiver effects regardless of the information available (cues versus real time interaction). The current thesis will take the first steps toward addressing this crucial gap in the literature.

1.4 The Process Underlying Perceiver Effects: Do Perceiver Effects Remain Stable over Time?

Kenny (1994) described two possible forms of perceiver effects, both of which have important implications for change over time. The generalized other model states that perceiver effects are informed by one’s internal working model, which stores information about an individual’s expectations of others and facilitates relationship formation (Kenny, 1994; Pietromonaco & Feldman Barrett, 2000). As such, the generalized other model is firmly established by adulthood (Kenny, 1994). If perceiver effects do adhere to the generalized other model, they should remain stable over time and represent individual differences in and of
themselves (Kenny, 1994). The second model is the group-specific stereotype which argues that an individual’s impression of others is updated as he or she learns more about his or her interaction partners (Kenny, 1994). This model implies the potential for perceiver effects to change over time.

The literature has yielded conflicting conclusions about the potential for perceiver effects to change. For instance, in a study conducted by Wood et al. (2010), fraternity and sorority members were recruited to rate 3 randomly selected members of their organization (Wood et al., 2010). One year later, these same participants were randomly assigned to rate 3 different members (Wood et al., 2010). A linear mixed model analysis indicated that individuals who tended to see their peers very positively at time 1 were more likely to demonstrate this same overly positive perception at time 2. However, the interpretation of these results is complicated. First, as in the other studies on perceiver effects conducted by Wood et al. (2010), individuals who rated one another were previously acquainted. Second, they all belonged to the same fraternity or sorority and so an in-group bias may have resulted in overly positive ratings of their peers at both time-points, rather than a stable perceiver effect.

In another attempt to assess the longitudinal pattern of perceiver effects, Srivastava et al. (2010) sought to determine whether perceiver effects are more akin to the generalized other model or the group-specific stereotype. Small groups of undergraduate students met four times throughout the semester and completed self-report and round-robin ratings of personality after each interaction (Srivastava et al., 2010). Overall, Srivastava et al. (2010) reported that perceiver effects were stable at time 1, consistent with the generalized other model. However, stability also increased across subsequent time-points, consistent with the group-specific stereotype (Srivastava et al., 2010). Thus, Srivastava et al. (2010) concluded that perceiver effects have characteristics of both models. While Srivastava et al. (2010) looked at correlations between ratings across the four time points, they did not investigate mean-level changes and so it remains unclear whether individual participants’ perceiver effects became more positive or more negative throughout the semester.

Furthermore, no study has yet explored whether individual differences moderate change in perceiver effects over time. An especially important factor to consider would be interpersonal
dysfunction since these problems are inextricably linked to rigid patterns of distorted cognition that are resistant to change (Young & Lindemann, 1992). Given that people with PDs have inflexible and maladaptive interpersonal schema, it is expected that participants in the current study who report interpersonal problems will largely maintain a stable perceiver effect over time. As predicted by the lens hypothesis, people filter information in idiosyncratic ways. While cue use might explain initial effects, a longitudinal pattern could mean one of at least two things. First, it could be that people consistently filter information through this lens even after forming first impressions. Second, it could be that a self-fulfilling prophecy arises such that individuals who expect the worst from others, act in accordance to their expectations (i.e. treat others harshly, act defensively) and are treated harshly by others in return. Previous research indicates that those with personality pathology frequently misinterpret affective cues and, as a result, not only maintain distorted expectations of others due to previously formed schema but also behave inappropriately. As a result, it is expected that individuals with interpersonal problems will maintain stable perceiver effects over time both at first impression and throughout acquaintanceship, due to inappropriate cue usage and behaviour this misunderstanding provokes.

2 The Current Research

The purpose of the current thesis is threefold. First, I will establish the structure of perceiver effects by determining whether they maintain a single positivity dimension or a five-factor structure, much like self-reported personality. As previously mentioned, the structure of perceiver effects has not yet been confirmed in the literature. As such, this first step is crucial to improving our understanding of perceiver effects in general. Second, I will illustrate the association between interpersonal problems and perceiver effects. Study 1 will isolate cue perception processes in an effort to elucidate the mechanism that underlies perceiver effects. By isolating behavioural and physical cues using the video medium, it is ensured that behavioural reactivity and any consequent self-fulfilling prophecies are not driving the formation of idiosyncratic impressions. If significant correlations are observed between interpersonal problems and perceiver effects during Study 1, there will be some evidence to suggest that cue misperception prompts perceiver effects at first impression. The relationship between interpersonal problems and perceiver effects will also be investigated in Study 2 to determine whether the magnitude and direction of the correlations observed in Study 1 are replicated or significantly strengthened when perceivers and targets engage in social interaction. Furthermore,
Study 2 will determine whether interpersonal problems predict patterns of mean-level change in perceiver effects over time. These longitudinal analyses will investigate whether interpersonal problems are marked by a tendency to hold on to idiosyncratic perceptions of others or, alternatively, characterized by a tendency to become increasingly negative as acquaintanceship is strengthened.

2.1 Hypotheses

2.2 The Structure of Perceiver Effects

2.2.1.1 The Five Factor Hypothesis

The literature remains divided on whether perceiver effects represent a single, positivity dimension (i.e. perceivers see others very positively) or whether they maintain a Big 5 structure (Srivastava et al., 2010; Wood et al., 2010). Wood et al. (2010) demonstrated that perceiver effects can be measured along a single positivity dimension that essentially captures a perceiver’s evaluative halo. In comparison, Srivastava et al. (2010) found evidence of a five-factor structure. Beyond determining the structure of perceiver effects, two crucial steps are required to confirm their existence at all. First, evidence must demonstrate that acquiescence alone does not provide the optimal fit for the data (Srivastava et al., 2010). Acquiescence refers to a participant’s tendency to agree with self-report items even when the items are not true for the respondent (Srivastava et al., 2010). If an acquiescence structure provided optimal fit for the data, this would suggest that any observed perceiver effects are simply methodological artifacts (Srivastava et al., 2010). Second, there must be evidence that perceiver effects are not merely accounted for by projection, an unconscious process whereby an individual assumes that others have the same personality traits as him or herself (Hoch, 1987). Projection is especially common when assessing traits with few observable cues (Ready, Clark, Watson, & Westerhouse, 2000). The current studies will confirm the structure of perceiver effects by replicating the structural equation models conducted by Srivastava et al. (2010) which compared the fit of five different models of perceiver effects. Given that self-reported personality maintains a differentiated five-factor structure, it is anticipated that perceiver effects will also demonstrate a five-factor structure in the current studies.
2.3 The Interpersonal Circumplex and Perceiver Effects: The Effects of Dominance, Communion, and Generalized Distress

Support for the following hypotheses are expected to be generated in both Study 1 and Study 2 of the current thesis.

2.3.1.1 The Large and in Charge Hypothesis

Interpersonal problems characterized by high levels of dominance and low levels of communion are commonly associated with antagonism and disinhibition (Wright et al., 2015). These personality domains typify narcissistic and antisocial PDs respectively, both of which are characterized by low levels of social inhibition (Clifton, Turkheimer, & Oltmanns, 2005; Krueger, Derringer, Markon, Watson, & Skodol, 2012). Furthermore, those who self-report high levels of narcissistic personality pathology not only see themselves as extremely extraverted but very open to experience as well (Carlson, Vazire, & Oltmanns, 2011). Indeed, narcissistic individuals’ self-perceptions for both extraversion and openness are generally higher than the typical person’s self-perceptions (Carlson et al., 2011). Narcissists even tend to over-estimate how extraverted and open to experience both their peers and close others perceive them (Carlson et al., 2011). Due to this grandiose sense of self, it is expected that people who self-report interpersonal problems due to high dominance will tend to see others as being less extraverted and less open to experience in Studies 1 and 2, especially since these traits are both seemingly important to the self-concept of narcissistic individuals. Given the correlational nature of the current studies and the bipolar structure of the dominance subscale, it is conversely expected that individuals who self-report low levels of dominance are expected to see others as highly extraverted and open to experience in both studies.

2.3.1.2 The Warm and Welcoming Hypothesis

It is hypothesized that individuals who self-report high levels of communion will maintain a diffusely positive set of perceiver effects. Thus, these individuals will tend to see the very best in others (i.e. high extraversion, agreeableness, conscientiousness, emotional stability, and openness). On the contrary, given the bipolar nature of the communion scale, it is expected that participants who report low levels of communion will tend to see the worst in others across all five domains of personality (i.e. low extraversion, agreeableness etc.)
2.3.1.3 The Interpersonal Threat Hypothesis

People who report high interpersonal distress on this unipolar scale tend to express feelings of limited autonomy and high dependence on others (Wright et al., 2012; Wright et al., 2015). Maintaining close social connections is typically adaptive. However, relationships become dysfunctional when an individual essentially feels that he or she cannot function without the support of others, as is the case with borderline pathology (Fonagy & Luyten, 2009). It is also maladaptive to feel threatened by others, as is the case with avoidant pathology (Rosenthal et al., 2011). Indeed, borderline and avoidant pathology maintain some of the strongest associations with interpersonal distress among the PDs (Wright et al., 2012; Wright et al., 2015). It is predicted that high interpersonal distress will be associated with a tendency to perceive others as low in agreeableness. Essentially, it is expected that people who seek extreme closeness with others (i.e. BPD) will often be disappointed when their unrealistic expectations go unmet resulting in a tendency to perceive them as unkind. Similarly, those who seek social distance from others due to anxiety (i.e. AVPD) might generally anticipate others to be unkind, threatening, or possibly judgmental resulting in a tendency to see everyone as low in agreeableness. In sum, it is expected that people who report high generalized distress will underestimate how agreeable (i.e. kind) others really are. Though there will be no effect of behavioural reactivity in Study 1 due to the isolation of cue perception processes, agreeableness is a low visibility trait that is often difficult to assess based on behavioural cues alone (Albright et al., 1987). As such, participants in Study 1 may rely on perceiver effects to fill gaps in their knowledge even if the targets’ behaviour does not directly impact or threaten them. Thus, significant negative correlations between interpersonal distress and agreeableness is expected in both studies.

2.4 The Process of Perceiver Effects

The following hypotheses will be tested in Study 2 only.

2.4.1 The Stability Hypothesis

I hypothesize that perceiver effects associated with high dominance will remain stable over time. Though people who endorse narcissistic pathology do have some awareness that others’ perceptions of them become less favourable as acquaintanceship improves, narcissistic
individuals still provide high self-reported ratings of extraversion and openness regardless (Carlson et al., 2011). Because this exaggerated self-perception endures, it is expected that the resulting perceiver effects will remain stable as well.

Furthermore, I hypothesize that high generalized interpersonal distress will be associated with a stable and negative agreeableness perceiver effect over time such that no mean level changes are observed. Interpersonal problems result from rigid cognitive schema that are characterized by a mistrust of others (Young & Lindemann, 1992). One of the core maladaptive cognitive schema observed among those with personality pathology is the instability and disconnection schema which is characterized by the following 3 themes: abandonment, abuse, and emotional deprivation (Young & Lindemann, 1992). When this schema is activated, automatic thoughts about the unreliability or the danger of other people emerge (Young & Lindemann, 1992). Based on this wariness of others, it seems likely that people who experience interpersonal distress will form a negative first impression of those they meet. Furthermore, I expect they will filter all perceived social cues through a negative lens and behave in such a way that elicits negative reactions from others. Therefore, I anticipate that regardless of how much new information is learned about their group members, those with interpersonal problems will maintain a stable perceiver effect.

2.4.2 The Reality Check Hypothesis

On the contrary, it is expected that mean level change in perceiver effects will be observed among those who report problems related to high communion. People who self-report high levels of communion typically expend great effort helping others. Essentially, it is expected that while their impressions may start off as diffusely positive, they will become less positive as time passes since others may underappreciate or fail to reciprocate their acts of kindness. As such, these individuals’ rosy worldview may be challenged thus leading them to drastically revise the way they perceive others. Conversely, those who are low in communion may tend to judge others very harshly at first. However, with further interaction and strengthened acquaintanceship, these individuals may be treated warmly by others perhaps softening their initially negative worldview, leading their perceiver effects to become increasingly positive over time.
3 Study 1

3.1 Purpose

Study 1 was conducted using archival data collected at the University of Toronto’s Mississauga Campus. The study addresses the fundamental question of whether interpersonal problems predict a biased perception of others. As such, it tests the large and in charge, warm and welcoming, and interpersonal threat hypotheses. Study 1 was mainly designed to isolate cue utilization processes. Specifically, participants rated video-taped targets rather than people who they met in real life, which eliminates any possible element of behavioural reactivity. As such, the secondary goal of the study was to determine whether relationships between interpersonal problems and perceiver effects emerged when perceivers did not interact with targets.

3.2 Methods

3.2.1 Participants

Undergraduate students at the University of Toronto were recruited to participate in a longitudinal study investigating self-concept changes during university. Only data collected during study session 1 were used in the current analyses. Participants were recruited from the University of Toronto’s Mississauga Campus undergraduate research pool and through print advertisements circulated on the UTM campus. Students from the UTM research pool received 2 course credits for their participation. All other participating students received $20 as compensation for their time. Participants ($N = 175; M_{age} = 18.65, SD_{age} = .96$) were predominantly female, of Asian and/or Caucasian heritage, heterosexual, and currently residing with their parents.

3.2.2 Materials and Procedure

Participants were invited to the Self-Knowledge and Interpersonal Perception (SKIP) Laboratory at the UTM campus to complete a two-hour long experimental study session. Participants read a brief overview of the study’s purpose and procedure before providing written informed consent. They were free to end the session at any time. Participants subsequently completed a battery of self-report measures assessing their personality and interpersonal functioning. These questionnaires were administered on desktop computers using Qualtrics
survey software and took approximately 45 minutes to complete. Participants then watched four video-taped interactions in which pairs of unacquainted undergraduate students engaged in a brief “getting-to-know-you” conversation. These interactions had been videotaped during experimental sessions from a previous study conducted at the University of Washington in St. Louis. After watching each video, participants were instructed to rate one of the two interaction partners. Targets were counterbalanced to avoid order effects. In videos 1 and 3, the individual sitting on the left side of the scene was rated. In videos 2 and 4, the individual sitting on the right side was rated.

3.2.3 Measures
3.2.4 Personality index

Participants were provided with a list of 31 traits and rated the extent to which each described their own personality on a scale ranging from 1 (“not at all”) to 9 (“extremely”). Traits broadly reflected each of the Big 5 personality factors and included additional characteristics such as likeability, attractiveness, intelligence, satisfaction with life, depression, etc. Participants also rated each of the four video-taped targets on these same 31 traits. For the purposes of the current study, only those traits that conceptually mapped on to the Big 5 personality factors were included in the analyses (18 items). The traits listed in these personality indices substantially overlap with many of the traits included in the Ten-Item Personality Inventory (TIPI) (Gosling, Rentfrow, & Swann, 2003), a well-validated measure of the Big 5 personality factors. As such, the scoring protocol for the personality index administered in the current study was informed by the scoring procedures for the TIPI. Big 5 subscale scores for self-reported personality ratings were computed by taking the average of those items that were conceptually consistent with each of the Big 5 factors. Higher scores indicated that the trait was a good descriptor of the individual. In the current study, the self-reported Big 5 personality factors generally demonstrated poor internal reliability: extraversion ($M = 5.77, \alpha = .67$), conscientiousness ($M = 5.68, \alpha = .33$), agreeableness ($M = 6.93, \alpha = .68$), emotional stability ($M = 5.54, \alpha = .63$), and openness ($M = 6.42, \alpha = .70$).

3.2.5 Interpersonal problems

The Inventory of Interpersonal Problems – 64 (IIP-64; Horowitz, Rosenberg, Baer, Ureno, & Villasenor, 1988) is a 64 item subset of the original 127-item version of the IIP
(Wiggins, 1979) that was initially developed for use as a clinical screening measure. Items were derived from content analysis of clinical intake interviews (Wiggins, 1979). The items probe interpersonal behaviours that are challenging for the respondent (i.e. “it is hard for me to express my feelings to other people directly”, “it is hard for me to be firm when I need to be”, etc.) as well as problematic interpersonal behaviours that the respondent does too often (i.e. “I fight with other people too much”, “I feel too responsible for solving other people’s problems”, etc.). Respondents rate the extent to which each of these interpersonal problems causes them distress on a Likert scale ranging from 0 (“not at all”) to 5 (“extremely”). As previously mentioned, the IIP-64 can be scored to capture dominance ($M = .02, SD = .73$), communion ($M = .21, SD = .64$), and interpersonal distress ($M = 2.23, SD = .72$), all three of which are weighted scales.

3.2.6 Analyses

To test the structure of perceiver effects, a series of confirmatory structural equation models were run using the lavaan statistical package (Rosseel, 2012) in R version 3.2.2 (R core team, 2015). This initial series of CFA models was used to test the fit of 5 possible perceiver effect structures previously identified by Srivastava et al. (2010) and in this order: 1) a single-factor acquiescence structure (i.e., the tendency to agree with items), 2) a single-factor global positivity structure, 3) a two-factor agency (e.g., “this person is someone who is outgoing”, “this person is someone who is dominant”, etc.) and communion (e.g., “this person is someone who is sympathetic”, “this person is someone who is socially competent”, etc.) structure, 4) a five-factor personality structure, and 5) a five-factor structure with a higher order positivity dimension. The models were progressively complex. In each case, the more simplistic model was run and its model fit was compared to the next most complex model. For example, the acquiescence model was run and then compared to the global positivity structure. In cases where the simpler model provided better fit than the next most complex model in the sequence, its fit was compared to the following most complex model.

In total, 5 series of CFA were run to confirm the structure of perceiver effects. CFA were first run using overall perception scores. To compute overall perception scores, item-level ratings of each video target were standardized such that the mean score for each item became zero and the deviations from zero represented perceiver effects. Positive scores indicated higher rating of a trait than the average person would typically give a target and negative scores indicated lower
Once the structure of perceiver effects in the current study were identified, a series of Pearson product-moment correlations were conducted between the interpersonal subscale scores and perceiver effect subscale scores to determine whether self-reported interpersonal problems were associated with perceptual idiosyncrasies. To ensure that any significant associations between interpersonal problems and perceiver effects were not simply explained by projection, two-step hierarchical regressions were subsequently run. In each hierarchical regression model, the relevant perceiver effect was entered as the dependent variable. In step 1, the self-reported rating of that same personality trait was entered as an independent variable. In step 2, the significant interpersonal problem subscale(s) were entered as an independent variable to evaluate whether they predicted the perceiver effect over and above projection. If so, this finding was taken as evidence that participants were not solely relying on their own self-perceptions when making target judgments but, rather, they indeed demonstrated a substantial perceptual idiosyncrasy.

3.3 Results

3.3.1.1 Confirmatory Factor Analyses

3.3.1.1.1 Acquiescence

The first model tested was a single factor acquiescence model. The factor loading for reverse-scored items was set to -1. The factor loading for all other items was set to +1.0 (Srivastava et al., 2010). Srivastava et al. (2010) found that acquiescence alone was a poor fit for their data, though it accounted for a significant amount of variance (Srivastava et al., 2010). In the current study, the acquiescence model demonstrated the worst fit of any model tested with both the overall perception scores and the perceiver effect scores across all four videos (see Tables 1-5 for fit indices of all models). However, as in Srivastava et al.’s (2010) study, acquiescence accounted for significant variance when overall perception scores loaded on to the
factor \((z = 8, \ p < .001)\) and so an acquiescence factor was retained in all of the models that were subsequently tested with overall perception scores and with data from across the four videos. The other factors specified in these models were not permitted to correlate with acquiescence.

### 3.3.1.1.2 Global positivity structure

All personality items loaded on to the global positivity structure. When run with overall perception scores, the global positivity structure fit significantly better than the acquiescence model, \(\Delta \chi^2 (18) = 500.15, \ p < .001\). When the model was run with data from video 1, a chi-square difference test conversely indicated that the global positivity structure fit the data significantly better than the acquiescence model, \(\Delta \chi^2 (18) = 446.64, \ p < .001\). This finding was replicated in videos 2, 3, and 4 [video 2: \(\Delta \chi^2 (18) = 411.32, \ p < .001\), video 3: \(\Delta \chi^2 (18) = 290.5, \ p < .001\), and video 4: \(\Delta \chi^2 (18) = 410.91, \ p < .001\)].

### 3.3.1.1.3 Agency and communion model

Items consistent with traits openness and extraversion (7 items) loaded on to the agency factor (Srivastava et al., 2010). Items consistent with agreeableness, conscientiousness and emotional stability (11 items) loaded on to the communion factor (Srivastava et al., 2010). When this model was run using overall perception scores, it did not demonstrate significantly better fit than the global positivity structure, \(\Delta \chi^2 (1) = 2.72, \ ns\). Similarly, in videos 1, 2, 3, and 4, no significant difference in fit was observed between the agency and communion model and the global positivity model.

### 3.3.1.1.4 The five-factor model

The five factors in this model were allowed to co-vary with one another. When run with overall perception scores, the five-factor model fit significantly better than the global positivity model, \(\Delta \chi^2 (10) = 182.97, \ p < .001\) and the agency and communion model, \(\Delta \chi^2 (9) = 180.25, \ p < .001\). In video 1, a chi-square difference test indicated that the five factor model fit the data significantly better than the global positivity model, \(\Delta \chi^2 (10) = 140.23, \ p < .001\), and the agency and communion model, \(\Delta \chi^2 (9) = 130.50, \ p < .001\). When run with data from video 2, the extraversion and conscientiousness factors in the five-factor model were not permitted to co-vary due to their substantial shared variance. In video 2, the five-factor model fit better than both the global positivity structure, \(\Delta \chi^2 (9) = 111.83, \ p < .001\), and the agency and communion model, \(\Delta \chi^2\).
(8) = 110.29, \( p < .001 \). This result was replicated in videos 3 and 4. In video 3, the five-factor model fit better than both the global positivity structure, \( \Delta \chi^2 (10) = 156.60, p < .001 \), and the agency and communion model, \( \Delta \chi^2 (9) = 155.81, p < .001 \). In video 4, the five-factor model once again exemplified better fit than both the global positivity structure, \( \Delta \chi^2 (10) = 156.60, p < .001 \), and the agency and communion model, \( \Delta \chi^2 (9) = 137.35, p < .001 \).

### 3.3.1.1.5 Five-factor model with higher order positivity dimension

A five-factor model with an additional higher order positivity dimension was tested using overall perception scores. The five-factor model without the additional higher order positivity dimension still demonstrated the best fit, \( \Delta \chi^2 (5) = 46.71, p < .001 \). When run with video 1 data, the five-factor structure demonstrated better model fit than the more complex model, \( \Delta \chi^2 (5) = 16.22, p < .01 \). This was observed across the remaining three videos [video 2: \( \Delta \chi^2 (4) = 25.32, p < .001 \); video 3: \( \Delta \chi^2 (5) = 40.64, p < .001 \); video 4: \( \Delta \chi^2 (5) = 23.98, p < .001 \)]. Overall, the fit of the five-factor model was not significantly improved by the addition of a higher order positivity dimension.

### 3.3.1.1.6 Summary: The Structure of Perceiver Effects

The CFA models provided strong evidence that perceiver effects in the current study maintain a five-factor structure. Big 5 subscale scores for each video were calculated by taking the average of the items that loaded on to each of the five factors respectively. Subscale scores were subsequently standardized such that the mean score for each of the Big 5 subscales was zero and deviations from zero represented participants’ perceiver effects. Positive scores indicated higher rating of a trait than the average person and negative scores indicated lower rating of a trait relative to the average person. The internal reliability of each subscale was assessed using Cronbach’s alpha (see Table 6). The extraversion subscale scores from each of the four videos demonstrated good internal reliability (range: \( \alpha = .72 -.79 \)) as did openness subscales (range: \( \alpha = .69 -.77 \)). However, the conscientiousness, agreeableness, and emotional stability subscales generally demonstrated low internal reliability (range: \( \alpha = .25 -.58 \)). To improve reliability, item 2 was dropped from the agreeableness subscale and item 9 was dropped from the emotional stability subscale (see Table 6). Unfortunately, only minimal improvements in reliability would have been gained from dropping any of the items in the conscientiousness subscale. Furthermore, the items that were deleterious to this subscale’s reliability differed across
videos. In order to maintain conceptual consistency across datasets, all items on the conscientiousness subscale were retained. As previously mentioned, the Big 5 self-reported personality subscales generally demonstrated low internal reliability too. Thus, the range of alpha coefficients observed among the self-reported personality subscales most likely represented the upper limits of reliability for perceiver effects. The relationship between interpersonal problems and perceiver effects was assessed using Pearson product-moment correlations. These analyses were run using total perceiver effect scores for each of the Big 5 factors. Total perceiver effect scores were computed by taking the average of the standardized subscale scores from each of the four videos. So, for example, the total extraversion perceiver effect subscale was created by averaging extraversion subscale scores from videos 1-4. When running the Pearson correlations, these total perceiver effect scores were entered as the DVs and the interpersonal problem subscale scores were entered as the IVs.

3.3.1.2 Do People with Interpersonal Problems Tend to See Others in Idiosyncratic Ways?

Participants higher in dominance issues tended to perceive video targets as less emotionally stable, $r (163) = -.19, p < .05$, an effect that remained significant when controlling for self-perceptions of emotional stability ($\beta = -.17, p < .05$) (see Table 7). However, as shown in Table 8, no other significant associations between interpersonal problems and total perceiver effects emerged.

3.4 Discussion

The primary aim of the current study was to determine the nature of the relationship between interpersonal problems and perceiver effects. Three patterns of association were expected. First, the large and in charge hypothesis predicted that individuals who reported high dominance would tend to perceive video targets as low in extraversion and openness to experience. Second, the warm and welcoming hypothesis anticipated that those high in communion would see others in a diffusely favourable light. Finally, the interpersonal threat hypothesis predicted that participants who reported high generalized distress would perceive targets as low in agreeableness. None of these hypotheses were supported in the current study. Instead, the only significant result observed was a negative correlation between dominance and emotional stability perceiver effects, suggesting that participants who endorsed dominance-
related problems tended to perceive targets as being low in emotional stability. One possibility is that people who reported higher dominance tended to think they themselves were very emotionally stable and, in turn, automatically assumed that all targets were less stable in comparison. Indeed, narcissistic individuals tend to over-estimate their reputation for being emotionally stable (Carlson et al., 2011). However, given that only one effect emerged, it is likely that this correlation was driven by random chance (i.e., Type 1 error) versus a true effect. Future research investigating the association between dominance-related problems and perceiver effects is needed to see whether this effect can be replicated.

Beyond demonstrating associations between interpersonal problems and perceiver effects, the secondary aim of the study was to isolate cue perception processes in order to determine the extent to which perceptual idiosyncrasies are driven by the misuse of social and behavioural cues alone. The null effects observed in the current study may be an indication that perceiver effects do not result from cue misuse. However, an alternative possibility is that the video medium compromised the ecological validity of participants’ interpersonal perceptions. In his realistic accuracy model (RAM), Funder (1995) emphasizes that accurate personality perception is more likely to occur when an individual closely attends to a target. When there are fewer distractions present, the perceiver is likely to notice the target’s behaviours and infer underlying personality traits (Funder, 1995). Distractions were few and far between in the current study. The video-taped scenes were quite sparse. Only two people interacted in each tape. As a result, participants’ attention was relatively undivided and they could expend more effort carefully attending to the target’s behaviours, appearance and speech. Though the current study did not evaluate the accuracy of participants’ personality judgments, previous research has indicated that perceiver effects can flesh out first impressions when little information is available to the perceiver or when available information is ambiguous (Albright et al., 1988). Participants’ increased attention may have reduced their need to use perceiver effects to fill the gaps in their impressions. Additionally, because there was no interaction between participants and the targets in this study, the conversations may have been less personally salient to perceivers. Participants may have been emotionally disengaged which could have limited the emergence of perceiver effects. A study employing round robin ratings would help to determine if interpersonal problems predict perceiver effects when perceivers and targets directly interact with one another.
3.5 Limitations

The current study has several limitations which should be noted. The reliability of the perceiver effect subscales was quite poor. These low alpha coefficients may not necessarily reflect the dubious nature of perceiver effects themselves, but rather the limitation of the personality index used. This is further suggested by the only slightly higher reliability estimates observed among the self-reported personality subscales. The personality index in the current study was very similar to the TIPI, a measure that consistently demonstrates low reliability since each subscale is comprised of only two items. Furthermore, the items that were included in the current study’s Big 5 subscales but which were not directly adapted from the TIPI captured a broad range of traits. While these items demonstrated excellent content validity, their diversity may have reduced internal reliability. To address this limitation in Study 2, target ratings were provided on the TIPI. While this measure does tend to exhibit low reliability, it was expected that its reliability would be higher than the non-validated measure of personality administered in Study 1. Furthermore, beyond having provided the optimal conditions for assessing personality during the current study (i.e. few distractions), it may be the case that individuals in the videos were especially good targets. In order to pull for differentiated target ratings across videos, participants rated individuals who had very distinctive personality profiles. For example, one video target demonstrated prototypically narcissistic qualities and, as such, was considered easy to judge. In one way, the extremity of these targets’ qualities and behaviours was a strength of the study as they provided a conservative test of perceiver effects. If perceiver effects could be detected despite the exaggerated personalities of these targets, it would be quite convincing evidence that participants with interpersonal problems tend to see others through a distorted lens no matter how much information is available. However, these extreme traits and behaviours may have further reduced the ecological validity of the study. In real life, people tend to demonstrate a more nuanced spectrum of personality traits and often make conscious efforts to engage in self-presentation during early acquaintanceship to ensure a favourable first impression. Targets in the current study very obviously demonstrated their true colours and, as such, may have prevented perceiver effects from emerging. Finally, the current study’s results were correlational. Causal inferences should not be drawn. To clarify the causal relationship between interpersonal problems and perceiver effects, a longitudinal study was conducted next.
4 Study 2

4.1 Purpose

The purpose of the current study was 1) to test the large and in charge, warm and welcoming, and interpersonal threat hypotheses to determine whether interpersonal problems predict perceiver effects at first impression when participants are permitted to directly interact, and 2) to determine whether interpersonal problems moderate change in perceiver effects over time. PDs are notoriously difficult to treat given the deeply-entrenched maladaptive schema that underpin their characteristic inappropriate behaviours and perceptions (Young & Lindemann, 1992). Given that interpersonal dysfunction is one of the primary clinical features of PDs, it is important to consider whether perceiver effects drive these interpersonal issues and whether they remain stable or become increasingly maladaptive over time. If those with interpersonal problems gradually let go of their perceiver effects, such that their initial assumptions about new acquaintances become more normative as they get to know them better, then this could be evidence that people correct their own perceptual idiosyncrasies. If this is not the case, then we have some indication that perceiver effects among those with personality pathology are just as intractable as the personality phenotypes that are associated with each of the PDs. This relationship between perceiver effects and interpersonal problems could potentially provide two important insights into PDs. On a theoretical level, it could be an indication that perceiver effects are driven by maladaptive interpersonal schema inherent to PDs. On a practical level, knowing the typical course of perceiver effects among those with PD pathology will be important in order to develop and empirically test targeted interventions. In the current study, it was predicted that people who report high dominance and generalized distress would exhibit stable perceiver effects (the stability hypothesis) but those who endorsed high communion would develop an increasingly negative perceiver effect over time (the reality check hypothesis).

4.2 Methods

4.2.1 Participants

Participants were recruited from two sections of an undergraduate personality psychology course at the University of Washington at St. Louis for the current longitudinal study.
Participants (Section 1: \( N = 106; M_{\text{age}} = 19.66, SD = .95 \); Section 2: \( N = 94; M_{\text{age}} = 19.91, SD = .99 \)) were predominantly female and Caucasian.

4.2.2 Materials and procedure

In the first week of classes (T1), participants were assigned to groups comprised of 4 to 8 students. All group members were initially unacquainted with one another. Groups met once a week for 10-20 minutes throughout the 15-week semester. Acquaintanceship was established at time 1 (T1) by completing a “getting-to-know-you” task called “Two Truths and a Lie”. In this game, each group member was asked to tell the group 2 true things about themselves and 1 false thing. Group members were challenged to guess which statement was the lie. For the remainder of the semester, groups discussed course material during their meetings.

Round robin ratings of group members were completed at T1 and in the final week of the semester (T2). This ecologically valid design involves having every participant provide personality ratings for themselves and for each of their group members (Kenny, 1994). It is intended to capture the way people perceive others in their everyday life (Kenny, 1994). At T1, they rated and were rated by each group member on a measure of Big 5 traits (TIPI) and the same ratings took place during the last week of class (T2). The first class section completed two additional personality ratings (T2 and T4) and the second class section completed one additional personality rating (T3) in the middle of the semester. However, ratings from these time points (T2, T3, and T4) were not included in the current analysis in order to maintain consistency in the two samples. A few weeks into the semester, participants completed a self-report measure of interpersonal problems (IIP-64).

4.2.3 Measures

4.2.3.1 Personality

Round robin ratings were completed on the TIPI (TIPI; Gosling, Rentfrow, & Swann, 2003). Perceiver effect subscales in the current study showed poor to adequate reliability at both the beginning and the end of the semester (T1: \( \alpha = 44 -.76 \); T5: \( \alpha = 49 -.75 \)).
4.2.3.2 Interpersonal problems

The Inventory of Interpersonal Problems – 64 (IIP-64; Horowitz, Rosenberg, Baer, Ureno, & Villasenor, 1988): Participants completed a self-report version of the IIP-64 (see Study 1 Methods section for an overview of the IIP-64’s psychometric properties). The IIP-64 was scored for dominance ($M = -.04$, $SD = .68$), communion ($M = .21$, $SD = .66$), and generalized distress ($M = 1.93$, $SD = .64$).

4.2.4 Analyses

To determine whether self-reported interpersonal problems predict change in perceiver effects over time, a series of conditional growth curve models were conducted. A three-level model was fit using the lme4 statistical package in R version 3.2.2 (Bates, Maechler, Bolker, & Walker, 2015). Perceiver effect scores were computed for each of the Big 5 traits as well as for narcissism using the TripleR statistical package (Schönbrodt, Back, & Schmukle, 2012) in R version 3.2.3, a package that computes target and perceiver effects based on the Social Relations Model (Kenny, 1994). This package computes target and perceiver effects for each person in a group but allows users to export a) group-centered scores (e.g., how a person tends to see his or her group members relative to the typical person, akin to a z-score) and b) raw scores whereby group means are re-entered into target and perceiver effects. I elected to use raw scores to interpret change over time in original values.

Perceiver effects (DV) were modelled as a function of time (level 1 predictor). Grand mean-centered interpersonal problem scores (level 2 predictor) were included as a cross-level moderator of intercepts (i.e., initial perceiver effect) ($\beta_{01}$) and slopes (i.e., change over time in perceiver effects) ($\beta_{11}$). Finally, group assignment was entered as a level 3 predictor to account for mean-level differences across groups. Indeed, the random variance in intercepts at the group level was significant for all traits. Perceiver effect scores were nested within participant ID (level 2) and a random intercept and random slope were estimated at level 1 to account for individual differences in participants’ impressions. IIP scores for dominance, communion, and generalized distress were entered for each perceiver effect which resulted in 6 models for each IIP score.

Equations:

Level 1:

$$y_{ijk} = \pi_{0jk} + \pi_{1jk} \text{ time} + e_{ijk}$$

Level 2:
\[ \pi_{0jk} = \beta_{00k} + \beta_{01k} \text{ dominance} + \eta_j \]
\[ \pi_{0jk} = \beta_{00k} + \beta_{01k} \text{ communion} + \eta_j \]
\[ \pi_{0jk} = \beta_{00k} + \beta_{01k} \text{ generalized distress} + \eta_j \]

\[ \pi_{1jk} = \beta_{10k} + \beta_{11k} \text{ dominance} + \eta_j \]
\[ \pi_{1jk} = \beta_{10k} + \beta_{11k} \text{ communion} + \eta_j \]
\[ \pi_{1jk} = \beta_{10k} + \beta_{11k} \text{ generalized distress} + \eta_j \]

**Level 3:**
\[ \beta_{00k} = \gamma_{000} + \mu_{00k} \]

Time was modelled as a linear effect such that ratings collected at the beginning of the semester (T1) were coded as zero and subsequent ratings were coded as +1. The level 1 intercept represented participants’ initial impressions of their group members (T1) (\( \beta_{00} \)) and the slope (\( \beta_{10} \)) represented change in their average ratings over time. Time was also reverse-coded such that the final time point was coded as 0 and the preceding time point was coded as -1. This approach provides a redundant slope coefficient, but the intercept allows for the examination of perceiver effects at the end of the semester. As shown in Table 9, models revealed that all of the intercepts varied significantly, suggesting there were individual differences to be explained in people’s initial and final perceiver effects. The random variance in slopes was significant for both openness and emotional stability, indicating there were individual differences in change over time for these two perceiver effects; however, the random variance in slopes for extraversion, agreeableness, conscientiousness, and narcissism was not significant. For these latter traits, interaction effects of IIP scores should be interpreted with caution.

### 4.3 Results

#### 4.3.1 Do Those High in Dominance Maintain a Stable Perceiver Effect Over Time?

Contrary to the large and in charge hypothesis, which predicted that high dominance would be associated with perceiving group members as low in extraversion and openness, there was a significant main effect of dominance on agreeableness and narcissism at both T1 and T2. These findings indicate that participants who reported high levels of dominance tended to see others as less agreeable and more narcissistic both at the beginning and the end of the semester (see Table 10). Projection was then entered into the model as a control to determine whether
these observed perceiver effects were simply the result of participants assuming that their group members had the same personality traits as themselves. When controlling for projection, the effects of dominance on agreeableness and narcissism perceiver effects became non-significant at both time-points suggesting that self-perception was a major source of information driving these perceiver effects (see Table 11). However, two new effects were observed in the control models which supported the large and in charge hypothesis. There was a significant main effect of dominance on extraversion and openness perceiver effects at T2 such that participants who reported more dominance problems tended to see their group members as less extraverted and open to experience at the end of the semester. Dominance did not significantly moderate the effect of time on either of these two perceiver effects and, while there was no significant main effect of dominance on extraversion and openness perceiver effects at T1, the beta coefficients in the control models fell within the confidence intervals at T2. Thus, stability can be inferred, albeit interpreted with caution. Overall, these results provide evidence that those high in dominance tend to maintain a stable and unfavourable perception of their peers’ extraversion and openness over time which supports both the large and in charge and the stability hypotheses.

4.3.2 Do Those High in Communion Become Less Warm and Welcoming Over Time?

Partial support for the warm and welcoming hypothesis was demonstrated at T1. A significant main effect of communion on agreeableness, conscientiousness, and openness was observed, suggesting that participants who reported higher levels of communion tended to see others as more agreeable, conscientious, and open to experience (see Table 10). Effects for conscientiousness and openness remained significant even when controlling for projection suggesting that self-perceptions were not a major source of information driving these perceptual idiosyncrasies (see Table 11). In direct opposition to the reality check hypothesis, communion did not moderate the effect of time on either of these two perceiver effects which indicates that those who endorse high levels of communion do not develop increasingly negative perceptions of others over time. Similar to the effects observed at T1, there was a significant main effect of communion on extraversion, agreeableness, and openness at T2. However, only the effect on openness was maintained when controlling for projection. Though there was no significant main effect of communion on conscientiousness perceiver effects at T2, the beta coefficients in the control models fell within the confidence intervals at T1. Thus, stability can be inferred, albeit
interpreted with caution. Overall, these results suggest that those who reported high communion tended to maintain a stable and favourable perception of their group members’ conscientiousness and openness over time.

4.3.3 Do Those High in Generalized Distress Maintain a Stable Perceiver Effect Over Time?

Partial support for the interpersonal threat hypothesis was observed at T1. There was a significant main effect of generalized distress on agreeableness, conscientiousness, emotional stability, and narcissism at T1 such that participants who reported higher levels of elevated distress tended to perceive others as being less agreeable, conscientious, emotionally stable, and more narcissistic at first impression (see Table 10). However, only the effects on conscientiousness remained significant when controlling for projection, a finding that was inconsistent with the interpersonal threat hypothesis (see Table 11). Furthermore, when controlling for projection, a new main effect of openness was observed such that participants who reported high distress perceived others as less open to experience. Generalized distress did not moderate the effect of time on either conscientiousness or openness perceiver effects. At T2, there was a significant main effect of generalized distress on extraversion, agreeableness, conscientiousness, openness and narcissism such that participants who reported higher levels of generalized distress tended to perceive others as less extraverted, agreeable, conscientious, emotionally stable, open, and more narcissistic. As was the case at T1, only the effects on conscientiousness and openness remained significant when controlling for projection. This finding suggests that while participants used their self-perceptions to inform their target ratings of extraversion, agreeableness, and narcissism, a true perceptual idiosyncrasy existed for conscientiousness and openness. These results provide evidence that participants who reported high generalized distress maintained a stable and unfavourable perception of their group members’ openness and conscientiousness throughout the semester, which supports the stability hypothesis.

4.4 Discussion

The purpose of the current study was twofold. First, Study 2 sought to test the large and in charge, warm and welcoming, and interpersonal threat hypotheses that were first examined in Study 1. Given the number of null effects in the previous study, it was thought that the limited
external validity of the video-taped interactions could have prevented a stronger pattern of correlations from emerging. As such, I sought to determine whether the predicted relationships between interpersonal problems and perceiver effects could be observed in Study 2 when participants directly interacted with one another. Second, the current study sought to determine whether interpersonal problems moderated change in perceiver effects over the course of the semester or whether those with interpersonal problems maintained stable perceiver effects instead.

4.4.1 The Interpersonal Circumplex and Perceiver Effects

The large and in charge hypothesis anticipated that high dominance would be associated with a tendency to see group members as low in extraversion and openness. The stability hypothesis anticipated that these perceiver effects would be maintained throughout the semester. Study 2 provided support for both the large and in charge and stability hypotheses. Indeed, those who reported high levels of dominance tended to perceive their group members as low in extraversion and openness to experience over time.

In comparison, the warm and welcoming hypothesis predicted that people high in communion would see others in a diffusely positive light. Furthermore, the reality check hypothesis anticipated that people high in communion would withstand a significant change in perceiver effects over time such that their perceptions would be positive at the start of the semester, would gradually become less positive over time, and eventually be negative at the conclusion of the study. The current study partially supported the warm and welcoming hypothesis but no evidence was found for the reality check hypothesis. Those who self-reported high levels of communion tended to see targets as high in conscientiousness and openness and these perceptions were maintained throughout the semester. Though these positive perceiver effects were expected, we also hypothesized that high communion would be associated with a broadly positive evaluation of peers on the other three Big 5 traits, which was not observed.

Finally, the interpersonal threat hypothesis predicted that high generalized distress would be associated with a tendency to perceive others as low in agreeableness and the stability hypothesis predicted that this unfavourable perception would remain stable throughout the semester. The interpersonal threat hypothesis was disconfirmed in the current study though
support for the stability hypothesis was found. Participants who reported high distress tended to see their group members as low in conscientiousness and low in openness throughout the course of the semester.

Unlike the findings from Study 1, the results of Study 2 indicate that interpersonal problems do predict perceiver effects during first impression formation. The initial correlations observed at the start of the semester were largely expected. The negative relationship between dominance and extraversion and dominance and openness perceiver effects had been anticipated since agentic interpersonal problems are commonly associated with narcissistic PD (Wright et al., 2012). Those who endorse narcissistic symptomatology tend to overestimate their own levels of extraversion and openness (Carlson et al., 2011). Consequently, it was expected that highly dominant people in the current study may have had narcissistic qualities leading them to find their peers less outgoing and intelligent compared to themselves. Convincing evidence for this phenomenon was found since extraversion and openness map on to these two traits respectively.

The only a priori prediction we had regarding conscientiousness perceiver effects was that people who reported high communion would tend to see others as high in conscientiousness, in addition to maintaining a generally positive perception of their group members. Surprisingly, generalized distress predicted a tendency to see others as low in this trait. As previously mentioned, Human & Biesanz (2012) argue that conscientiousness is easier to judge than other traits because it is relatively non-evaluative and thus people may be less inclined to engage in self-presentation management. As a result, it was not expected that perceiver effects would be needed to supplement impressions of conscientiousness. However, in a classroom context, conscientiousness may be especially significant for both perceiver and target given that it is a marker of academic and occupational performance (Barrick, Patton, & Haugland, 2000). If the salience of certain traits varies across contexts, then perhaps the resultant perceiver effects do as well. Indeed, there was a significant correlation not only between communion and conscientiousness but also between communion and openness. Furthermore, an unexpected correlation was observed between generalized distress and openness perceiver effects at T1 and T2. Openness is linked to intellect and creativity and is likely considered important to academic success among undergraduate students. As a result, openness may have been especially salient during round robin ratings which were completed just after students discussed course material. It
may be the case that those who are high in communion are motivated to see the best in others and this motivation is sensitive to contextual cues. In a classroom setting, perhaps people high in communion tend to perceive others as high in conscientiousness and openness because both of these traits are especially important for academic success and would be highly salient and flattering. In comparison, those who endorse high levels of generalized distress may be threatened by others’ potential for academic success in a classroom context and thus underestimate group members’ conscientiousness and openness as a defensive measure.

Future research should seek to determine the extent to which different perceiver effects emerge depending on the setting in which individuals meet and become acquainted. For example, a longitudinal round robin study could be conducted with members of the general community. By recruiting adults who have no other connection to one another (i.e. registration at the same university, registration in the same class), one could see whether the same pattern of association between dominance, communion, generalized distress and Big 5 perceiver effects that were observed in Study 2 emerge. If not, this could be taken as further evidence that perceiver effects vary across situations. This consideration is key when estimating how perceptual idiosyncrasies can impact daily living. Results from the current study suggest that people with interpersonal problems may maintain perceiver effects that are salient within an academic context when providing judgments in the classroom. As such, it may be that perceiver effects not only have the potential to prompt interpersonal conflict between individuals but they can have serious implications at school and in the workplace as well. For example, someone who endorses interpersonal problems may let their perceiver effects skew their perceptions of co-workers, which could impact letters of reference or even job performance evaluations which are required by many companies at the end of probationary periods or to qualify for pay raises. As such, further research is required to determine which contexts provoke which perceiver effects and how the potentially deleterious impact of these perceiver effects can be managed or mitigated.

4.4.2 The Process of Perceiver Effects

The second purpose of the current study was to determine the extent to which people who reported interpersonal problems maintained stable perceiver effects over time. The stability hypothesis predicted that participants who reported interpersonal problems due to dominance or
generalized distress would maintain negative and stable perceiver effects throughout the semester. On the contrary, the reality check hypothesis predicted that those who endorsed high communion would start the semester with a broadly positive perception of others that would become less positive over time, and eventually would become negative. Results from the current study confirmed the stability hypothesis but did not support the reality check hypothesis. People with interpersonal problems of any nature tend to hold on to their idiosyncratic views rather than let them go, even as acquaintanceship is strengthened.

The stability of perceiver effects observed among those high in dominance could owe to a self-fulfilling prophecy. It may be that these individuals were socially aggressive and dominated the conversation during group meetings thus eliciting passive reactions from others. The complementary reaction of their peers may have led those high in agentic problems to rate their group members as low in extraversion and, consequently, openness because the students would have had fewer opportunities to express their interpretations of the course material. If this pattern of interaction continued throughout the semester, group members would have had few opportunities to disconfirm their highly dominant peers’ initial expectations. As such, highly dominant individuals would have maintained a perception that their peers tend to be low in extraversion and openness.

Second, it was not expected that people who are high in communion would maintain a stable perceiver effect over time. Generally, those who espouse high levels of communion tend to expend a great amount of effort to help others and to maintain social harmony. It seemed plausible that people who endorsed high levels of communion would go out of their way to support their group members during the semester (i.e. sharing notes, creating group study materials, etc.). However, if these prosocial acts were not reciprocated or went underappreciated, it was expected that they would grow resentful of their group members. One possible explanation is that because these students were relatively unacquainted with one another, they would have maintained polite and cordial relationships throughout the semester. Perhaps the pattern of change predicted by the reality check hypothesis would be observed over a longer period of time as the students became more comfortable with one another. Another possibility is that this pattern of change would emerge in the context of other relationships (i.e. among family members, friends, etc.). Alternatively, it seems plausible that a self-fulfilling prophecy could be
operating in this case as well. For example, perhaps people who are high in communion tend to
treat others with great courtesy and respect due to their tendency to generally see others
positively (i.e. high in conscientiousness and openness in the current study). In turn, they are
better liked by their peers, a conclusion that is supported by research from Human et al. (2013)
which demonstrated that people who form positive impressions of others are better liked.

A self-fulfilling prophecy seems especially likely in Study 2 given the context in which
group interactions and personality ratings occurred. Previous research has demonstrated that
people are more likely to elicit self-fulfilling prophecies when they are highly distracted or
attending to multiple tasks simultaneously (Biesanz et al., 2001; Harris & Perkins, 1995). For
example, in one study, Biesanz et al. (2001) demonstrated that participants were more likely to
form impressions of others that confirmed their a priori expectations when they were distracted
by other tasks at the time of interaction. In the current study, groups met during class time
throughout the course of the semester, an environment that can be quite chaotic given high
university enrolment. As such, a host of distractions could have divided participants’ attention
leading them to rely on perceiver effects while making judgments (Funder, 1995). Furthermore,
students discussed course material during the majority of their group meetings, compromising
their attention even further at the time of interaction. Given the substantial cognitive load
presumably carried by participants in Study 2, it seems probable that self-fulfilling prophecies
were elicited during group interactions.

PDs are characterized by a host of maladaptive cognitive schema that direct interpersonal
expectations and perceptions. As such, these maladaptive cognitive schema may have driven
self-fulfilling prophecies in the current study. A primary example are the negative expectations
held by those with avoidant personality pathology, a PD that is associated with social anxiety and
avoidance (Rodebaugh, Gianoli, Turkheimer, & Oltmanns, 2010). Socially anxious people tend
to falsely believe their peers see them in an especially negative light (i.e. incompetent, unreliable,
and unlikeable) (Christensen, Stein, & Means-Christensen, 2003). In actuality, peers’ ratings of
socially anxious people do not correspond with these beliefs and instead reflect a tendency to
think they are quiet, anxious and distant (Christensen et al., 2003). Indeed, previous research has
demonstrated that avoidant personality pathology is not only associated with a tendency to be
socially inhibited and non-assertive but to also demonstrate cold and distant behaviour
So, it seems that socially anxious people might expect peers to see the worst in them which results in behaviour that creates unnecessary social distance between themselves and others. Indeed, avoidant PD is not the only form of personality pathology associated with misguided interpersonal expectations. For example, those with borderline pathology typically exhibit an anxious-avoidant attachment style leading them to seek extreme closeness with others while simultaneously expecting to be treated with hostility (De Panfilis, Riva, Preti, Cabrino, & Marchesi, 2015; Foragy & Luyten, 2009). Furthermore, people with borderline pathology struggle to navigate social interactions and are more likely to feel rejected even when included by their peers compared to those without borderline pathology (De Panfilis et al., 2015). These underlying and maladaptive interpersonal expectations may represent the driving force behind perceiver effects.

However, self-fulfilling prophecies may have also emerged due to deficits in mentalization, which is a common characteristic of personality pathology (Fonagy, Gergely Jurist, & Target, 2002). Mentalization involves taking the perspective of another person to determine the motivation and meaning of their behaviour (Hessels, van Aken, de Castro, Lacuelle, & van Voorst, 2016). This process is integral to adaptive interpersonal functioning however, those with personality pathology often struggle to make appropriate assumptions about the mental state of others (Bateman & Fonagy, 2008; Hessels et al., 2016). Problems with mentalization are especially common among people who endorse borderline and/or antisocial symptomatology (Bateman & Fonagy, 2008). For instance, Hessel et al. (2016) demonstrated that adolescents with Cluster B pathology (i.e. borderline, antisocial characteristics) were more likely to suggest aggressive responses when describing how they would act in a series of vignettes that provided descriptions of ambiguous social interactions. Even when vignette characters were not clearly fighting, those with personality pathology were more likely to support inflammatory action (Hessel et al., 2016). Future research should try to disentangle the two possible causes of perceiver effects by looking carefully at the moderating role of reflective functioning capacity (i.e. an individual’s capacity to engage in mentalization) in the relationship between interpersonal problems and perceiver effects. If mentalization is a core process involved in the maintenance of perceiver effects, it would be expected that interpersonal problems would be associated with higher perceiver effects when reflective functioning capacity is low.
4.4.3 Limitations and Future Directions

The current study extended the literature on perceiver effects by demonstrating that interpersonal problems predict stable but idiosyncratic perceptions over time. Despite the important implications of the current research, several limitations should be noted. First, now that an association between interpersonal problems and perceiver effects has been established, studies should investigate the direct link between pathology and perceiver effects. This next step will help to interpret results from the current study given that it is possible for several types of interpersonal problems to be exhibited by a single person concurrently. Furthermore, research has demonstrated that each of the PDs in the DSM-5 are associated with multiple forms of interpersonal problems rather than just one, in addition to PDs themselves being highly comorbid (Wright et al., 2012; Wright et al., 2015). Previous research on pathology and perceiver effects simply looked at how positively people with PD symptomatology tended to rate others (Wood et al., 2010). By investigating the association between PDs and the Big 5 perceiver effects, one could determine the extent to which people with personality pathology maintain a differentiated profile of perceiver effects. Additionally, future studies should recruit participants from the general community or from psychiatric populations to capture more severe dysfunction. Participants in the current study were undergraduates and presumably well-adjusted. Thus, a restricted range of interpersonal problems reported by this sample may have prevented a more robust pattern of results from emerging.

Second, the two class sections recruited for participation in this study only had two rating time-points in common and so mean-level change was only assessed between the beginning and end of the semester. Future longitudinal research that includes several round robin ratings should be conducted to capture more variance over time. Furthermore, this research should be conducted over a longer period rather than just a few months during a single semester. Such longitudinal research is especially important given recent findings from Wright et al. (2015) which demonstrate that people with PDs exhibit individual differences in their presentation of interpersonal problems and distress over a 1-year period. Essentially, participants demonstrated significant vacillations in self-reported interpersonal problems and generalized distress over the course of 1 year (Wright et al., 2015). Given the observed link between interpersonal problems and perceiver effects in the current study, it is important to establish whether these perceptual
idiosyncrasies 1) vary over long periods of time, and 2) whether perceiver effects vacillate in sync with interpersonal problems.

5 General Discussion

5.1 The Mechanism of Perceiver Effects

Overall, the current studies provide some evidence that interpersonal problems predict perceiver effects. These findings should be taken as further evidence that interpersonal perception resides at the very heart of personality pathology. However, it is important to consider the mechanisms that drive perceiver effects. As previously mentioned, the literature has not yet determined whether perceiver effects are due to a misperception of social and behavioural cues or whether they are driven by self-fulfilling prophecies. In the current program of research, Study 1 isolated cue perception processes and only one significant result was found. This result may simply represent a Type 1 error. If so, the null effects in Study 1 have provided some evidence that perceiver effects are not due to cue misperception processes. In comparison, Study 2 demonstrated that dominance, communion and interpersonal distress are all associated with perceiver effects at first impression and that these perceiver effects are maintained throughout acquaintanceship. These findings do indeed suggest that interpersonal dysfunction is associated with perceptual idiosyncrasies and that this relationship is more likely to emerge during real-life social interactions.

Perceiver effects were only observed when perceivers and targets freely interacted with one another, which strongly suggests the role of self-fulfilling prophecy. However, cue misperception still cannot be fully discounted. The video-taped interactions in Study 1 may have had limited ecological validity, thus restricting the emergence of perceiver effects. Furthermore, the maladaptive cognitive schema that are inherent to PDs and that drive interpersonal assumptions and expectations may not have been activated in Study 1 since the targets were not actually engaging with the perceivers. As such, the words and the actions of these targets would not have been personally meaningful to participants nor perceived as threatening. Participants were thus less likely to be hypervigilant to cues of interpersonal threat that may have otherwise resulted in perceiver effects. However, both cue misperception and self-fulfilling prophecy may have been active in Study 2. To further disentangle the mechanisms that underlie these
perceptual idiosyncrasies, the following steps should be taken. First, another study should be conducted in which participants are asked to rate video-taped targets. However, unlike the current study, targets should not demonstrate exaggerated personality qualities and all personality ratings should be provided on a validated measure that demonstrates higher internal reliability than the personality index administered in Study 1. If an association between interpersonal problems and perceiver effects did not emerge in this study, it may be further evidence that video-taped interactions cannot capture perceiver effects. Second, further round robin studies should be conducted in which participants become acquainted and rate one another’s personalities over a long period of time. However, in addition to self-report and perceiver ratings of personality, these social interactions should be video-recorded. Each group members’ behaviours should be coded to determine whether behavioural reactivity is indeed occurring during social interactions (i.e. complementary reactions in which dominance elicits submissiveness from others). Furthermore, this research could investigate which behaviours predict which perceiver effects during social interactions. To determine whether such reactivity occurs in real-life as well, experience sampling methodology could be employed to see whether the same pattern of complementary behavior emerges during interactions with strangers, family members, romantic partners and friends. By directly observing behavior in future research, the role of self-fulfilling prophecy could be further elucidated.

5.2 The Process of Perceiver Effects

The current program of research also demonstrates that people with interpersonal problems demonstrate stable perceiver effects. Though the perceptual idiosyncrasies associated with interpersonal dysfunction do not become more normative over time, they do not become more negative either. This provides further evidence for the generalized other model of perceiver effects proposed by Kenny (1994) and which argues that the way people perceive others is deeply-entrenched, unchanging, and likely related to their internal working models. This result provides some evidence that perceiver effects are stable across time and thus may represent individual differences in and of themselves. Furthermore, this finding provides further evidence that perceiver effects may represent a key clinical feature of PDs as they demonstrate the same degree of intractability as the personality phenotypes that define them. Future developmental research is needed to better understand exactly when in the life course perceiver effects emerge,
whether their development coincides with the appearance of other PD symptomatology and, ultimately, how they are associated with attachment style.

5.3 Perceiver Effects and their Clinical Implications

Interpersonal problems are an important feature of pathology to consider as the DSM undergoes future revisions. Throughout the development of the DSM-5, the PD work group strongly advocated for major changes to be made to the diagnostic framework for personality pathology (Krueger, 2013). A categorical model of diagnosis was introduced in DSM-III and subsequently retained in the original and text-revised versions of the DSM-IV (Krueger, 2013). In this model, diagnoses represented categorical constructs that were characterized by a list of clinically-relevant symptoms (Krueger et al., 2013). Diagnoses were made if clients endorsed a sufficient number of symptoms to meet clinical threshold (Krueger, 2013). However, the categorical system has come under close scrutiny for two major reasons: 1) the clinical thresholds have not been informed by empirical research and thus represent arbitrary cut-off points, and 2) the categorical system overgeneralizes the extremely complex and nuanced interpersonal processes that maintain PDs (Krueger, 2013).

Though the DSM-IV model was essentially maintained in DSM-5, a newly-developed categorical-dimensional diagnostic model has been published in section III (“Emerging Measures and Models”) of the DSM-5 for future consideration (American Psychiatric Association, 2013). In this new model, diagnoses are made based on two new criteria that can be evaluated dimensionally: Criterion A, pathological personality profiles for each of the PDs, and Criterion B, impairment related to self and interpersonal functioning (American Psychiatric Association, 2013; Krueger et al., 2013). Though its dimensional nature addresses many of the shortcomings of the categorical model, the APA (2013) indicates this revised system needs further empirical validation before replacing the categorical model entirely. Krueger (2013) argues that PD research is now at a crucial crossroads and the field should soldier forward and conduct further research that investigates the interpersonal nature of personality pathology in order to implement this new dimensional model in the near future.

The current study contributes to this important, emerging line of inquiry by demonstrating that people who report interpersonal problems not only endorse idiosyncratic
perceptions of others but hold on to these perceptions over time. These findings imply that even as acquaintanceship improves, people with interpersonal problems are largely unable to update their impressions as they acquire new information. Targeted interventions that aim to change perceiver effects need to be developed and empirically tested. Future research may investigate the extent to which people with interpersonal problems are aware of their perceiver effects. Those with PDs often fail to recognize when their behaviour is socially inappropriate or distressing to others (Oltmanns & Turkheimer, 2009) and so it may be that they also fail to recognize when their evaluation of others is maladaptive. Intervention studies could investigate whether providing direct feedback about perceiver effects would prompt change in the way clients perceive others over time. However, already established and empirically-supported therapies may have a beneficial effect on perceiver effects. This hypothesis still remains to be tested. For example, dialectical behaviour therapy (DBT) focuses on bolstering empathy and mindfulness among clients (Swenson & Choi-Kain, 2015). Mentalization-based therapy (MBT) teaches clients strategies to improve their ability to read social cues (Swenson & Choi-Kain, 2015). Given the focus on interpersonal awareness in both of these treatments, they may help to change perceiver effects by encouraging clients to become aware of the way they tend to see and treat other people. Both DBT and MBT are largely used to treat borderline PD. However, evidence that either help to change perceiver effects could justify adapting some of these techniques in the treatment of other forms of personality pathology, like narcissistic or antisocial PDs.

Furthermore, the current study provides some support for the elimination of histrionic and dependent PDs, a revision which has been suggested for future editions of the DSM. The categorical-dimensional model in Section III suggests that the existing 10 PD diagnoses be pared down to just 6 in order to minimize the currently high rate of PD comorbidity (Bornstein, 2011). This revision would include the elimination of histrionic and dependent PDs which are characterized by some of the highest levels of communion among the PDs, generally speaking (Bornstein, 2011; Wright et al., 2015). The PD work group has suggested the removal of histrionic and dependent PDs due to the dearth of evidence indicating their diagnostic validity, as well as low prevalence rates (Bornstein, 2011). The current study demonstrated that interpersonal problems due to high communion are associated with very few perceiver effects, after controlling for projection. Thus, pathological warmth may not distort interpersonal perception to a great
degree. In fact, those high in communion tended to maintain positive perceptions of their group members’ conscientiousness and openness levels over the course of the semester. Maintaining such perceptions may even prove adaptive given that people who hold highly favourable impressions of others tend to be more well-liked and their peers show greater interest in maintaining contact with them (Human et al., 2013; Wood et al., 2010). As such, these positive perceptions could be especially beneficial in occupational or academic settings as they may promote good working relationships and facilitate collaboration. Of course, future research is needed to confirm whether there is a direct relationship between each of the PDs and perceiver effects.

6 Conclusion

The current program of research is the first to demonstrate that interpersonal problems predict perceiver effects at first impression and that these perceptual idiosyncrasies maintain stability over time. These findings not only extend the extant literature on interpersonal dysfunction but will have important implications for future revisions to the personality disorder diagnostic criteria in the *DSM-5*. Ultimately, the current program of research provides support for the introduction of a more interpersonally-oriented and dimensional model of personality pathology.
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### Tables

#### Table 1.

*Confirmatory Structural Equation Models to Determine the Factor Structure of the Total, Standardized Item-Level Ratings*

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<td>.78</td>
<td>13722.30</td>
<td>.12</td>
<td>.09</td>
</tr>
<tr>
<td>Two Trait Model</td>
<td>442.47</td>
<td>133</td>
<td>.78</td>
<td>13724.74</td>
<td>.12</td>
<td>.09</td>
</tr>
<tr>
<td>FFM</td>
<td>262.23</td>
<td>124</td>
<td>.90</td>
<td>13590.98</td>
<td>.08</td>
<td>.09</td>
</tr>
<tr>
<td>FFM with global evaluation factor</td>
<td>308.93</td>
<td>129</td>
<td>.87</td>
<td>13611.86</td>
<td>.09</td>
<td>.09</td>
</tr>
</tbody>
</table>

*Note.* $N=175$. FFM = five-factor model, CFI = comparative fit index; BIC = Bayesian information criterion, RMSEA = root-mean-square error of approximation; SRMR = standardized root-mean-square residual.

#### Table 2.

*Confirmatory Structural Equation Models to Determine the Factor Structure of Perceiver Effects in Video 1*

<table>
<thead>
<tr>
<th>Model</th>
<th>$\chi^2$</th>
<th>df</th>
<th>CFI</th>
<th>BIC</th>
<th>RMSEA</th>
<th>SRMR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acquiescence Only</td>
<td>810.71</td>
<td>152</td>
<td>.34</td>
<td>11491.19</td>
<td>.16</td>
<td>.21</td>
</tr>
<tr>
<td>Global Evaluation</td>
<td>364.07</td>
<td>134</td>
<td>.77</td>
<td>11136.56</td>
<td>.10</td>
<td>.09</td>
</tr>
<tr>
<td>Two Trait Model</td>
<td>354.35</td>
<td>133</td>
<td>.78</td>
<td>11131.95</td>
<td>.10</td>
<td>.10</td>
</tr>
<tr>
<td>FFM</td>
<td>223.85</td>
<td>124</td>
<td>.90</td>
<td>11047.45</td>
<td>.07</td>
<td>.08</td>
</tr>
<tr>
<td>FFM with global evaluation factor</td>
<td>240.06</td>
<td>129</td>
<td>.89</td>
<td>11038.11</td>
<td>.07</td>
<td>.08</td>
</tr>
</tbody>
</table>

*Note.* $N=166$. FFM = five-factor model, CFI = comparative fit index; BIC = Bayesian information criterion, RMSEA = root-mean-square error of approximation; SRMR = standardized root-mean-square residual.
Table 3.

*Confirmatory Structural Equation Models to Determine the Factor Structure of Perceiver Effects in Video 2*

<table>
<thead>
<tr>
<th>Model</th>
<th>$\chi^2$</th>
<th>df</th>
<th>CFI</th>
<th>BIC</th>
<th>RMSEA</th>
<th>SRMR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acquiescence Only</td>
<td>901.03</td>
<td>152</td>
<td>.30</td>
<td>11707.28</td>
<td>.17</td>
<td>.23</td>
</tr>
<tr>
<td>Global Evaluation</td>
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<td>134</td>
<td>.67</td>
<td>11387.76</td>
<td>.13</td>
<td>.12</td>
</tr>
<tr>
<td>Two Trait Model</td>
<td>488.16</td>
<td>133</td>
<td>.67</td>
<td>11391.31</td>
<td>.13</td>
<td>.12</td>
</tr>
<tr>
<td>FFM</td>
<td>377.87</td>
<td>125</td>
<td>.76</td>
<td>11321.82</td>
<td>.11</td>
<td>.12</td>
</tr>
<tr>
<td>FFM with global evaluation factor</td>
<td>403.19</td>
<td>129</td>
<td>.75</td>
<td>11326.74</td>
<td>.11</td>
<td>.13</td>
</tr>
</tbody>
</table>

*Note.* $N=164$. FFM = five-factor model, CFI = comparative fit index; BIC = Bayesian information criterion, RMSEA = root-mean-square error of approximation; SRMR = standardized root-mean-square residual.

Table 4.

*Confirmatory Structural Equation Models to Determine the Factor Structure of Perceiver Effects in Video 3*

<table>
<thead>
<tr>
<th>Model</th>
<th>$\chi^2$</th>
<th>df</th>
<th>CFI</th>
<th>BIC</th>
<th>RMSEA</th>
<th>SRMR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acquiescence Only</td>
<td>708.70</td>
<td>152</td>
<td>.38</td>
<td>12262.48</td>
<td>.15</td>
<td>.20</td>
</tr>
<tr>
<td>Global Evaluation</td>
<td>418.19</td>
<td>134</td>
<td>.68</td>
<td>12064.10</td>
<td>.11</td>
<td>.11</td>
</tr>
<tr>
<td>Two Trait Model</td>
<td>417.40</td>
<td>133</td>
<td>.68</td>
<td>12068.43</td>
<td>.11</td>
<td>.11</td>
</tr>
<tr>
<td>FFM</td>
<td>261.60</td>
<td>124</td>
<td>.85</td>
<td>11809.88</td>
<td>.08</td>
<td>.10</td>
</tr>
<tr>
<td>FFM with global evaluation factor</td>
<td>302.24</td>
<td>129</td>
<td>.81</td>
<td>11973.74</td>
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<td>.11</td>
</tr>
</tbody>
</table>

*Note.* $N=167$. FFM = five-factor model, CFI = comparative fit index; BIC = Bayesian information criterion, RMSEA = root-mean-square error of approximation; SRMR = standardized root-mean-square residual.
Table 5.

*Confirmatory Structural Equation Models to Determine the Factor Structure of Perceiver Effects in Video 4*

<table>
<thead>
<tr>
<th>Model</th>
<th>$\chi^2$</th>
<th>df</th>
<th>CFI</th>
<th>BIC</th>
<th>RMSEA</th>
<th>SRMR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acquiescence Only</td>
<td>844.32</td>
<td>152</td>
<td>.34</td>
<td>11087.39</td>
<td>.17</td>
<td>.24</td>
</tr>
<tr>
<td>Global Evaluation</td>
<td>433.40</td>
<td>134</td>
<td>.71</td>
<td>10767.94</td>
<td>.12</td>
<td>.10</td>
</tr>
<tr>
<td>Two Trait Model</td>
<td>430.41</td>
<td>133</td>
<td>.72</td>
<td>10770.03</td>
<td>.12</td>
<td>.10</td>
</tr>
<tr>
<td>FFM</td>
<td>293.06</td>
<td>124</td>
<td>.84</td>
<td>10678.42</td>
<td>.09</td>
<td>.10</td>
</tr>
<tr>
<td>FFM with global evaluation factor</td>
<td>317.05</td>
<td>129</td>
<td>.82</td>
<td>10676.99</td>
<td>.10</td>
<td>.10</td>
</tr>
</tbody>
</table>

*Note.* $N=161$. FFM = five-factor model, CFI = comparative fit index; BIC = Bayesian information criterion, RMSEA = root-mean-square error of approximation; SRMR = standardized root-mean-square residual.
Table 6.

*Descriptive Statistics and Alpha Coefficients for each of the Big 5 Subscale Scores in Study 1*

<table>
<thead>
<tr>
<th>Subscales</th>
<th>Original Items</th>
<th>Revised Items</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>α</td>
<td>α</td>
</tr>
<tr>
<td>Total Extraversion</td>
<td>.42</td>
<td>-</td>
</tr>
<tr>
<td>Video 1 Extraversion</td>
<td>.72</td>
<td>-</td>
</tr>
<tr>
<td>Video 2 Extraversion</td>
<td>.79</td>
<td>-</td>
</tr>
<tr>
<td>Video 3 Extraversion</td>
<td>.78</td>
<td>-</td>
</tr>
<tr>
<td>Video 4 Extraversion</td>
<td>.76</td>
<td>-</td>
</tr>
<tr>
<td>Total Conscientiousness</td>
<td>.51</td>
<td>-</td>
</tr>
<tr>
<td>Video 1 Conscientiousness</td>
<td>.34</td>
<td>-</td>
</tr>
<tr>
<td>Video 2 Conscientiousness</td>
<td>.25</td>
<td>-</td>
</tr>
<tr>
<td>Video 3 Conscientiousness</td>
<td>.35</td>
<td>-</td>
</tr>
<tr>
<td>Video 4 Conscientiousness</td>
<td>.51</td>
<td>-</td>
</tr>
<tr>
<td>Total Agreeableness</td>
<td>.36</td>
<td>.68</td>
</tr>
<tr>
<td>Video 1 Agreeableness</td>
<td>.46</td>
<td>.75</td>
</tr>
<tr>
<td>Video 2 Agreeableness</td>
<td>.51</td>
<td>.79</td>
</tr>
<tr>
<td>Video 3 Agreeableness</td>
<td>.58</td>
<td>.82</td>
</tr>
<tr>
<td>Video 4 Agreeableness</td>
<td>.48</td>
<td>.76</td>
</tr>
<tr>
<td>Total Emotional Stability</td>
<td>.54</td>
<td>.63</td>
</tr>
<tr>
<td>Video 1 Emotional Stability</td>
<td>.54</td>
<td>.59</td>
</tr>
<tr>
<td>Video 2 Emotional Stability</td>
<td>.55</td>
<td>.65</td>
</tr>
<tr>
<td>Video 3 Emotional Stability</td>
<td>.50</td>
<td>.55</td>
</tr>
<tr>
<td>Video 4 Emotional Stability</td>
<td>.54</td>
<td>.59</td>
</tr>
<tr>
<td>Total Openness</td>
<td>.72</td>
<td>-</td>
</tr>
<tr>
<td>Video 1 Openness</td>
<td>.77</td>
<td>-</td>
</tr>
<tr>
<td>Video 2 Openness</td>
<td>.77</td>
<td>-</td>
</tr>
<tr>
<td>Video 3 Openness</td>
<td>.72</td>
<td>-</td>
</tr>
<tr>
<td>Video 4 Openness</td>
<td>.69</td>
<td>-</td>
</tr>
</tbody>
</table>
Table 7.

Hierarchical Regression for Emotional Stability Perceiver Effects

All Videos

<table>
<thead>
<tr>
<th>Predictors</th>
<th>β</th>
<th>t</th>
<th>( R^2 )</th>
<th>( \Delta R^2 )</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step 1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Self-Reported ES</td>
<td>.06</td>
<td>1.79</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Step 2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Self-Reported ES</td>
<td>.06</td>
<td>1.65</td>
<td></td>
<td>.03</td>
</tr>
<tr>
<td>Dominance</td>
<td>-.17</td>
<td>-2.34*</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note. ES = emotional stability, * indicates \( p < .05 \), ** indicates \( p < .01 \), *** indicates \( p < .001 \)

Table 8.

Pearson Product-Moment Correlations Between Dominance, Communion and Generalized Distress and Total Big 5 Perceiver Effects

<table>
<thead>
<tr>
<th>Perceiver Effects</th>
<th>Dominance</th>
<th>Communion</th>
<th>Distress</th>
</tr>
</thead>
<tbody>
<tr>
<td>Extraversion</td>
<td>.06</td>
<td>.05</td>
<td>.11</td>
</tr>
<tr>
<td>Agreeableness</td>
<td>.07</td>
<td>.06</td>
<td>-.02</td>
</tr>
<tr>
<td>Conscientiousness</td>
<td>-.02</td>
<td>.13</td>
<td>-.08</td>
</tr>
<tr>
<td>Emotional Stability</td>
<td>-.19*</td>
<td>.13</td>
<td>-.12</td>
</tr>
<tr>
<td>Openness</td>
<td>.02</td>
<td>.10</td>
<td>.05</td>
</tr>
</tbody>
</table>

Note. * indicates \( p < .05 \), ** indicates \( p < .01 \)
Table 9.

Normative Effects for Big 5 and Narcissism Perceiver Effects Over Time

<table>
<thead>
<tr>
<th>Perceiver Effects</th>
<th>First β₀ (SE) [95% CI]</th>
<th>r₀ (SE)</th>
<th>Change β₁ (SE) [95% CI]</th>
<th>r₁ (SE)</th>
<th>Last β₀ (SE) [95% CI]</th>
<th>r₀ (SE)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agreeableness</td>
<td>10.48(13)** [10.21,10.75]</td>
<td>1.34(24)**</td>
<td>-.05(03) [-.11,.01]</td>
<td>.01(02)</td>
<td>10.28(14)** [10,10.57]</td>
<td>1.24(27)**</td>
</tr>
<tr>
<td>Conscientiousness</td>
<td>10.61(13)** [10.36,10.87]</td>
<td>1.21(24)**</td>
<td>.00(03) [-.06,.05]</td>
<td>.00(02)</td>
<td>10.60(14)** [10.33,10.87]</td>
<td>1.14(28)**</td>
</tr>
<tr>
<td>Narcissism</td>
<td>5.76(15)** [5.46,6.06]</td>
<td>2.55(44)**</td>
<td>-.01(04) [-.09,.07]</td>
<td>.04(04)</td>
<td>5.73(17)** [5.38,6.07]</td>
<td>2.81(56)**</td>
</tr>
</tbody>
</table>

*Note.* * indicates *p < .05, ** indicates *p < .001
Table 10.

The Effect of Interpersonal Problems on Big 5 and Narcissism Perceiver Effects Over Time

<table>
<thead>
<tr>
<th></th>
<th>Dominance</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th>Generalized Distress</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>First β₀₁ (SE)</td>
<td>Change β₁₁ (SE)</td>
<td>Last β₀₁ (SE)</td>
<td>First β₀₁ (SE)</td>
<td>Change β₁₁ (SE)</td>
<td>Last β₀₁ (SE)</td>
<td>First β₀₁ (SE)</td>
<td>Change β₁₁ (SE)</td>
<td>Last β₀₁ (SE)</td>
</tr>
<tr>
<td></td>
<td>[95% CI]</td>
<td>[95% CI]</td>
<td>[95% CI]</td>
<td>[95% CI]</td>
<td>[95% CI]</td>
<td>[95% CI]</td>
<td>[95% CI]</td>
<td>[95% CI]</td>
<td>[95% CI]</td>
</tr>
<tr>
<td>Extraversion</td>
<td>-0.05(15)</td>
<td>-0.06(04)</td>
<td>-0.29(17)</td>
<td>.21(15)</td>
<td>.06(05)</td>
<td>.43(18)*</td>
<td>-1.12(15)</td>
<td>-0.06(05)</td>
<td>-0.37(19)*</td>
</tr>
<tr>
<td>Agreeableness</td>
<td>-0.40(16)*</td>
<td>.01(04)</td>
<td>-0.34(17)*</td>
<td>.44(16)*</td>
<td>.02(04)</td>
<td>.52(17)**</td>
<td>-0.42(16)*</td>
<td>.01(04)</td>
<td>-0.38(18)*</td>
</tr>
<tr>
<td>Conscientiousness</td>
<td>-0.01(14)</td>
<td>.01(04)</td>
<td>-0.12(17)</td>
<td>.38(16)*</td>
<td>-.03(05)</td>
<td>.26(18)</td>
<td>-.70(16)**</td>
<td>.05(05)</td>
<td>-.60(18)**</td>
</tr>
<tr>
<td>Emotional Stability</td>
<td>-0.16(18)</td>
<td>.00(05)</td>
<td>-0.16(18)</td>
<td>.21(18)</td>
<td>.02(05)</td>
<td>.31(19)</td>
<td>-.45(18)*</td>
<td>.01(05)</td>
<td>-.40(20)</td>
</tr>
<tr>
<td>Openness</td>
<td>-0.12(17)</td>
<td>-0.06(05)</td>
<td>-0.35(18)</td>
<td>.42(17)*</td>
<td>.03(05)</td>
<td>.56(18)**</td>
<td>-.34(17)</td>
<td>-.07(05)</td>
<td>-.64(19)**</td>
</tr>
<tr>
<td>Narcissism</td>
<td>.56(21)*</td>
<td>.02(06)</td>
<td>.62(24)*</td>
<td>-.24(22)</td>
<td>-.04(06)</td>
<td>-.40(25)</td>
<td>.47(22)*</td>
<td>.04(06)</td>
<td>.64(26)*</td>
</tr>
</tbody>
</table>

Note. * indicates $p < .05$, ** indicates $p < .01$
Table 11. The Effect of Interpersonal Problems on Big 5 and Narcissism Perceiver Effects Over Time when controlling for Projection

<table>
<thead>
<tr>
<th></th>
<th>Dominance</th>
<th></th>
<th></th>
<th>Communation</th>
<th></th>
<th></th>
<th>Generalized Distress</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>First β₀₁ (SE)</td>
<td>Change β₁₁ (SE)</td>
<td>Last β₀₁ (SE) [95% CI]</td>
<td>First β₀₁ (SE)</td>
<td>Change β₁₁ (SE)</td>
<td>Last β₀₁ (SE) [95% CI]</td>
<td>First β₀₁ (SE)</td>
</tr>
<tr>
<td>Extraversion</td>
<td>-.24(.15)</td>
<td>-.06(.04)</td>
<td>-.49(.18)**</td>
<td>-.06(.05)</td>
<td>.26(.19)</td>
<td>-.06(.15)</td>
<td>-.06(.05)</td>
</tr>
<tr>
<td>Agreeableness</td>
<td>.02(.15)</td>
<td>.03(.04)</td>
<td>-.12(.17)</td>
<td>-.17(.16)</td>
<td>.02(.04)</td>
<td>-.08(.18)</td>
<td>-.25(.14)</td>
</tr>
<tr>
<td>Conscientiousness</td>
<td>-.05(.15)</td>
<td>.01(.04)</td>
<td>-.02(.17)</td>
<td>.36(15)**</td>
<td>-.03(.05)</td>
<td>.26(.17)</td>
<td>-.46(16)**</td>
</tr>
<tr>
<td>Emotional Stability</td>
<td>-.23(.17)</td>
<td>.00(.05)</td>
<td>-.24(.18)</td>
<td>.20(.17)</td>
<td>.03(.05)</td>
<td>.31(.19)</td>
<td>-.28(.19)</td>
</tr>
<tr>
<td>Openness</td>
<td>-.17(.16)</td>
<td>-.06(.05)</td>
<td>-.39(.17)*</td>
<td>.34(16)**</td>
<td>.03(.05)</td>
<td>.45(18)**</td>
<td>-.34(17)*</td>
</tr>
<tr>
<td>Narcissism</td>
<td>.12(.22)</td>
<td>.02(.06)</td>
<td>-.06(.24)</td>
<td>-.10(.19)</td>
<td>-.04(.06)</td>
<td>-.25(.23)</td>
<td>.27(.20)</td>
</tr>
</tbody>
</table>

*Note.* * indicates p <.05, ** indicates p <.01