

Persönlichkeit und deren Auswirkungen auf interpersonale Wahrnehmung und soziales Verhalten

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1. Zusammenfassung

Persönlichkeitsmerkmale haben einen Einfluss darauf, wie Menschen ihre Umwelt wahrnehmen, wie sie ihre soziale Umgebung interpretieren und wie sie darauf reagieren. Das PERSOC-Modell (Back et al., 2011) beschreibt die dynamischen und komplexen Wechselwirkungen zwischen der Persönlichkeit und unseren sozialen Beziehungen. Es geht davon aus, dass sich Persönlichkeitsmerkmale darauf auswirken, wie sich das Individuum in seinen sozialen Beziehungen verhält. Soziale Interaktionen sollen nach diesem Modell wiederum einen Einfluss auf die weitere Persönlichkeitsentwicklung nehmen. Im Rahmen des vorliegenden Dissertationsprojekts wurde zunächst theoretisch für das Persönlichkeitsmerkmal der Opfersensibilität diskutiert und in einem zweiten Schritt für das Big Five Persönlichkeitsmerkmal Neurotizismus anhand längsschnittlicher Daten untersucht, wie sich die Persönlichkeit auf die interpersonale Wahrnehmung, Interpretationen und auf das interpersonelle Verhalten von Menschen auswirkt (d.h. persönlichkeitskongruente Einflüsse) und ob diese psychologischen Variablen wiederum Einfluss auf die Entwicklung von Neurotizismus über die Zeit haben.

Auf Basis von längsschnittlichen Daten der CONNECT Studie, wo Psychologie-Studierende wiederholt über das Bachelorstudium hinweg befragt wurden, wurden interpersonale Wahrnehmungsmuster neurotischer Versuchspersonen sowie Einflüsse von Neurotizismus auf die Auswahl von InteraktionspartnerInnen untersucht. Mithilfe von ereignis-basiertem Ambulatory Assessment berichteten die Studierenden darüber, wie sie ihr eigenes Verhalten sowie das Verhalten ihrer InteraktionspartnerInnen anhand mehrerer Verhaltensdimensionen einschätzen. Es fanden sich Hinweise darauf, dass Neurotizismus interpersonale Wahrnehmungen von Geselligkeit und Wärme bei den InteraktionspartnerInnen beeinflusste. Neurotische Individuen schätzten dabei ihre InteraktionspartnerInnen positiver ein als diese von Dritten wahrgenommen wurden, was als *positivity bias* im Sinne einer Wahrnehmungs-

verzerrung interpretiert wurde. Die eigene Wahrnehmung konnte dabei jedoch nicht Veränderungen in Neurotizismus-Werten über die Zeit vorhersagen (reaktive Transaktion; u.a. Caspi & Roberts, 1999). Interagierten neurotische Individuen jedoch mehr mit geselligen InteraktionspartnerInnen, ging dies mit einer stärkeren Abnahme im Neurotizismus einher (d.h., proaktive Transaktion, Caspi & Roberts, 1999). Wurde das soziale Umfeld von Dritten dagegen als wärmer eingeschätzt, war die in dieser Lebensspanne normative Abnahme von Neurotizismus geringer. Das soziale Umfeld nahm somit Einfluss auf die Veränderung bzw. Stabilisierung von Neurotizismus über die Zeit.

Anhand längsschnittlicher, dyadischer Daten des Beziehungs- und Familienpanels Pairfam, wo heterosexuelle Paare wiederholt zu eigenen Erlebens- und Verhaltensweisen sowie zu ihrer intimen Paarbeziehung befragt wurden, wurde der prädiktive Einfluss von Neurotizismus auf kognitive, emotionale und verhaltensbezogene Merkmale untersucht und inwiefern diese den negativen Zusammenhang zwischen Neurotizismus und der Zufriedenheit in intimen Paarbeziehungen erklären können. Die Ergebnisse zeigten, dass Neurotizismus kognitive (feindselige Attributionen), emotionale (Angst und Unsicherheit) und Verhaltensvariablen (u.a. Selbstöffnung und dyadisches Coping) beeinflussen konnte, was wiederum die Beziehungszufriedenheit beeinflusste. Darüber hinaus konnten bedeutsame Einflüsse auf intra- wie auch auf interpersoneller Ebene nachgewiesen werden.

Im Rahmen des Dissertationsprojekts wird die besondere Bedeutung sozial-kognitiver Mechanismen diskutiert. Es wird argumentiert, dass kognitive Prozesse (insb. feindselige Attributionen) eine zentrale Rolle bei der Vorhersage von psychologischen Variablen und in der Folge bei der Gestaltung sozialer Beziehungen spielen. Hier konnte das vorliegende Projekt auf früheren Forschungsbefunden aufbauen und diese um neue Erkenntnisse erweitern. Darüber hinaus werden neue Forschungsfragen aufgeworfen und eine mögliche, empirische Untersuchung dieser skizziert. Implikationen für die klinische Praxis, wo kognitiven Prozessen eine zentrale aufrechterhaltende Funktionen zugeschrieben wird, werden diskutiert.

2. Abstract

Personality dispositions predict how individuals perceive, interpret and react to their social environment. The PERSOC model (Back et al., 2011) describes the dynamic, continuous and reciprocal interaction between individuals and their social environment. It assumes that personality dispositions also affect how individuals behave in their social relationships. According to this model, social interactions, in turn, have impacts on personality development (i.e., dispositional development process). The dissertation project aims at studying how personality dispositions affect interpersonal perceptions, interpretations and interpersonal behaviors (i.e., personality-congruent influences) and whether and how these psychological variables influence the development of neuroticism over time. First, possible psychological mechanisms were theoretically discussed with regard to the personality disposition victim sensitivity. Second, several of the discussed psychological mechanisms were examined using longitudinal data for neuroticism as one of the Big Five personality traits.

Based on longitudinal data from the CONNECT study, where psychology freshmen were repeatedly surveyed throughout their Bachelor degree, interpersonal perceptions of neurotic individuals were assessed. Based on event-based ambulatory assessments, students reported on how they perceive their own behavior and their partners' behavior rated on several behavioral dimensions. Neuroticism was used to predict interpersonal perceptions and the selection of interaction partners. There was evidence that neuroticism influenced interpersonal perceptions of the interaction partners' sociability and warmth. Neurotic individuals perceived their interaction partners more positive than they were perceived by third parties. Contrary to previous findings, this biased interpersonal perception was interpreted as a *positivity bias*. However, the individual's biased interpersonal perception could not predict changes in neuroticism over time (i.e., reactive transaction, e.g., Caspi & Roberts, 1999). However, if neurotic individuals interacted more frequently with interaction partners described as sociable, this was associated with a greater decrease in neuroticism over time (i.e., proactive transaction,

Caspi & Roberts, 1999). On the other hand, if their interaction partners were rated as warmer by third parties, the normative decrease in neuroticism during this lifespan was lower. Thus, the social environment influenced personality development of neuroticism over time.

Based on longitudinal, dyadic data from the relationship and family panel Pairfam, where heterosexual couples were repeatedly surveyed about their own thoughts, feelings and behavior as well as their relationship satisfaction, the predictive influence of neuroticism on cognitive, emotional and behavioral variables was examined and to what extent these variables influence the negative relationship between neuroticism and satisfaction in partner relationships. Results showed that neuroticism influenced cognitive (hostile attributions), emotional (fear and insecurity), and behavioral variables (including self-disclosure and dyadic coping), which, in turn, influenced both partners' relationship satisfaction. Importantly, psychological processes emerged both on an intrapersonal as well as on an interpersonal level.

The dissertation project discusses the relative importance of social-cognitive mechanisms. It is argued that cognitive processes (esp. hostile attributions) play a central role in predicting psychological variables and, subsequently, in shaping social relationships. The present project was able to build on earlier research findings and expand them with further findings. In addition, new research questions are raised and a possible empirical investigation of these was outlined. Implications are discussed, particularly for clinical practice, where cognitive processes are ascribed central maintenance functions.

3. Artikel im Rahmen des Dissertationsprojekts

Die kumulative Dissertation basiert auf drei wissenschaftlichen Artikeln, die in peer-reviewed Fachzeitschriften veröffentlicht worden sind. Im Hauptteil dieser Arbeit werden zunächst die theoretischen Grundlagen im Rahmen des Theoretischen Hintergrundes dargelegt und im Anschluss werden die Ergebnisse der wissenschaftlichen Arbeiten zusammengefasst. Für weitere Einzelheiten zu den wissenschaftlichen Arbeiten wird der Leser/die Leserin auf die vollständigen Manuskripte verwiesen, die dieser Arbeit beigelegt sind. Im Rahmen der Abschließenden Diskussion werden die Ergebnisse der Studien vor dem Hintergrund vorheriger Arbeiten diskutiert sowie weitere Forschungsbedarfe aufgezeigt.

Gollwitzer, M., Süßenbach, P., & Hannuschke*, M. (2015). Victimization experiences and the stabilization of victim sensitivity. *Frontiers in Psychology*, 6(439), 1-12.

DOI: 10.3389/fpsyg.2015.00439

Hannuschke*, M., Gollwitzer, M., Geukes, K., Nestler, S., & Back, M. (2019). Neuroticism and interpersonal perception: Evidence for positive, but not negative, biases. *Journal of Personality*, 88(2), 217-236. DOI: 10.1111/jopy.12480

Kreuzer*, M. & Gollwitzer, M. (2022). Neuroticism and satisfaction in romantic relationships: A systematic investigation of intra- and interpersonal processes with a longitudinal approach. *European Journal of Personality*, 36(2); 149-179.

DOI:10.1177/08902070211001258

* Die ersten zwei Artikel wurden unter dem Geburtsnamen (Hannuschke) der Promovendin publiziert.

Beiträge der Promovendin zu den einzelnen Publikationen:

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4. Einleitung

„Ich denke, also bin ich.“ (im lateinischen Original: „*Ego cogito, ergo sum.*“)

René Descartes, publiziert in *Meditationes de prima philosophia* (1641)

Die Persönlichkeit eines Menschen beschreibt relativ überdauernde, individuelle Erlebens- und Verhaltensweisen, das heißt, individuelle Tendenzen, wie Menschen Situationen wahrnehmen, interpretieren und wie sie sich in diesen Situationen verhalten (u.a. Roberts, Wood, & Caspi, 2008). Die Persönlichkeit beeinflusst somit substantiell die soziale Informationsverarbeitung, wie Menschen fühlen und ihre zwischenmenschlichen Beziehungen gestalten. Der französische Philosoph René Descartes ging sogar noch einen Schritt weiter. In seinem ersten Grundsatz prägte er den Satz „Ich denke, also bin ich“. Er setzte sich in seinem Werk mit der Frage auseinander, inwiefern der Mensch seinen Wahrnehmungen trauen kann. Optische Täuschungen oder dass ein und dieselbe Situation von verschiedenen Menschen unterschiedlich wahrgenommen werden kann, zeige laut Descartes, dass menschliche Wahrnehmungen zweifelhaft sind. Im 20. Jahrhundert wurde die Idee dieser individuellen Variabilität sozialer Informationsverarbeitungsprozesse unter anderem in Crick und Dodges (1994) Modell der sozialen Informationsverarbeitung aufgegriffen. Die in dem Modell postulierte individuelle *data base* beeinflusse an verschiedenen Stellen die Verarbeitung (sozialer) Informationen. Descartes nahm in seinem Werk jedoch auch an, dass das Zweifeln an der eigenen Wahrnehmung an sich das eigene Ich ausmache. Das Ich repräsentiere die eigene Erkenntnisfähigkeit, was wiederum die Echtheit der eigenen Existenz bestätige. Auch wenn aus diesen philosophischen Überlegungen im Laufe der Jahrhunderte lediglich eines der bekanntesten Zitate der Philosophie geworden ist, so deutete sich hier schon früh die zentrale Rolle (sozial-)kognitiver Prozesse für die eigene Existenz oder auch die Persönlichkeit an.

Die Persönlichkeit beeinflusst wiederum die Gestaltung sozialer Beziehungen, da viel von dem, was Persönlichkeit ausmacht - wie Gedanken, Gefühle und Verhaltensweisen

gegenüber anderen Menschen - sich in sozialen Beziehungen manifestiert. Es gibt theoretische Modelle, die Prozesse und Mechanismen beschreiben, wie genau Persönlichkeitsmerkmale auf die Gestaltung sozialer Beziehungen wirken (u.a. PERSOC Modell, Back et al., 2011). Eine Annahme ist, dass individuelle Dispositionen als Vulnerabilitäten für spezifische maladaptive und adaptive Reaktionen fungieren, insbesondere bei der Bewältigung stressreicher Ereignisse (u.a. *Vulnerability Stress Adaptation Model*; Karney & Bradbury, 1995). Adaptive Reaktionen beziehen sich dabei unter anderem auf das Verhalten des Individuums.

Ein Teil dieser Ansätze geht ferner davon aus, dass sich soziale Interaktionen und Beziehungen wiederum auf die Stabilisierung von Persönlichkeitsmerkmalen über die Zeit auswirken, wobei eine Vielzahl von Mechanismen für die Stabilisierung von Persönlichkeitsmerkmalen diskutiert wurden (für eine Übersicht siehe Specht et al., 2014). Neben biologischen und Umweltfaktoren werden auch zunehmend sozial-kognitive Mechanismen beschrieben, wie die Übernahme sozialer Rollen und die Entwicklung einer (sozialen) Identität, aber auch die aktivere Rolle des Individuums bei der Herstellung passender (sozialer) Umwelten, was wiederum zugrundeliegende Persönlichkeitsmerkmale stabilisieren könnte (Person-Umwelt-Transaktionen, u.a. Caspi, 1998).

Das vorliegende Dissertationsprojekt beschäftigt sich mit der Frage, wie insbesondere maladaptive Persönlichkeitsmerkmale wie Neurotizismus und Opfersensibilität als eine Perspektive, von der aus Individuen sensibel auf (Un-)Gerechtigkeit reagieren können, sich auf die interpersonale Wahrnehmung, sozial-kognitive Prozesse sowie auf das soziale Verhalten auswirken (d.h. persönlichkeitskongruente Einflüsse) und ob dies wiederum Rückwirkungen auf die Stabilisierung von Persönlichkeitsmerkmalen über die Zeit hat. In Manuskript #1 wurde theoretisch die Frage diskutiert, wie sich Opfersensibilität aus lebensgeschichtlicher Perspektive sowie in konkreten sozialen Interaktionen (d.h. aktual-genetisch) entwickeln und stabilisieren könnte. Die Überlegungen wurden in zwei theoretische Rahmenmodelle integriert. In Manuskript #2 und #3 wurde ein Teil der diskutierten psychologischen Prozesse genauer

untersucht, die die Auswirkungen von Persönlichkeit auf soziale Beziehungen erklären könnten. Mithilfe von zwei längsschnittlichen Datensätzen wurden die Auswirkungen des Persönlichkeitsmerkmals Neurotizismus in zwei sozialen Beziehungsformen untersucht: (1) die interpersonale Wahrnehmung von Studierenden in alltäglichen sozialen Interaktionen mit ihren KommilitonInnen (Manuskript #2) und (2) intra- und interpersonelle Prozesse, die den Einfluss von Neurotizismus auf die Zufriedenheit in heterosexuellen, intimen Paarbeziehungen vermitteln (Manuskript #3).

5. Theoretischer Hintergrund

Die Persönlichkeit eines Menschen zeigt sich in Form von Gedanken, Gefühlen und Verhaltensweisen. Diese stehen wiederum in Verbindung mit sozialen Beziehungen, da sie auch als Reaktion auf das Gegenüber in sozialen Interaktionen entstehen, wobei die Persönlichkeit beider InteraktionspartnerInnen mitbestimmt, welche Reaktionen gezeigt werden. Diese dynamische Wechselwirkung zwischen Persönlichkeit und sozialen Beziehungen wurde als *dynamic transactionism* (Endler & Magnusson, 1976; Asendorpf & Wilpers, 1998; Neyer & Asendorpf, 2001; Neyer, Mund, Zimmermann, & Wrzus, 2014) konzeptualisiert. Das Konzept besagt, dass sich die Persönlichkeit eines Individuums durch dynamische, kontinuierliche und reziproke Transaktionsprozesse mit dessen Umfeld entwickelt. Im PERSOC-Modell (Abkürzung für *PERSONality and SOCIAL relationships*; Back et al., 2011) wurde dieser Interaktionsgedanke aufgegriffen. Das Modell geht davon aus, dass sich Persönlichkeitsmerkmale oder auch Dispositionen in interpersonalen Wahrnehmungen und sozialem Verhalten in Interaktionen niederschlagen, genauer gesagt, dass Wahrnehmungen und Verhalten durch die Persönlichkeit bedingt werden, das heißt, dass sie zumindest in Teilen persönlichkeitskongruent sind. Dynamisch-transaktionale Modelle gehen nun nicht nur davon aus, dass sich Persönlichkeitsmerkmale aufgrund von Umwelteinwirkungen entwickeln können (u.a. durch Lernprozesse). Dem Individuum wird auch eine aktive Rolle bei der Beeinflussung und Veränderung der sozialen Umwelt und so auch bei der Persönlichkeitsentwicklung zugeschrieben. So könnten beispielsweise eigene Interpretations- und Bewertungsprozesse im Sinne eines *confirmation bias* (Nickerson, 1998) die soziale Informationsverarbeitung verzerren. Wahrnehmungsfehler oder Erwartungen könnten wiederum das gezeigte soziale Verhalten beeinflussen und im Sinne sich-selbst-erfüllender Prophezeiungen (u.a. Jones, 1977; Miller & Turnbull, 1986) a-priori Erwartungen durch das eigene Verhalten bestätigen. Dies könnte wiederum zugrundeliegende, persönlichkeitskongruente Muster festigen und auch die soziale Anpassung mitbeeinflussen. Im Folgenden werden zunächst die theoretischen

Hintergründe des Dissertationsprojekts näher erläutert sowie die Fragestellungen und Ziele des Dissertationsprojekts auf deren Basis abgeleitet.

5.1. Das PERSOC-Modell

Das PERSOC-Modell (Back et al., 2011) ist ein heuristisches Modell, das die dynamischen und komplexen Wechselwirkungen zwischen der Persönlichkeit eines Individuums und dessen sozialen Beziehungen beschreibt. Dieses integrative Rahmenmodell geht davon aus, dass sich Persönlichkeitsmerkmale oder *dispositions* darauf auswirken, wie das Individuum seine Umgebung wahrnimmt, wie es das Wahrgenommene interpretiert und wie es sich in seinen sozialen Beziehungen verhält (*dispositional expression processes* als einer von drei zentralen Prozessen laut dem PERSOC Modell¹). *Dispositions* umfassen dabei interindividuell unterschiedliche und relativ stabile Merkmale eines Individuums. Neben Persönlichkeitsmerkmalen werden darunter auch explizite und implizite Repräsentationen des Selbst subsumiert wie das Selbstbewusstsein und Selbstkonzept sowie mentale Repräsentationen der Umgebung, aber auch andere Elemente wie Bewertungen, Einstellungen, Präferenzen, Fähigkeiten oder das Temperament einer Person. Darüber hinaus werden allgemeine Wahrnehmungstendenzen als Dispositionen konzeptualisiert, beispielsweise wie das Individuum habituell sein soziales Umfeld wahrnimmt (*generalized other*; Bronfenbrenner, Harding, & Gallwey, 1958) oder wie es selbst generell von seinem sozialen Umfeld wahrgenommen wird (*reputations*).

Soziales Verhalten, Gedanken und Gefühle, die in Interaktionssituationen auftreten, spielen nach dem PERSOC-Modell eine zentrale Rolle, da sich darin Persönlichkeitsmerkmale manifestieren (*social interaction processes*). Das *behavior and perceptions principle* (als eines

¹ Die vier Prinzipien des PERSOC-Modells sind das *disposition principle* (Existenz interindividuell unterschiedlicher Dispositionen), das *interaction principle* (Dispositionen wirken sich durch soziale Interaktionen aus), das *behavior and perceptions principle* und das *process principle*, in welchem drei zentrale Prozesse beschrieben werden (*dispositional expression processes*, *social interaction processes* und *dispositional development processes*).

von vier zentralen Prinzipien) benennt hier soziales Verhalten und interpersonale Wahrnehmungen als zentrale, persönlichkeitskongruente Interaktionsarten. Soziales Verhalten umfasst dabei alle Verhaltensweisen, die von InteraktionspartnerInnen ausgeführt werden, wie Lächeln, aktives Zuhören oder Ignorieren des Gegenübers, und von InteraktionspartnerInnen wahrgenommen werden können. Interpersonale Wahrnehmungen beinhalten Schlussfolgerungen über Eigenschaften, Gedanken und Gefühle der InteraktionspartnerInnen sowie eigene Gedanken, Gefühle und Einstellungen gegenüber diesen. Das *Social Information Processing Model of Children's Social Adjustment* (Crick & Dodge, 1994, s.u.) ist ein bekanntes Modell zur Erklärung der Verarbeitung sozialer Informationen. Wahrnehmungs- und Interpretationsprozesse stellen hier die ersten zwei von insgesamt sechs Verarbeitungsschritten dar. Insbesondere diese im sozialen Informationsverarbeitungsprozess früh auftretenden Prozesse, aber auch Reaktionen auf soziale Stimuli sollen zu einem bedeutsamen Ausmaß von der sogenannten *data base* mitbeeinflusst werden. Die *data base* umfasst im Gedächtnis gespeicherte Schemata, soziales Wissen und frühere Erfahrungen, mit denen ein Individuum sich bereits in die soziale Situation begibt.

Neben Wahrnehmungen des sozialen Umfelds umfassen interpersonale Wahrnehmungen nach dem PERSOC-Modell auch *Meta-perceptions*, das heißt, Wahrnehmungen über die Wahrnehmungen des Gegenübers. Im Sinne von *mind reading* soll dadurch abgebildet werden, wie das Individuum meint, von InteraktionspartnerInnen bewertet zu werden oder wie das Individuum meint, wie InteraktionspartnerInnen zu ihm/ihr stehen. Hier zeigt sich die bidirektionale Art sozialen Verhaltens und interpersonaler Wahrnehmungen, da InteraktionspartnerInnen immer in zwei Rollen in einer Situation agieren: als diejenigen, die ein Verhalten zeigen, das heißt, aktiv handeln (*actor*) bzw. das Gegenüber wahrnehmen (*perceiver*) und gleichzeitig diejenigen sind, mit denen die InteraktionspartnerInnen interagieren (*partner*) bzw. von diesen wahrgenommen werden (*target*). Diese zwei Perspektiven werden im *Social Relations Model* (Kenny, 1994) näher beschrieben (s.u.). Nach dem PERSOC-Modell sind

neben Wahrnehmungen in Bezug auf das Gegenüber aber auch Wahrnehmungen in Bezug auf das Individuum selbst relevant. Das heißt, wie sich das Individuum selbst sieht und was es selbst denkt, fühlt und was es selbst möchte, seien mitursächlich dafür, wie das Individuum das Gegenüber wahrnimmt und wie sich das Individuum ihm/ ihr gegenüber schließlich verhält.

Das PERSOC-Modell geht weiter davon aus, dass soziale Interaktionsprozesse, die aufgrund von individuellen Persönlichkeitsmerkmalen auftreten, auch auf die weitere Persönlichkeitsentwicklung wirken (*dispositional development process*). Das heißt, dass die Reaktionen des sozialen Umfelds auf das Verhalten des Individuums wiederum beeinflussen, wie sich das Individuum weiterentwickelt, beispielsweise wie sich individuelle Dispositionen verändern oder neu ausbilden. Diese Annahme findet sich auch im Konzept der Person-Umwelt-Transaktionen (Caspi & Roberts, 1999, 2001) wieder (s.u.).

5.2. Das Vulnerability Stress Adaption Model

Das *Vulnerability Stress Adaptation Model* (VSA; Karney & Bradbury, 1995) thematisiert ebenfalls die dynamische Interaktion zwischen Persönlichkeitsmerkmalen und sozialen Beziehungen, jedoch konkreter in romantischen Beziehungen. Das Modell beschreibt drei Komponenten, die die individuelle Anpassung an und Bewältigung von insbesondere stressreichen Ereignissen in einer Beziehung beeinflussen (Braithwaite, Mitchell, Selby & Fincham, 2016). Das heißt, es erweitert die Erklärung des PERSOC-Modells um den Einfluss von *stress*, wie er beispielsweise durch kritische Lebensereignisse oder alltägliche Anforderungen ausgelöst wird. Das Modell geht davon aus, dass stressige Erfahrungen vorhandene adaptive Prozesse beeinträchtigen können. *Adaptive processes* umfassen dabei interaktive Prozesse innerhalb der Beziehung. In Analogie zum PERSOC-Modell wird nach dem VSA Modell das konkrete soziale Verhalten (u.a. zwischenmenschliche Kommunikation und Konfliktlösungsstrategien) auch durch überdauernde Vulnerabilitäten beider InteraktionspartnerInnen beeinflusst. *Enduring vulnerabilities* umfassen Persönlichkeitsmerkmale,

Temperament und frühere Erfahrungen, die bestimmte Verhaltenstendenzen befördern. Als Vulnerabilitäten für die Gestaltung sozialer Beziehungen fungieren unter anderem Schwierigkeiten in der interpersonellen Kommunikation, dysfunktionale kognitive Tendenzen und langfristige Folgen von traumatischen Erfahrungen. Wird ein Individuum mit stressigen Erfahrungen konfrontiert, können solche individuellen Merkmale es anfälliger für das Erfahren von Stress machen oder es in seinen Bewältigungsressourcen einschränken, so dass stressige Erfahrungen negativere Konsequenzen haben. Ist ein Partner zum Beispiel nach einem stressigen Arbeitstag erschöpft, reagiert er deshalb in einer gewöhnlichen Interaktion mit seinem Partner zur Planung der Woche gereizter und abweisender. Die drei Modellkomponenten beeinflussen sich dann gegenseitig und können sich in der Folge verstärken. Ist einer der beiden Partner beispielsweise neurotischer, reagiert er womöglich stärker auf Stress und/ oder verfügt über eingeschränkte sozial-kommunikative Fähigkeiten, um eine effektive Konfliktlösung zu initiieren. In der Folge würde darunter wahrscheinlich die Beziehungsqualität leiden. Da jedoch die Qualität unserer sozialen Beziehungen eine zentrale Rolle für die Zufriedenheit bzw. das Wohlbefinden eines Menschen spielt (u.a. Heller, Watson, & Illies, 2004), erscheint es relevant, zu verstehen, welche Vulnerabilitäten und adaptive Prozesse bei der Bewältigung von stressigen Ereignissen in Beziehungen bedeutsam sind.

5.3. Opfersensibilität und Neurotizismus als individuelle Vulnerabilitäten

Nach dem VSA Modell (Karney & Bradbury, 1995) sind individuelle Vulnerabilitäten unter anderem Persönlichkeitsmerkmale, die bestimmte Verhaltenstendenzen befördern und somit wiederum die soziale Anpassung oder die Bewältigung von Stress negativ beeinflussen können. Vulnerabilitäten können (mal-)adaptive Prozesse auf verschiedenen Funktionsebenen begünstigen, beispielweise auf (1) kognitiver Ebene interpersonale Wahrnehmungen und Attributionsprozesse, auf (2) emotionaler Ebene unangenehme emotionale Zustände und auf (3) behavioraler Ebene das Kommunikationsverhalten. Im Rahmen des Dissertationsprojekts

wurden zwei Persönlichkeitsmerkmale näher betrachtet, für die in zahlreichen Studien solche negativen Folgen nachgewiesen werden konnten: Opfersensibilität - eine Facette von Gerechtigkeitssensitivität - und das Big Five Persönlichkeitsmerkmal Neurotizismus.

5.3.1. Opfersensibilität

Schmitt (1996, Schmitt, Baumert, Gollwitzer & Maes, 2010) konnte zeigen, dass sich Menschen systematisch darin unterscheiden, wie sie emotional und auf der Verhaltensebene auf wahrgenommene Ungerechtigkeit reagieren. Auf Basis dieser Beobachtungen konzeptualisierte er Gerechtigkeitssensitivität als Persönlichkeitseigenschaft. Opfersensibilität wurde später als eine Facette dieses Konstrukts beschrieben, wobei jede Facette² eine unterschiedliche Perspektive abbildet, von der aus man Ungerechtigkeit erfahren kann. Opfersensibilität bezieht sich dabei auf die selbst erfahrene Ungerechtigkeit. Studien konnten zeigen, dass sich Menschen mit höheren Ausprägungen in Opfersensibilität eher aggressiv verhielten (Bondü & Krahe, 2015) und destruktiv, besonders wenn sie die Möglichkeit sahen, von anderen ausgenutzt zu werden (Schmitt & Mohiyeddini, 1996; Schmitt & Dörfel, 1999). Sie trafen eher egoistische Entscheidungen in sozialen Dilemmata (Fetchenhauer & Huang, 2004) und zeigten eine geringere Bereitschaft, Menschen in Not zu helfen (Gollwitzer, Schmitt, Schalke, Maes & Baer, 2005), sowohl in zwischenmenschlichen als auch in Intergruppensituationen (Süßenbach & Gollwitzer, 2015). Sie waren neidischer und eifersüchtiger (Schmitt, Gollwitzer, Maes & Arbach, 2005) und sie waren weniger bereit, Entschuldigungen von ihren PartnerInnen anzunehmen (Gerlach, Allemand, Agroskin & Denissen, 2012). Opfersensible Personen reagierten auch empfindlicher auf schon geringfügige Hinweise auf Unzuverlässigkeit (Gollwitzer, Rothmund, Alt & Jekel, 2012; Gollwitzer, Rothmund, Pfeiffer & Ensenbach, 2009), auch wenn diese Hinweise nur bedingt prognostisch relevant für die

² Die vier Perspektiven sind *victim*, *observer*, *beneficiary* und *perpetrator* (Schmitt et al., 2010).

Situation waren, in der sie von anderen ausgenutzt werden könnten (Rothmund, Gollwitzer, Bender & Klimmt, 2015; Rothmund, Gollwitzer & Klimmt, 2011).

Opfersensibilität sagt somit misstrauische kognitive Schemata, egoistisches und unkooperatives Verhalten vorher (Fetchenhauer & Huang, 2004; Gollwitzer et al., 2005; Gollwitzer & Rothmund, 2011). Als Ursache für diese negativen Verhaltenskonsequenzen wurden im *Sensitivity to Mean Intentions Model* (SeMI; u.a. Gollwitzer, Rothmund & Süßenbach, 2013) insbesondere negative Erwartungen, Attributions- und Aufmerksamkeitsprozesse diskutiert. Die in dem Modell postulierten Zusammenhänge konnten in verschiedenen Studien nachgewiesen werden (u.a. Maltese, Baumert, Schmitt, & MacLeod, 2016; Baumert, Otto, Thomas, Bobocel & Schmitt, 2012). Gleichzeitig konnte das SeMI-Modell (u.a. Gollwitzer & Rothmund, 2009) nicht die Frage beantworten, wie dieses maladaptive Persönlichkeitsmerkmal entsteht und welche konkreten kognitiven Prozesse bei dessen Entwicklung und Stabilisierung involviert sind.

5.3.2. Neurotizismus

Neurotizismus als eine der Big Five Persönlichkeitseigenschaften (u.a. McCrae & Costa, 2008) wird als emotionale Instabilität umschrieben. Es steht in Verbindung mit dem gehäuften Erleben von Ärger, Traurigkeit, Angst, Sorgen, Unsicherheit und Feindseligkeit (u.a. Costa & McCrae, 1992). Neurotische Menschen erleben insbesondere in Stresssituationen höhere Ausprägungen an negativen Emotionen (Fisher & McNulty, 2008). Sie sind selbstkritischer, anfälliger gegenüber Kritik und nehmen sich öfter als ungenügend wahr (Watson, Clark, & Harness, 1994). Sie erfahren allgemein mehr Unsicherheit und sind irritierbarer (Deventer et al., 2019; Steel et al., 2008). Neurotizismus war mit einem geringeren Selbstwertgefühl assoziiert (u.a. Watson, Suls, & Haig, 2002; Leary & Baumeister, 2000). Neurotische Personen zeigen stärkere Reaktionen auf wahrgenommene soziale und nicht-soziale Bedrohungen (Denissen & Penke, 2008) und Veränderungen (u.a. Ormel & Wohlfahrt, 1991). Sie erleben

soziale Interaktionen als negativer (u.a. Hampson, 2012). Negative Erlebnisse werden von ihnen wahrscheinlicher als Bedrohung wahrgenommen (Braithwaite et al., 2016). Neurotische Menschen zeigten auch stärkere emotionale Reaktionen (Lavee & Ben-Ari, 2004) und machten ihre PartnerInnen stärker dafür verantwortlich (Vater & Schröder-Abé, 2015). Sie schreiben ihren PartnerInnen eher negative Intentionen zu und erwarten häufiger, dass Interaktionen negativ werden (Karney, Bradbury, Fincham & Sullivan, 1994; Finn, Mitte & Neyer, 2013). Gegenüber ihren PartnerInnen zeigen neurotische Individuen weniger ihre Gedanken und Gefühle, offenbaren sich diesen weniger (Cunningham & Strassberg, 1981; Wagner, Lütke, Roberts & Trautwein, 2014), neigen allgemein zu eher rückzügigem Verhalten (Caughlin & Vangelisti, 2000) und verzeihen seltener (Braithwaite et al., 2016).

Somit erscheint auch der oft nachgewiesene, negative Zusammenhang zwischen Neurotizismus und der Zufriedenheit in sozialen Beziehungen plausibel (u.a. Dyrenforth, Kashy, Donnellan & Lucas, 2010; Malouff, Thorsteinsson, Schutte, Bhullar & Rooke, 2010). Im Vergleich zu den anderen Big Five Persönlichkeitsfaktoren hatte Neurotizismus den stärksten Einfluss auf die Qualität und Stabilität sozialer Beziehungen (u.a. Dyrenforth et al., 2010; Solomon & Jackson, 2014). Eine reduzierte Beziehungszufriedenheit (u.a. Finn et al., 2013), höhere Scheidungsraten (Orth, 2013), aber auch ein geringerer beruflicher Erfolg (Ozer & Benet-Martinez, 2006; Roberts, Kuncel, Shiner, Caspi, & Goldberg, 2007) und eine geringere Lebensqualität (u.a. Lynn & Steel, 2006) und -zufriedenheit (u.a. Heller et al., 2004) zeigen die negativen Folgen dieser Persönlichkeitseigenschaft. Neurotizismus konnte darüber hinaus auch mit gesundheitlichen Problemen (u.a. Bouhuys, Flentge, Oldehinkel, & van den Berg, 2004) und psychischen Erkrankungen wie Depressionen (Ozer & Benet-Martinez, 2006; Spijker, de Graaf, Oldehinkel, Nolen, & Ormel, 2007), Angststörungen und Alkoholkonsum (Malouff, Thorsteinsson, Rooke, & Schutte, 2007) in Verbindung gebracht werden.

Die genauen psychologischen Prozesse, die diese negativen Auswirkungen erklären können, erfuhren gerade in den letzten Jahren mehr Aufmerksamkeit (u.a. Back, 2015). Da

Neurotizismus konzeptuell in enger Verbindung zu einem vermehrten Auftreten von Ängstlichkeit und Sorgen steht (McCrae & Costa, 2008) und Angst wiederum an verschiedenen Stellen die soziale Informationsverarbeitung beeinflusst (Mathews & MacLeod, 2005), wurden sozial-kognitive Prozesse auch zur Erklärung der Auswirkungen von Neurotizismus untersucht. Angst befördert eine Aufmerksamkeitslenkung auf Bedrohungsstimuli (Bar-Haim, Lamy, Pergamin, Bakermans-Kranenburg, & van Ijzendoorn, 2007), Bedrohungsstimuli werden leichter im Gedächtnis abgespeichert (Mitte, 2008) und analog zu Befunden von Finn und Kollegen (2013) für Neurotizismus werden ambigüe Stimuli als bedrohlicher wahrgenommen (MacLeod & Cohen, 1993). Aufgrund der konzeptuellen Nähe von Neurotizismus und Angst scheint es somit plausibel, dass auch Neurotizismus die Verarbeitung sozialer Informationen beeinflusst, was zumindest teilweise die negativen Folgen dieses Persönlichkeitsmerkmals erklären könnte. Die Frage stellt sich somit, ob - und wenn ja, wie - eine möglicherweise persönlichkeitskongruente soziale Informationsverarbeitung und soziales Verhalten sich auf die (soziale) Anpassung des Individuums auswirken.

5.4. Soziale Informationsverarbeitung

Ein möglicher vermittelnder Prozess zur Erklärung des Einflusses von Persönlichkeitseigenschaften auf soziale Beziehungen ist der Einfluss der Persönlichkeit darauf, wie Situationen wahrgenommen und interpretiert werden. Das *Social Information Processing (SIP) Model of Children's Social Adjustment* (SIP; Crick & Dodge, 1994) wurde ursprünglich zur Erklärung aggressiven Verhaltens bei Kindern und Jugendlichen entwickelt. Es kann jedoch auch genutzt werden, um den Ablauf der sozialen Informationsverarbeitung und den Einfluss sozial-kognitiver Variablen auf das soziale Verhalten zu konzeptualisieren. Das Modell geht davon aus, dass die Reaktion eines Individuums in einer Situation maßgeblich davon beeinflusst wird, wie das Individuum die Situation wahrnimmt und interpretiert. Das gezeigte soziale Verhalten ist wiederum die Grundlage dafür, wie gut ein Individuum in seinem

sozialen Umfeld angepasst ist (u.a. Crick & Dodge, 1984). Das Modell versucht deshalb, die in einer sozialen Situation ablaufenden Prozesse zu definieren, das heißt, wie das Individuum soziale Hinweise verarbeitet, diese mit früherem Wissen in Verbindung bringt und darauf aufbauend soziale Entscheidungen trifft, was wiederum die Basis für sozial kompetentes Verhalten darstellt.

Die soziale Informationsverarbeitung besteht nach dem Modell aus sechs aufeinanderfolgenden Schritten (siehe Abbildung 1). Zunächst werden 1) soziale Reize in der Umwelt wahrgenommen (*encoding of clues*) und 2) interpretiert (*interpretation and mental representation of cues*), dann werden 3) Ziele für die geplante Verhaltensreaktion abgewogen (*clarification/ selection of goals*), 4) wobei das zur Verfügung stehende Verhaltensrepertoire eine zentrale Rolle spielt (*response access or construction*). Im nächsten Schritt wird 5) die Verhaltensreaktion festgesetzt (*response decision*) und schließlich wird 6) das entsprechende Verhalten gezeigt (*behavioral enactment*). Um dies an einem Beispiel zu verdeutlichen, könnte man sich vorstellen, wie eine Person an einem Arbeitstag ins Büro kommt, wie gewohnt den bereits anwesenden KollegInnen einen „Guten Morgen“ wünscht, aber an diesem Tag von einem Arbeitskollegen nicht zurückgegrüßt wird. Dieser Kollege ist mit gesenktem Kopf und abgewendetem Blick an der Person vorbeigegangen, ohne eine Reaktion zu zeigen. Die Person würde dies wahrnehmen, könnte es als Abweisung interpretieren (er grüßt mich nicht, weil ich ihn nerve) und schließlich das daraufhin gezeigte Verhalten auswählen. Sie würde ihn ignorieren, wenn er das nächste Mal auf sie/ ihn zugeht, sich abwenden und ihn/sie morgens nicht mehr grüßen. Wie entscheidet sich nun aber, ob die Person die ausgebliebene Begrüßung als Abweisung interpretiert oder lediglich als Zeichen dafür, dass der Kollege mit den Gedanken nur schon ganz bei der Arbeit war oder gerade ein schwieriges Problem zu lösen hatte und die Person und deren Gruß somit gar nicht wahrgenommen hat?

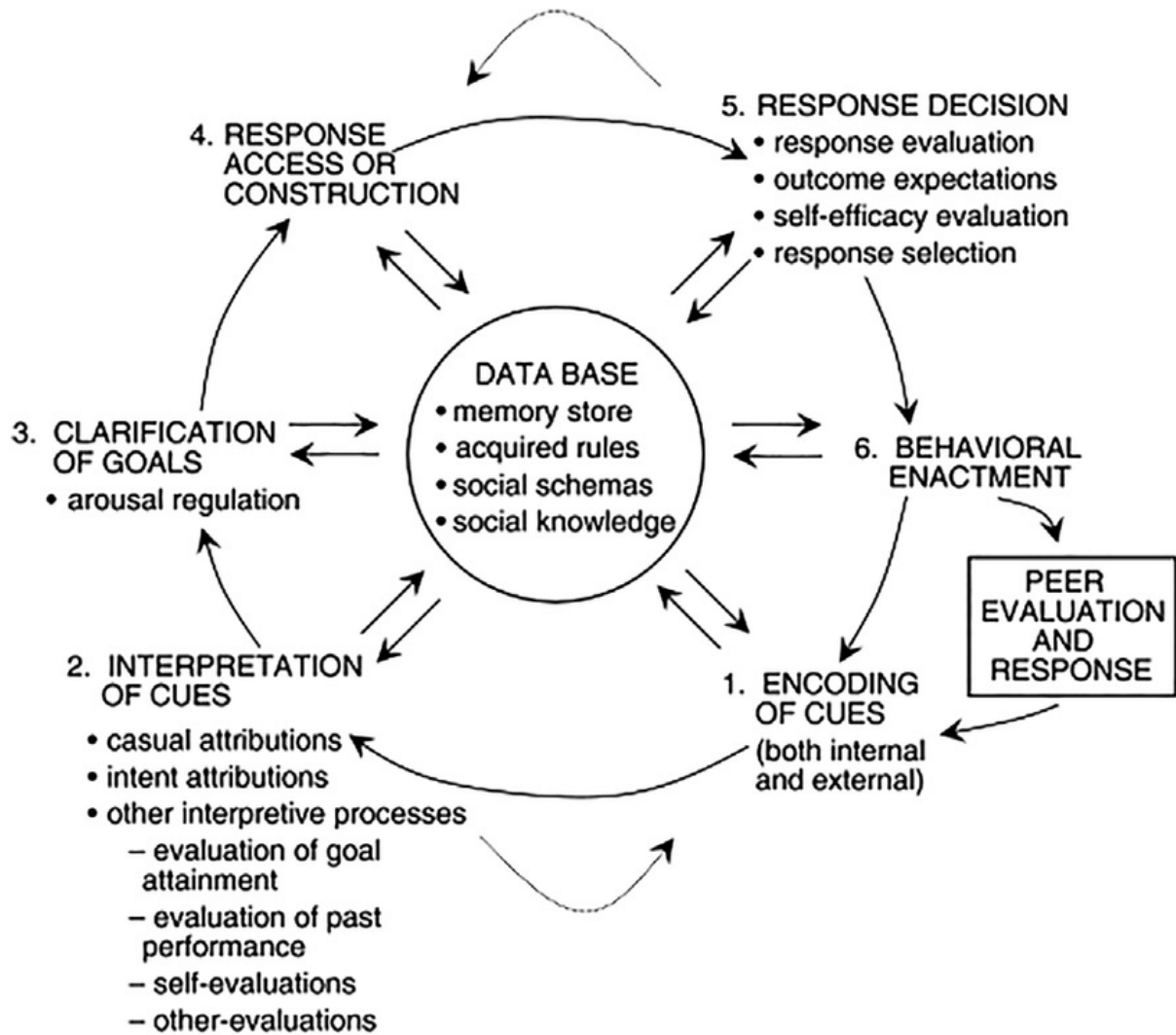


Abbildung 1. Grafische Darstellung des *Social Information Processing Model* nach Crick und Dodge (1994, Figure 1, S.74).

Im SIP Modell wird die sogenannte *data base* zur Erklärung solcher individuellen Interpretations- und Reaktionsweisen herangezogen. Diese besteht aus im Gedächtnis gespeicherten, früheren Erfahrungen, sozialen Schemata über sich, andere Personen und die Welt und erworbenen sozialen Regeln und Verhaltensskripten. In sozialen Situationen greift das Individuum nun auf dieses gespeicherte soziale Wissen zurück. Im Sinne von kognitiven Filtern beeinflusst dieses soziale Wissen nun jeden Schritt der sozialen Informationsverarbeitung; beispielweise, ob das Verhalten des Kollegen als Abweisung oder Unachtsamkeit interpretiert wird. Beispiele für Auswirkungen von solchen persönlichkeits-kongruenten Wahrnehmungs- und Interpretationsmustern finden sich im Bereich der Aggressionsforschung

(*hostile attribution bias*, Crick & Dodge, 1994), bei Studien zum Konzept der Gerechtigkeitssensitivität (SeMI-Modell; Schmitt et al., 2010) sowie für Neurotizismus (Finn et al., 2013).

5.4.1. Einfluss der Persönlichkeit auf (interpersonale) Wahrnehmungsprozesse

Nach dem PERSOC-Modell (Back et al., 2011) umfassen interpersonale Wahrnehmungen (1) Einschätzungen der InteraktionspartnerInnen (u.a. Persönlichkeit, Kognitionen, Motivationen und Emotionen), (2) Einschätzungen eigener Gefühle, Gedanken und Motive in Bezug auf InteraktionspartnerInnen, (3) *Meta-perceptions* über Wahrnehmungen des Gegenübers und (4) Selbstwahrnehmungen. Die Wahrnehmung der Situation, des Gegenübers und in Bezug auf sich selbst sind dann relevant für das später gezeigte Verhalten (u.a. Beck, Freeman & Davis, 2004; Reis, 2008). Dem SIP-Modell (Crick & Dodge, 1994) folgend, können diese Wahrnehmungen durch a-priori Wissen und Erfahrungen (sog. *data base*) beeinflusst werden und eine selektive Aufmerksamkeit begünstigen.

Das *Social Relations Model*. Da in einer Interaktionssituation immer mindestens zwei Perspektiven beteiligt sind, die des Wahrnehmenden (*perceiver* oder *actor* in Bezug auf soziales Verhalten) und die des Wahrgenommenen (*target* oder *partner* in Bezug auf soziales Verhalten), geht das *Social Relations Model* (SRM; Back & Kenny, 2010) davon aus, dass diese Bidirektionalität von Wahrnehmungen explizit berücksichtigt werden muss. Das heißt, in einer sozialen Interaktion ist Person A sowohl der-/ diejenige, der/die als AkteurIn das Gegenüber wahrnimmt, das Wahrgenommene interpretiert und entsprechend handelt als auch der-/ diejenige, der/die als Gegenüber von Person B wahrgenommen und bewertet wird sowie eine Reaktion von Person B erfährt. Nimmt Person A beispielsweise das Verhalten von Person B als negativer wahr, beeinflusst dies die nachfolgende soziale Informationsverarbeitung der Person A. Die Person A hat möglicherweise die Einschätzung, dass Person B sie/ ihn weniger mag und wendet sich deshalb von der Partnerschaft ab. In der Folge beeinflusst dies auch die emotionale

Reaktion von Person B. Gefühle von Trauer oder Angst wären die Folge, was wiederum auf der Verhaltensebene Ablehnung und Rückzug aus der Beziehung begünstigen könnte. Dies könnte wiederum die Beziehungszufriedenheit beider Personen reduzieren. Das eigene Denken beeinflusst somit die eigene emotionale und behaviorale Reaktion, was einem intrapersonalen³ Effekt entspricht. In der Terminologie des SRM-Modells (u.a. Back & Kenny, 2010) werden intrapersonale³ Effekte auch als Akteureffekte (*actor effect/ perceiver effect*) bezeichnet. Akteureffekte beschreiben die habituelle Tendenz eines Individuums, die soziale Umwelt wahrzunehmen oder sich auf eine bestimmte Weise zu verhalten. Zum Beispiel könnte Person A gewohnheitsmäßig ihr Gegenüber als unfreundlicher oder hinterhältiger wahrnehmen und entsprechend in sozialen Interaktionen misstrauisch oder zurückhaltend reagieren. Im Sinne einer persönlichkeitskongruenten Interpretations- bzw. Urteils-Verzerrung (*bias*) und Verhaltensgewohnheiten (siehe Back et al., 2011) können individuelle Persönlichkeitsmerkmale somit beeinflussen, wie das Individuum die Welt sieht und sich in seinen sozialen Beziehungen verhält.

Auf der anderen Seite erscheint es plausibel, dass eine neurotische Person A aufgrund ihrer (Fehl-)Interpretationen und -Verhaltensweisen auch das Erleben von Person B beeinflusst. Im Sinne eines interpersonalen Effekts könnte das Verhalten der Person A bei Person B Unzufriedenheit erzeugen. Person B könnte sich durch Person A missverstanden fühlen oder seine/ihre Reaktionen nicht verstehen. In der Folge könnte auch die Zufriedenheit von Person B mit der Beziehung abnehmen. Interpersonale³ Effekte werden im SRM-Modell auch als Partnereffekte (*partner effect/ target effect*) bezeichnet. Partnereffekte beschreiben die habituelle Tendenz, wie ein Individuum von anderen wahrgenommen wird bzw. wie das Umfeld gewohnheitsmäßig auf ihn/ sie reagiert. Zum Beispiel könnte Person B gewohnheitsmäßig von anderen als zurückhaltend oder abweisend wahrgenommen werden und

³ Im Original werden diese Effekte interindividuell und intraindividuell genannt. Zur Vereinheitlichung der Sprache im Rahmen des Dissertationsprojekts wurde jedoch die Terminologie interpersonal und intrapersonal synonym dazu verwendet.

das Umfeld meidet die-/ denjenigen deshalb häufiger. Interpersonale Wahrnehmungen und soziales Verhalten in einer sozialen Interaktion sind demnach das Ergebnis des Zusammenwirkens von Akteur- und Partnereffekten der beteiligten InteraktionspartnerInnen.

Perceiver effects im Zusammenhang mit individuellen Dispositionen. In den letzten Jahren entstanden immer mehr Forschungsarbeiten zum möglichen Einfluss von individuellen Persönlichkeitsmerkmalen auf die interpersonale Wahrnehmung, das heißt, zu persönlichkeitskongruenten Einflüssen. Zum Beispiel konnte die individuelle Wahrnehmung des Gegenübers narzisstisches Verhalten vorhersagen (Beck et al., 2004). Individuen zeigen narzisstisches Verhalten teilweise bedingt dadurch, dass sie das Gegenüber als unterlegen, uninteressant und nicht-beachtenswert wahrnahmen, was nicht nur die Folge einer negativen Selbstwahrnehmung war (American Psychiatric Association, 1994). Hohe Ausprägungen in Verträglichkeit führten dagegen zu einer eher positiven Wahrnehmung des Gegenübers (Graziano, Bruce, Sheese, & Tobin, 2007). Wood, Harms und Vazire (2010) beschäftigten sich mit der Frage, inwiefern die Wahrnehmung in Bezug auf sich selbst auch die Wahrnehmung des Gegenübers beeinflusst. Sie konnten zeigen, dass Menschen einem gewissen *similarity effect* unterliegen. Das heißt, andere werden in gewisser Weise so beschrieben, wie wir uns selbst sehen, wobei die Effekte eher klein waren. Menschen, die sich selbst als neurotischer wahrnahmen, neigten demnach dazu, das Gegenüber als ebenfalls neurotischer wahrzunehmen, was als *assumed similarity bias* (Cronbach, 1955) bezeichnet wurde. Greve und Wentura (2003) argumentierten, dass die Selbstwahrnehmung auch einen Einfluss auf die Stabilisierung des Selbstkonzepts ausübt. Durch Immunisierungsprozesse sollen Informationen, die zum aktuellen Selbstkonzept konträr sind, in ihrer Bedeutung umgewichtet werden, um so erfahrene Widersprüche aufzulösen. In der Studie von Wood und Kollegen (2010) schätzten Menschen, die sich selbst als neurotischer beschrieben, ihr Gegenüber aber auch als tendenziell verträglicher ein, was einer persönlichkeitskongruenten Wahrnehmungstendenz entspricht und nicht allein durch den *similarity effect* erklärt werden kann. Diese Tendenz könnte im

Zusammenhang mit stabilen mentalen Repräsentationen des Individuums stehen im Sinne eines generellen Schemas von anderen, also wie diese sind bzw. was man von anderen erwartet (*generalized other*, Kenny, 1994).

In Bezug auf Wahrnehmungsprozesse konnten Morse, Sauerberger, Todd und Funder (2015) zeigen, dass Persönlichkeitsmerkmale im Sinne der Big Five auch die Wahrnehmung von Interaktionen vorhersagen konnten. Das heißt, dass bei höheren Ausprägungen in Neurotizismus Personen die Situation im Vergleich zu anderen Teilnehmenden negativer wahrnahmen sowie das Verhalten der Interaktionspartner als weniger gesellig oder selbstoffenbarnd einschätzten (u.a. Wieczorek, Mueller, Lüdtkke & Wagner, 2021). Neurotizismus sagte in ähnlicher Weise auch die Wahrnehmung des Verhaltens des Gegenübers in Problemlösungssituationen vorher (McNulty, 2008).

5.4.2. Einfluss der Persönlichkeit auf Interpretationsprozesse

Nach dem SIP-Modell (Crick & Dodge, 1994) ist der zweite Schritt in der Verarbeitung sozialer Informationen die Interpretation der wahrgenommenen Hinweise und eine mentale Repräsentation dieser. Das heißt, es werden kausale Schlussfolgerungen über das Gesehene sowie zu Intentionen des Gegenübers gezogen. Bereits im ersten Schritt der Verarbeitung werden Reize gefiltert wahrgenommen und im nächsten Schritt analysiert, wobei hier vermutlich der Rückgriff auf die in der *data base* gespeicherten Informationen einen starken Einfluss ausübt. Einerseits soll so die Informationsverarbeitung vereinfacht werden, andererseits kann es so auch zu Verzerrungen kommen. Das bereits angesprochene Konzept der *generalized other* (Kenny, 1994) ist ein Beispiel für eine habituelle, eventuell sogar persönlichkeitskongruente Interpretationstendenz (u.a. Srivastava, Guglielmo, & Beer, 2010). Es bildet eine Art mentale Repräsentation ab, wie wir andere wahrnehmen oder auch welche Modelle wir von (intimen) Beziehungen haben (analog zu *working models* in der Bindungstheorie). Es soll durch frühe Erfahrungen entstehen und Erwartungen darüber

beinhalten, wie andere sich typischer Weise verhalten. Srivastava, und Kollegen (2010) konnten zeigen, dass die habituelle Wahrnehmung des Gegenübers durch das Bindungsverhalten des Individuums beeinflusst wird. Unsichere Bindungsmuster standen auch im Zusammenhang mit negativen beziehungsspezifischen Glaubenssätzen (Stackert & Bursik, 2003).

Sensitivity to Mean Intentions Model. Eine in Bezug auf mögliche sozial-kognitive Verzerrungen gut untersuchte Persönlichkeitseigenschaft ist die Opfersensibilität. Hier konnten Studien zeigen, dass opfersensible Menschen die Kooperationsbereitschaft anderer geringer einschätzten als Menschen mit geringen Ausprägungen in Opfersensibilität (u.a. Gollwitzer et al., 2013). Ebenso reagierten opfersensible Probanden sensitiver auf Anzeichen von feindseligem Verhalten, auch wenn die Hinweise darauf nicht eindeutig waren (u.a. Gollwitzer et al., 2012). Das *Sensitivity to Mean Intentions Model* (Gollwitzer & Rothmund, 2009; Gollwitzer et al., 2013) postuliert hier verschiedene Erklärungsansätze für die gefundenen Verhaltensunterschiede. Die *asymmetry hypothesis* argumentiert mit einer erhöhten Sensitivität für Anzeichen von Un-Vertrauenswürdigkeit, das heißt, dass diesen Hinweisen mehr Aufmerksamkeit geschenkt wird als Hinweisen für Vertrauenswürdigkeit. Grundlage dafür sei eine Angst davor, von andere ausgenutzt zu werden (Vohs, Baumeister & Chin, 2007). Wenn entsprechende Hinweise wahrgenommen werden, sollen bei den Betroffenen spezifische Schemata aktiviert werden, die wiederum das Denken, Fühlen und Verhalten beeinflussen. Durch frühere Erfahrungen erlernte Erwartungen, dass andere nicht vertrauenswürdig sind (*suspicious mindset*), beeinflussen dann das gezeigte Verhalten. Das heißt, dass sich, wenn die misstrauische Einstellung bestehend aus feindseligen Interpretationen des Verhaltens anderer aktiviert wurden, opfersensible Menschen unkooperativer in sozialen Dilemmata verhalten. Das Verhalten soll hier als Vermeidungsstrategie dienen, um zu verhindern, von anderen ausgenutzt zu werden (*defection hypothesis*). In der Terminologie des SIP-Modells wäre das *suspicious mindset* bestehend aus a-priori Erwartungen und Schemata ein Teil der *data base*, die wiederum Aufmerksamkeitsprozesse und Verhaltenstendenzen beeinflusst.

Rejection sensitivity. Ein weiteres gut untersuchtes Konzept, das sozial-kognitive Prozesse explizit konzeptualisiert, ist das der *Rejection sensitivity* (Downey & Feldman, 1996). Es soll erklären, warum Menschen unterschiedlich stark auf erfahrene Zurückweisung reagieren. Als eine Art Persönlichkeitseigenschaft definiert es, dass einzelne Individuen vulnerabler reagieren und bei entsprechenden Hinweisen zu stärkeren Reaktionen neigen. Es wird davon ausgegangen, dass Erfahrungen eine wichtige Rolle bei der Genese dieser Vulnerabilität spielen. Negative Lernerfahrungen von Zurückweisung und Erwartungen, dass andere in ähnlicher Art reagieren werden, befördern eine ängstliche Vorsicht in Bezug auf ein erneutes Auftreten von Zurückweisung. Dies begünstigt wiederum - wie im SeMI-Modell (u.a. Gollwitzer & Rothmund, 2009) für Opfersensibilität angenommen - eine erhöhte Aufmerksamkeitslenkung in Bezug auf Hinweise auf eine mögliche Zurückweisung und defensive Reaktionen wie das Zeigen starker emotionaler Reaktionen, um dies zu verhindern (e.g., Downey Freitas, Michaelis, & Khouri, 1998; Levy, Ayduk, & Downey, 2001).

Hostile attribution bias. Interpretationen von sozialen Situationen stehen auch im Zusammenhang mit Attributionsprozessen. Nach Weiner's Attributionstheorie (1985) dienen Attributionen der Ursachenfindung, das heißt, dass Individuen so versuchen, Ereignisse oder Verhaltensweisen von anderen für sich verstehbar zu machen. Es gibt zahlreiche Studien, die hier persönlichkeitskongruente Verzerrungen in der Ursachenzuschreibung insbesondere in mehrdeutigen Situationen untersucht haben. So konnten Studien zeigen, dass die individuelle Bereitschaft, dem Gegenüber feindselige Intentionen zuzuschreiben (*hostile attribution bias*; Crick & Dodge, 1994), vorhersagen konnte, ob Kinder und Jugendliche aber auch Heranwachsende (Bailey & Ostrov, 2008) in einer uneindeutigen Situation aggressives Verhalten zeigten. Aggressive Individuen wiederum schrieben ihrem Gegenüber auch mehr feindselige Intentionen zu als weniger aggressive (Nasby, Hayden, & DePaulo, 1980; Orobio de Castro, Veerman, Koops, Bosch, & Monshouwer, 2002).

Kognitive Verzerrungen bei Neurotizismus. Auch bezogen auf Neurotizismus konnten Studien kognitive Verzerrungen zeigen. Die Ausprägung in Neurotizismus hatte beispielsweise einen Einfluss darauf, wie das Verhalten von PartnerInnen in intimen Beziehungen wahrgenommen wird. So tendierten neurotische Individuen dazu, das Verhalten der PartnerInnen als negativer und bedrohlicher einzuschätzen (Finn et al., 2013). Diese negative Interpretation des Verhaltens der PartnerInnen konnte wiederum mit einer geringeren Zufriedenheit mit der Beziehung in Verbindung gebracht werden. Auch bezüglich Neurotizismus wird hier von einer feindseligen Attributionsverzerrung (*hostile attribution bias*) gesprochen (u.a. Milich & Dodge, 1984). Durch die Verzerrungen schreiben neurotische Menschen ihrem sozialen Umfeld eher feindselige Intentionen und Verhaltensweisen zu. Aber auch Beziehungen werden im Allgemeinen von neurotischeren Menschen negativer eingeschätzt (Karney & Bradbury, 2000; Karney et al., 1994). Veränderungen in kognitiven Verzerrungen konnten in einer längsschnittlich angelegten Studie wiederum Veränderungen in Neurotizismus-Werten über die Zeit vorhersagen (Finn, Mitte & Neyer, 2015). Das Ausmaß des Neurotizismus nahm über die Zeit ab, wenn auch die Tendenz abnahm, uneindeutiges Verhalten in Partnerschaftsszenarien in negativer Art und Weise zu interpretieren. Die Frage ist nun, ob sozial-kognitive Prozesse nicht nur durch Persönlichkeitseigenschaften vorhersagbar sind, sondern inwiefern diese auch auf die weitere Entwicklung der Persönlichkeit Einfluss nehmen können.

5.4.3. Einfluss der sozialen Informationsverarbeitung auf die Persönlichkeitsentwicklung

Interpersonale Wahrnehmungen und Interpretationen konnten mit verschiedenen individuellen Dispositionen in Zusammenhang gebracht werden (u.a. Branje, Van Lieshout, & Gerris, 2007; Hagemeyer, Neyer, Neberich, & Asendorpf, 2013; Rothbart, 2011). Diese Wahrnehmungsprozesse beeinflussen wiederum das individuelle (soziale) Verhalten. So

zeigten Individuen, die erwarteten, von anderen zurückgewiesen zu werden, eher Verhaltensweisen, die diese Zurückweisung wahrscheinlicher machten (Sroufe, 1990), auch wenn das eigentliche Ziel war, die Zurückweisung zu verhindern. So neigten sie zu mehr Rückzugs- bzw. zu aggressivem Verhalten, um die Angst vor einer Zurückweisung zu reduzieren (London, Downey, Bonica, & Paltin, 2007). Beide Verhaltensreaktionen führten jedoch zu mehr Einsamkeit oder Beziehungsabbrüchen (u.a. Downey et al., 1998), was die a-priori befürchtete Zurückweisung eintreten ließ. Die Wahrnehmung feindseliger Intentionen bei anderen, befördert in analoger Weise aggressive Verhaltenstendenzen, was beim Gegenüber ebenfalls eher feindseliges Verhalten befördert, was die ursprünglich zugeschriebenen Intentionen bestätigt (Dodge & Crick, 1990, Raine, 2008). Kognitive Prozesse scheinen somit Verhaltensweisen zu befördern, die erwartungskonformes Verhalten beim Gegenüber wahrscheinlicher machen und so letztendlich die a-priori Erwartungen bestätigt (siehe Bradbury & Fincham, 1990).

Reaktive Transaktionen. Die konsistente Anwendung dieser teils persönlichkeitskongruenten, kognitiven Schemata und Verhaltensskripte könnte also die sozial-kognitiven Strukturen bestätigen und sie so über die Zeit festigen. Diese Idee wurde bereits im Konzept der reaktiven Transaktionen (Caspi & Roberts, 1999, 2001) postuliert. Reaktive Transaktionen als ein Typ von Person-Umwelt-Transaktionen bilden ab, dass ein und dieselbe Situation von Menschen unterschiedlich wahrgenommen und interpretiert werden kann. Analog zum SIP-Modell (Crick & Dodge, 1994) wird davon ausgegangen, dass soziale Situationen im Sinne einer Feedback-Schleife das abgespeicherte soziale Wissen verändern oder verstärken können, wenn die Verhaltenskonsequenzen die a-priori Erwartungen bestätigten. So führen kognitive Schemata dazu, dass zu Erwartungen und Konzepten kongruente Informationen selektiv ausgewählt und verarbeitet werden (Fiske & Taylor, 1991). Im Sinne eines *confirmation bias* (Nickerson, 1998) könnten diese Informationen die zugrundeliegenden kognitiven Schemata wiederum bestätigen. Kognitive Schemata ermöglichen somit eine schema-kongruente

Informationsverarbeitung, was wiederum eine Korrektur bestehender Schemata erschwert (u.a. Westen, 1991; Ickes, Snyder, & Garcia, 1997).

Evokative Transaktionen. Kognitive Schemata und Verhaltensskripte sowie die selektive Wahrnehmung beeinflussen wiederum auch die gezeigte Reaktion in einer sozialen Situation, was den Charakter einer sich-selbst-erfüllenden Prophezeiung (u.a. Jones, 1977; Miller & Turnbull, 1986) annehmen kann. Die Idee sich-selbst-erfüllender Prophezeiung wurde im Konzept der evokativen Transaktion aufgegriffen. Die Idee ist, dass Individuen durch ihr Verhalten spezifische Reaktionen beim Gegenüber evozieren, die konsistent mit a-priori bestehenden Erwartungen sind. In der Folge werden die a-priori Erwartungen bestätigt und verfestigt. Wenn ein Individuum beispielsweise erwartet, dass das Gegenüber wenig verständnisvoll oder eher kritisierend in einer Problemsituation auftritt, wird es wahrscheinlicher schweigend oder vermeidend auftreten (u.a. McNulty & Karney, 2002, 2004; Sanford, 2006), was wiederum mit höherer Wahrscheinlichkeit tatsächlich negatives Interaktionsverhalten des Gegenübers zur Folge hat (Fisher & McNulty, 2008). Sich-selbst-erfüllende Prophezeiungen bestätigen somit ursprüngliche (Fehl-)Erwartungen oder Wahrnehmungen und wirken stabilisierend auf bestehende Schemata und tragen so letztlich zu einer Stabilisierung bestehender Persönlichkeitsdispositionen bei.

Person-Umwelt-Transaktionen. Sollte das soziale Wissen bzw. die Auswirkungen von Persönlichkeitsmerkmalen aber zu maladaptiven Folgen für die Betroffenen führen, beispielsweise durch mehr Unzufriedenheit in sozialen Beziehungen, bergen Stabilisierungsprozesse ein gewisses Risiko. Ein Verständnis solcher Stabilisierungsprozesse und -mechanismen ermöglicht es, effektive therapeutische Interventionen zu entwickeln, um die Stabilisierung maladaptiver Dispositionen zu verhindern. Person-Umwelt-Transaktionen gehen auf dynamisch-interaktionistische Modellvorstellungen zurück und konzeptualisieren mögliche Mechanismen, wie eine zunehmende Passung zwischen Persönlichkeit und Umwelt hergestellt werden kann (Caspi & Roberts, 1999, 2001; Roberts et al., 2008). In neueren Arbeiten werden

sechs verschiedene Arten von Transaktionen beschrieben, die die Stabilisierung von Persönlichkeitsmerkmalen begünstigen (*attraction, selection, manipulation, attrition, reactive transaction, evocative transaction*). In älteren Arbeiten wurden drei der Transaktionsformen (*attraction, selection, attrition*) unter selektiven Transaktionen zusammengefasst, so dass ursprünglich vier Transaktionsformen definiert wurden: (1) reaktive, (2) evokative, (3) selektive und (4) manipulative Transaktionen. Die ersten Transaktionsformen (reaktiv, evokativ) beschreiben stabilisierende Auswirkungen der sozialen Informationsverarbeitung. Die anderen Formen (selektiv, manipulativ) zeigen sich in der aktiven Auswahl und Beeinflussung der sozialen Umwelt.

5.5. Soziales Verhalten

Ein weiterer vermittelnder Prozess zur Erklärung des Einflusses von Persönlichkeitseigenschaften auf soziale Beziehungen ist das in einer Situation gezeigte soziale Verhalten. Soziales Verhalten umfasst nach dem PERSOC-Modell (Back et al., 2011) verbales, paraverbales oder nonverbales Verhalten, das von einer Person gezeigt wird und von den InteraktionspartnerInnen wahrgenommen werden kann.

5.5.1. Modell zur Beschreibung sozialen Verhaltens

Das interpersonelle Circumplex-Modell (Wiggins, 1979, 2003) ist das Ergebnis jahrelanger Forschung zur Konzeptualisierung interpersonellen Verhaltens, interpersonaler Wahrnehmungen und interpersoneller Dimensionen von Persönlichkeitseigenschaften (Horowitz & Strack, 2011). Mithilfe von zwei Hauptdimensionen - auf der vertikalen Achse *Agency* und auf der horizontalen Achse *Communion* (Abele & Wojciszke, 2007; Bakan, 1966; Hopwood, 2018) - können sowohl aktuell gezeigtes, soziales Verhalten als auch stabilere Verhaltenstendenzen in sozialen Situationen, die mit individuellen Persönlichkeitsmerkmalen zusammenhängen, beschrieben werden. *Agency* bezieht sich dabei auf Individualisierung und ist verbunden mit Dominanz, Macht, Status und Kontrolle. *Communion* ist dagegen auf

Verbindung fokussiert und ist verbunden mit Liebe, Zugehörigkeit, Beziehungen und Freundlichkeit (McAdams, Hoffman, Mansfield, & Day, 1996; Wiggins, 1991; Wiggins & Trapnell, 1996). Innerhalb des Circumplex-Modells werden meist vier Dimensionen unterschieden: (1) Dominanz/Submissivität auf der vertikalen *Agency*-Achse und (2) Wärme/Kälte auf der horizontalen *Communion*-Achse. Dominantes Verhalten zeigt sich durch den Versuch, den eigenen Status zu erhalten oder aufrechtzuerhalten. Submissivität dagegen zeichnet sich durch die Zuerkennung von Status an die InteraktionspartnerInnen aus. Warmes Verhalten beinhaltet das Streben nach Zuneigung, Akzeptanz oder Einbindung durch InteraktionspartnerInnen sowie die bereitwillige Gabe von Zuwendung an diese. Kaltes Verhalten zeigt sich dagegen im Entzug oder dem Vorenthalten solcher Zuwendung. Aus der Kombination beider Hauptdimensionen werden zwei weitere Dimensionen abgeleitet: (3) Geselligkeit/Zurückgezogenheit (um 45 Grad von der *Agency*-Achse aus in Richtung des Wärme-Pols auf der *Communion*-Achse gedreht) und (4) Arroganz/Bescheidenheit (um 45 Grad von der *Agency*-Achse in Richtung des Kälte-Pols auf der *Communion*-Achse gedreht). Geselligkeit beschreibt eine Kombination aus dominantem und freundlichem Verhalten. Arroganz ist eine Kombination aus dominantem und kaltem/ unfreundlichem Verhalten.

In Forschungsarbeiten konnten einzelne Persönlichkeitseigenschaften (u.a. Waldherr & Muck, 2011) sowie auch klinisch relevante Formen von Persönlichkeitsstörungen (u.a. Soldz, 1997; Kiesler, Van Denburg, Sikes-Nove, Larus, & Romney, 1990) in das Circumplex-Modell eingeordnet werden. Demnach kann das Persönlichkeitsmerkmal der Extraversion auf der Geselligkeit/ Zurückgezogenheit-Achse und Verträglichkeit auf der Bescheidenheit/Arroganz-Achse abgebildet werden. Abhängige Persönlichkeitsanteile konnten wiederum auf der Bescheidenheit/Arroganz-Achse verortet werden, vermeidende Persönlichkeitsanteile dagegen auf der Zurückgezogenheit/Geselligkeits-Achse. Das Circumplex-Modell kann darüber hinaus verwendet werden, um alltägliche Reaktionsweisen wie in Konflikten zu beschreiben.

5.5.2. Einfluss sozialen Verhaltens auf die Qualität sozialer Beziehungen

Die Qualität sozialer Beziehungen spielt eine zentrale Rolle für die Zufriedenheit bzw. das Wohlbefinden eines Menschen (u.a. Heller, Watson, & Iles, 2004). Sie wird dabei beeinflusst von verschiedenen Beziehungsaspekten, die sich auf kognitiver, emotionaler und Verhaltensebene zeigen können. Auf der Verhaltensebene scheinen insbesondere im Sinne des VSA-Modells (Karney & Bradbury, 1995) sogenannte *adaptive processes* im Umgang mit stressreichen Situationen relevant zu sein.

Konfliktverhalten. Studien zeigen die besondere Bedeutung des Umgangs mit Konflikten, das heißt, wie die PartnerInnen in einer Konfliktsituation handeln, beispielweise, ob sie daran interessiert sind, den Konflikt zu lösen und über welche Konfliktlösungsstrategien sie verfügen (Gottman & Driver, 2005). Dysfunktionale Konfliktstile umfassen aggressives Verhalten, Rückzug bzw. Vermeidung und sozial inkompetentes Verhalten wie dem Gegenüber nicht zuzuhören. Werden dagegen Konfliktsituationen adäquat gemeinsam bewältigt, kann dies die Beziehungszufriedenheit erhöhen (e.g., Falconier, Jackson, Hilpert, & Bodenmann, 2015). Die zur Verfügung stehenden Konfliktstile werden wiederum von individuellen Dispositionen beeinflusst wie beispielweise Ausprägungen in Neurotizismus (Antonioni, 1998; Bouchard, 2003). Individuen mit hohen Ausprägungen in Neurotizismus zeigten häufiger vermeidendes, unterwürfiges, distanziertes und seltener dominant-aktives Verhalten. Allgemein zeigten neurotische Individuen negativere Interaktionsstile in sozialen Kontakten (Karney & Bradbury, 1997). Darüber hinaus konnten Zusammenhänge zwischen Verhaltensweisen in Konflikten und dem individuellen Bindungsstil nachgewiesen werden (Sierau & Herzberg, 2012). Ängstlich gebundene Individuen tendierten zu eher negativen Konfliktstilen, was die Einflüsse von ängstlichen Bindungsmustern auf die Beziehungszufriedenheit erklären konnte. Sie zeigten weniger positive Problemlösestrategien. Anstelle von der Suche nach Kompromissen, wo verschiedene Meinungen integriert werden sollen, zeigten sie eher aggressives Verhalten und Rückzug. Der Rückgriff auf distanzierte oder vermeidende

Konfliktstile hing dabei auch mit der Einschätzung der Bewältigbarkeit der Konfliktsituation zusammen. Übersteigt eine wahrgenommene Situation die selbst eingeschätzten, zur Verfügung stehenden Coping-Ressourcen eines Individuums, wird die Situation als bedrohlich bewertet, was eher ungünstige Verhaltensweisen zur Bewältigung des Konflikts befördert (u.a. Bouchard, 2003). Im Sinne einer sich selbst-erfüllenden Prophezeiung könnte solch eine eher ungünstige Vorgehensweise, die mit höherer Wahrscheinlichkeit zu einer unbefriedigenden Konfliktlösung führt, zu einer Bestätigung und somit Stabilisierung der ursprünglichen Erwartungen, Einstellungen und Wahrnehmungen beitragen.

Selbstoffenbarung und Intimität. Die Qualität des Bindungsverhaltens beeinflusste darüber hinaus auch die emotionale Selbstöffnung und das Ausmaß an Intimität in der Beziehung. Bei ungünstigen Bindungsdispositionen neigten die Personen dazu, emotional und psychisch unabhängig von ihren PartnerInnen zu bleiben, indem sie unter anderem weniger in die Beziehung investierten und Dinge eher für sich behielten (Hazan & Shaver, 1994). Auch Neurotizismus beeinflusste die Intimität in einer Partnerschaft. Menschen mit hohen Ausprägungen in Neurotizismus legten ihren PartnerInnen ihre Gedanken und Gefühle weniger offen, unabhängig davon, wie offen die PartnerInnen in der Beziehung waren (Cunningham & Strassberg, 1981). Das Ausmaß der emotionalen Intimität sagte wiederum die Beziehungszufriedenheit von beiden PartnerInnen vorher (e.g., Starks, Doyle, Millar, & Parsons, 2017; Anderson & Emmers-Sommer, 2006; Sanderson & Evans, 2001). Genauer gesagt vermittelten die soziale Unterstützung der PartnerInnen und deren Selbstoffenbarungen die positiven Einflüsse auf die Zufriedenheit in romantischen Beziehungen.

Kommunikationsverhalten. Aber auch das Verhalten in alltäglichen Situationen konnte den Zusammenhang zwischen Persönlichkeitsmerkmalen und der Zufriedenheit in sozialen Beziehungen erklären. Wilson, Harris und Vazire (2015) zeigten, dass die Big Five Persönlichkeitsfaktoren die Kommunikationstiefe, die Quantität von Interaktionen sowie das Ausmaß an Selbstöffnung und Emotionsunterdrückung vorhersagten, was wiederum die

Zufriedenheit in Freundschaften beeinflusste. Wenn sich Personen in einer Interaktion distanzierter verhielten oder weniger warmes Interaktionsverhalten zeigten, führte dies dazu, dass sie von ihren InteraktionspartnerInnen als weniger interessiert wahrgenommen wurden und weniger wahrgenommene Nähe berichteten (Ackerman & Corretti, 2015).

Emotionen und Emotionsregulation. Vater und Schröder-Abé (2015) konnten darüber hinaus zeigen, dass die Big Five Persönlichkeitsfaktoren systematisch mit der Emotionsregulation in Konfliktsituationen verbunden waren, was wiederum einen Einfluss auf das interpersonale Verhalten hatte. So neigten Individuen mit höheren Ausprägungen in Neurotizismus eher zu aggressiver Externalisierung als Bewältigungsstrategie in Konflikten, was wiederum bei beiden PartnerInnen die wahrgenommene Zufriedenheit mit der Beziehung reduzierte. Marshall, Simpson und Rholes (2015) konnten in einer Studie zeigen, dass es wichtig ist, die individuellen Dispositionen von beiden PartnerInnen zu berücksichtigen. Die Autoren untersuchten den Einfluss von spezifischen Kombinationen von Big Five Persönlichkeitseigenschaften auf Kommunikationsverhalten und das Ausmaß depressiver Symptome. Insbesondere die Kombination zwischen einer neurotischen Person und einer wenig verträglichen Person zeigte die höchsten Ausprägungen von Depressivität bei den AkteurInnen, die noch stärker ausfiel, wenn auch dysfunktionale Problemlösungsstrategien und aggressive Verhaltensweisen in der Partnerschaft gezeigt wurden.

Intra- und interpersonale Prozesse. Caughlin, Huston und Houts (2000) argumentierten, dass Wechselwirkungen in Beziehungen auf zwei verschiedenen Ebenen stattfinden: auf intra- und interpersoneller Ebene. Intrapersonale Einflüsse umfassen dabei direkte Einflüsse von der Persönlichkeit des Individuum auf das eigene Denken, Fühlen und Verhalten. In der Terminologie des SRM-Modells (Back & Kenny, 2010) wären dies Akteureffekte. Interpersonale Einflüsse meinen dagegen, dass die eigene Persönlichkeit durch die Interaktion mit dem Gegenüber auch das Denken, Fühlen und Verhalten der PartnerInnen beeinflussen kann, beispielsweise durch Kommunikationsprozesse oder emotionale

Übertragung (*emotional contagion processes*). In der Terminologie des SRM-Modells (Back & Kenny, 2010) wären dies Partnereffekte. Zahlreiche Prozesse könnten somit zur Erklärung der (sozialen) Konsequenzen von Persönlichkeitseigenschaften herangezogen werden, neben behavioralen, auch motivationale, kognitive und affektive Prozesse (für eine Übersicht siehe Back & Vazire, 2015).

Zahlreiche Beispiele für intraindividuelle Prozesse wurden bereits beim Einfluss der Persönlichkeit auf die soziale Informationsverarbeitung genannt. So neigten Individuen mit höheren Ausprägungen in Neurotizismus dazu, unabhängig von der objektiven Qualität des Verhaltens ihres Gegenübers, dieses als negativer wahrzunehmen (Caughlin et al., 2000; Donnellan, Conger, & Bryant, 2004), schrieben ihnen eher negative Intentionen zu (Finn et al., 2013) und vergaben ihren Partnern seltener (Braithwaite et al., 2016), was wiederum die Beziehungszufriedenheit reduziert. In Bezug auf interpersonale Prozesse zeigte sich, dass Individuen mit hohen Ausprägungen in Neurotizismus durch ihr eigenes, eher negatives Verhalten auch eher negatives Verhalten bei ihren PartnerInnen als Reaktion darauf erzeugten (*reciprocity effect*, Fisher & McNulty, 2008). So zeigten auch PartnerInnen von neurotischen Individuen eher negatives Verhalten in Interaktionssituationen als dies PartnerInnen von Individuen mit niedrigen Ausprägungen in Neurotizismus taten (Donnellan, Hardy, Robins, & Conger, 2007). Es ist jedoch wichtig, beide Prozessarten nicht als unabhängig voneinander zu betrachten, da sie sich gegenseitig beeinflussen können (Côté & Moskowitz, 1998). Nach Caughlin und Kollegen (2000) können intrapersonale Effekte spezifische Reaktionen bei InteraktionspartnerInnen hervorrufen, was wiederum einen interpersonalen Effekt erzeugt.

Kommunikationsprozesse. Kommunikationsprozesse als interpersonale Prozesse umfassen nach Caughlin und Kollegen (2000) negative Interaktionsarten wie Kritik, Beschwerden oder Wutäußerungen sowie im positiven Sinn unterstützendes Verhalten einer Person, was wiederum ein bestimmtes Kommunikationsverhalten bei PartnerInnen hervorruft. Hier findet sich eine Parallele zur Idee sich selbst-erfüllender Prophezeiungen (Jones, 1977;

Miller & Turnbull, 1986), die bereits bei der Beschreibung des Einflusses der Persönlichkeit auf Interpretationen thematisiert wurde. So besitzen neurotischere Individuen die habituelle Erwartung, von anderen negativ behandelt zu werden (u.a. Brookings, Zembar & Hochstetler, 2003), was insbesondere in Konfliktsituationen entsprechendes soziales Verhalten befördert. Dies löst bei PartnerInnen wiederum negative Reaktionen wie Beschwerden oder ablehnendes Verhalten aus, was einerseits die bisherigen Erwartungen bestätigt und andererseits die Beziehungszufriedenheit der PartnerInnen reduziert (z. B. Buss, 1991; Caughlin et al., 2000; Downey et al., 1998; Romero-Canyas, Downey, Berenson, Ayduk, & Kang, 2010; siehe auch Brookings et al., 2003).

Emotionale Übertragung. Die Übertragung emotionaler Zustände (*emotional contagion*; Hatfield, Cacioppo & Rapson, 1994; Schachter & Singer, 1962) beschreibt, dass der emotionale Zustand einer Person den emotionalen Zustand der anderen Person direkt beeinflussen kann. Zum Beispiel kann die Ehe mit einer sehr ängstlichen Person die eigene Angst verstärken und somit die Beziehungszufriedenheit verringern (Caughlin et al., 2000). Darüber hinaus attribuierten Individuen mit einem höheren Grad an negativer Affektivität – einer zentralen Facette von Neurotizismus – negative Ereignisse und negatives Verhalten ihrer PartnerInnen eher auf stabile Eigenschaften und schuldhafte und egoistische Intentionen, was wiederum zu einer geringeren Zufriedenheit mit der Beziehungen führte (Karney et al., 1994). Die negative Affektivität könnte sich hier einmal im Sinne eines intrapersonalen Prozesses auf die eigene Wahrnehmung, Interpretationen und Bewertungen des Verhaltens der PartnerInnen ausgewirkt haben. Andererseits könnte im Sinne eines interpersonalen Effekts die Konfrontation mit einer habituell negativ denkenden Person sich dahingehend auswirken, dass auch deren PartnerInnen mit der Zeit eher negative Attributionsmuster entwickelt. Dieses Beispiel zeigt, dass sowohl intrapersonale als auch interpersonale Prozesse betrachtet werden sollten, um zu verstehen, warum und wie sich Dispositionen wie Neurotizismus auf die Beziehungszufriedenheit auswirken.

5.5.3. Einfluss der sozialen Umwelt auf die Persönlichkeitsentwicklung

Das soziale Verhalten in zwischenmenschlichen Beziehungen ist von der sozialen Informationsverarbeitung beeinflusst, das heißt davon, wie Menschen über sich selbst und ihr soziales Umfeld denken. Soziales Wissen und Schemata, auf die Menschen in diesen Situationen zurückgreifen, entstehen durch frühere Erfahrungen mit dem sozialen Umfeld. Haben Menschen Zurückweisung, Ablehnung und Ausschluss aus der sozialen Gruppe erfahren, können sich Erwartungen herausbilden, dass andere Personen ähnlich auf sie reagieren werden, so dass sie in zukünftigen Interaktionen mit großer Wahrscheinlichkeit zurückhaltender agieren. Diese Idee wurde im SIP-Modell (Crick & Dodge, 1994) im Konzept der *data base* konzeptualisiert. Die Reaktionen des sozialen Umfeldes können wiederum ursprüngliche Erwartungen bestätigen und so zu deren Verfestigung beitragen. Die Persönlichkeitsentwicklung wird somit einmal im Sinne einer reaktiven oder evokativen Person-Umwelt-Transaktion (u.a. Caspi & Roberts, 1999, 2001) durch Erwartungen und erwartungskonformes Verhalten beeinflusst. Andererseits könnte auch das soziale Umfeld an sich beeinflussen, wie sich Menschen über die Zeit entwickeln.

Die Wechselwirkung zwischen Individuum und seiner sozialen Umwelt wird als selektive oder auch proaktive Person-Umwelt-Transaktion konzeptualisiert (Caspi & Roberts, 1999). Sie beschreibt die aktive Auswahl oder Gestaltung sozialer Umwelten durch das Individuum. Die Annahme dahinter ist, dass die soziale Umwelt, in der ein Individuum lebt, maßgeblich bestehende individuelle Dispositionen aufrechterhalten und verfestigen kann. Solche Effekte werden vor allem in engeren, sozialen Beziehungen wie in Freundschaften und Partnerschaften angenommen. Im Laufe der Zeit wurde sie in verschiedenen Versionen konzeptualisiert. Caspi und Roberts (1999) beschrieben zunächst vier Transaktionen, in denen der Einfluss sozialer Umwelten in selektiven und manipulativen Transaktionen abgebildet wurden. Später fassten sie diese als proaktive Transaktion zusammen (Roberts & Caspi, 2001).

Selektive Transaktionen. Selektive Transaktionen beziehen sich auf die aktive Auswahl des sozialen Umfelds. Basierend auf individuellen Präferenzen, Einstellungen und Kompetenzen wählen Individuen aktiv passende Umwelten aus. Die Bevorzugung von Menschen, die in Präferenzen, Einstellungen, etc. ähnlich sind, könnte wiederum die entsprechenden Dispositionen verstärken (*social reinforcement*; Newcomb, Bukowski, & Pattee, 1993; Harris, 1995). Studien konnten dahingehend zeigen, dass Individuen InteraktionspartnerInnen präferieren, die ihnen ähnlich sind (u.a. Selfhout, Burk, Branje, Denissen, van Aken, & Meeus, 2010). Bezogen auf den bereits zuvor beschriebenen Effekt, dass aggressive Kinder dazu tendieren, das Verhalten anderer eher feindseligen Intentionen zuzuschreiben (u.a. Orobio de Castro et al., 2002), könnte auch im Sinne eines Selektionseffekt argumentiert werden. Aggressive Kinder beschreiben ihre Freunde ebenfalls als aggressiver (Nangle, Erdley, & Gold, 1996; Poulin & Boivin, 2000) und sind häufiger in devianten Gleichaltrigengruppen integriert (Dishion, Andrews, & Crosby, 1995). Dies könnte wiederum bestehende aggressive Tendenzen verstärken bzw. über die Zeit stabilisieren.

Manipulative Transaktionen. Manipulative Transaktionen beschreiben dagegen die aktive Gestaltung des (sozialen) Umfelds, so dass dieses konsistent mit eigenen Erfahrungen und Verhaltensweisen ist. Da soziale Umwelten wie Gleichaltrige, Familienmitglieder, Freunde und PartnerInnen nicht immer zur eigenen Person passen, werden diese aktiv mitgestaltet. Zu a-priori Erwartungen passende soziale Beziehungen könnten dann die zugrundeliegende Disposition weiter stabilisieren (u.a. Roberts & Robins, 2004).

Zusammenfassend beschreiben Person-Umwelt-Transaktionen die Idee, dass das Individuum selbst eine aktive Rolle bei der Herstellung passender sozialer Umwelten und in der Folge bei der Stabilisierung bestehender Dispositionen und Persönlichkeitstendenz einnimmt. Die Persönlichkeit eines Individuums hat somit weitreichende Folgen, einerseits für die Gestaltung sozialer Beziehungen, aber auch für die weitere Entwicklung der eigenen Persönlichkeit.

5.6. Die Rolle emotionaler Prozesse

Mund, Finn, Hagemeyer und Neyer (2016) argumentieren, dass, um die dynamische Wechselwirkung zwischen Persönlichkeit und sozialen Beziehungen verstehen zu können, es wichtig ist, verschiedene psychologische Funktionen zu betrachten. Neben kognitiven Prozessen seien auch emotionale und motivationale Prozesse relevant, da sie menschliches Verhalten maßgeblich beeinflussen können. So zeigten Lavee und Ben-Ari (2004), dass die emotionale Ausdrucksstärke relevant ist, um die Wirkung von Neurotizismus auf die Beziehungszufriedenheit zu erklären. So neigten Personen mit einem höheren Grad an Neurotizismus dazu, ihre negativen Emotionen intensiver auszudrücken als diejenigen mit einem niedrigeren Grad an Neurotizismus. Darüber hinaus sagte die emotionale Ausdruckskraft beider PartnerInnen die Beziehungszufriedenheit insbesondere von Frauen vorher. Sie war jedoch nicht relevant für die Zufriedenheit von Männern. Frauen könnten somit dem emotionalen Ausdruck in der Beziehung mehr Bedeutung zumessen und dazu neigen, ihre Emotionen stärker auszudrücken als Männer (Gottman, Katz, & Hooven, 1996; King & Emmons, 1990; Shields, 1987). Neben dem Ausdruck des emotionalen Zustandes wird die Regulation der erlebten Emotionen als weiterer wichtiger Faktor diskutiert, um die negativen Folgen von Neurotizismus auf die Beziehungszufriedenheit zu erklären (Kokkonen & Pulkkinen, 2001; Vater & Schröder-Abé, 2015). In einer Diskussion über einen aktuellen Beziehungskonflikt während einer Laborsitzung zeigte sich, dass Menschen mit einem höheren Grad an Neurotizismus mehr negative Emotionsregulationsstrategien (insbesondere aggressive Externalisierung) zeigten, was eher negatives soziales Verhalten während des Konfliktgesprächs beförderte (Vater & Schröder-Abé, 2015).

Auch wenn Emotionen wie Kognitionen wichtige Informationen im Rahmen der sozialen Informationsverarbeitung sind, wurden sie in bisher diskutierten Modellen nur bedingt berücksichtigt (u.a. Crick & Dodge, 1994). Lemerise und Arsenio (2000) postulierten hier ein erweitertes Rahmenmodell, dass an verschiedenen Stellen im Originalmodell der Sozialen

Informationsverarbeitung von Crick und Dodge (1994) emotionale Prozessvariablen ergänzt (siehe Abbildung 2).

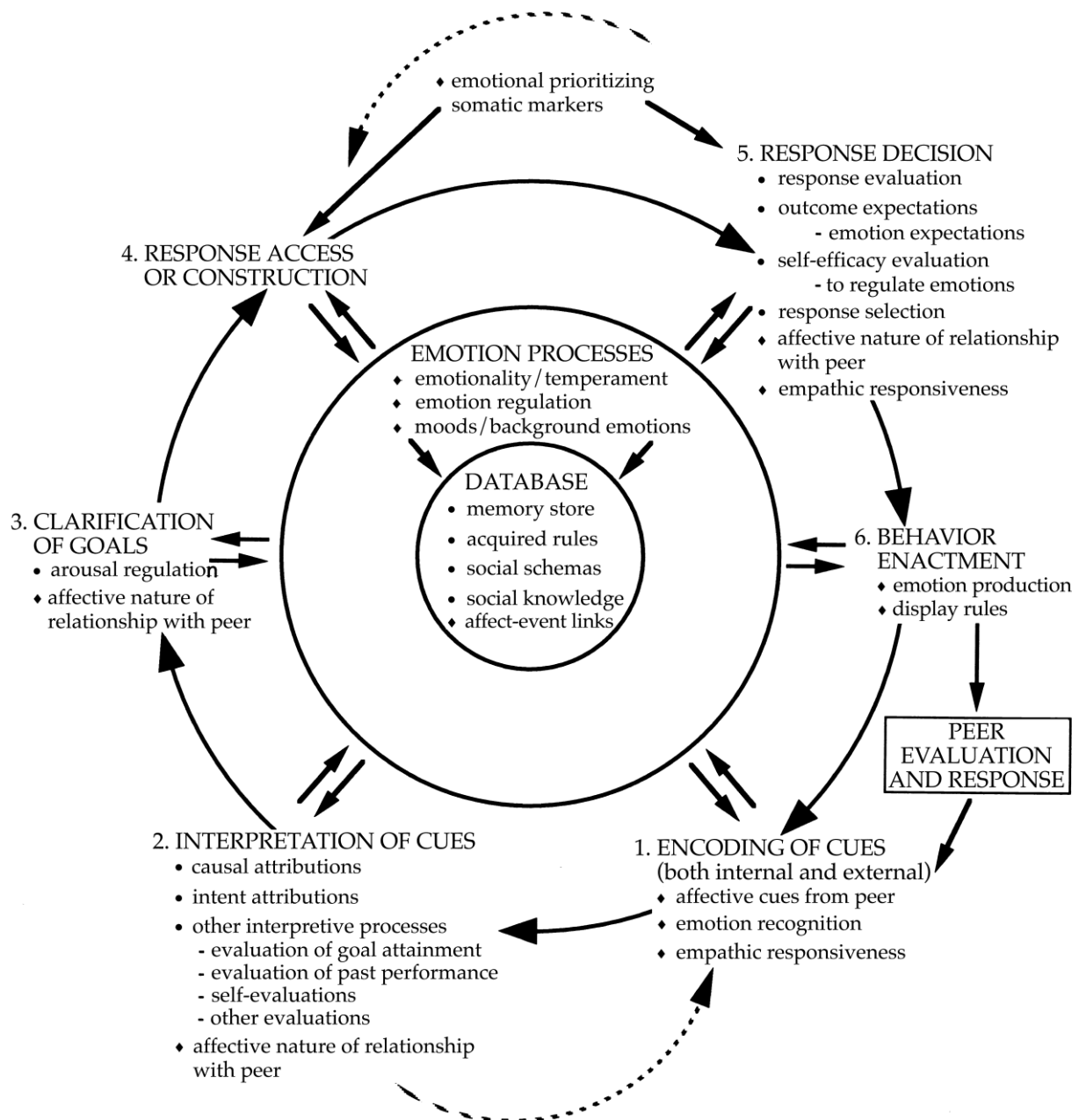


Abbildung 2. Grafische Darstellung des integrierten Modells emotionaler und kognitiver Prozesse bei der sozialen Informationsverarbeitung nach Lerner und Arsenio (2000, Figure 2, S.113).

Lerner und Arsenio (2000) gingen davon aus, dass die Emotionalität und die Fähigkeit zur Emotionsregulation als Vulnerabilitäten fungieren können und dass diese Vulnerabilitäten

zu spezifischen Reaktionsweisen führen können. So könnten diese Vulnerabilitäten insbesondere in Stresssituationen adaptive Bewältigungsstrategien hemmen oder Aufmerksamkeitsprozesse stören und in der Folge das gezeigte soziale Verhalten negativ beeinflussen. Gerade neuere Forschungsarbeiten scheinen bemüht, kognitive, emotionale und behaviorale Prozessvariablen in ihrem Zusammenspiel zu untersuchen (u.a. Bühler, Weidmann, Wünsche, Burriss, & Grob, 2020).

6. Zusammenfassung der Manuskripte

Persönlichkeitsmerkmale haben einen Einfluss darauf, wie Menschen ihre Umwelt wahrnehmen, wie sie ihre soziale Umgebung interpretieren und wie sie darauf reagieren. Das vorliegende Dissertationsprojekt beschäftigte sich in drei wissenschaftlichen Arbeiten mit der Fragestellung, wie sich Persönlichkeitsmerkmale - insbesondere Neurotizismus und das verwandte Konzept der Opfersensibilität - auf kognitiver, emotionaler und behavioraler Ebene auswirken (d.h. persönlichkeitskongruente Effekte). Beide Persönlichkeitsmerkmale konnten in Studien mit weitreichenden, eher maladaptiven Konsequenzen in Verbindung gebracht werden. Im Rahmen des Projekts wurde untersucht, inwiefern psychologische Variablen wie interpersonale Wahrnehmung, kognitive Verzerrungen und soziales Verhalten die negativen Folgen dieser Persönlichkeitsmerkmale erklären können (Fragestellung 1) und inwiefern diese psychologischen Variablen auch bei der Stabilisierung von Persönlichkeitsmerkmalen eine Rolle spielen (Fragestellung 2).

In **Manuskript #1** werden relevante psychologische Prozesse diskutiert, die zur Entstehung und Stabilisierung von Opfersensibilität, einer Facette von Gerechtigkeits-sensitivität, beitragen könnten. Das vorgestellte theoretische Rahmenmodell betrachtete dabei die Stabilisierung von Opfersensibilität aus zwei Perspektiven: aus lebensgeschichtlicher und aktual-genetischer, das heißt, in konkreten sozialen Situationen. Wobei jeweils die Frage adressiert wurde, wann und wie diese Persönlichkeitseigenschaft entsteht und welche (psychologischen) Prozesse zu deren Stabilisierung beitragen. Aufbauend auf dem *Sensitivity to Mean Intentions Model* (SeMI; u.a. Gollwitzer & Rothmund, 2009), welches die negativen Folgen von Opfersensibilität zu erklären versucht (u.a. Misstrauen, Egoismus und unkooperatives Verhalten), wurden vor allem sozial-kognitive Mechanismen für deren Entstehung diskutiert. Das SeMI-Modell konzeptualisiert explizit ein *suspicious mindset*. Dieses umfasst relativ stabile Erwartungen bezüglich der Nicht-Vertrauenswürdigkeit anderer, eine erhöhte Aufmerksamkeitslenkung auf Hinweise auf Unvertrauenswürdigkeit und es

konzeptualisiert daraus resultierendes unkooperatives Verhalten als defensive Verhaltensreaktion aufgrund von a-priori Erwartungen. Forschungsbefunde unterstützen die Bedeutung sozial-kognitiver Mechanismen bei der Entstehung und Stabilisierung von Opfersensibilität (u.a. Gollwitzer & Rothmund, 2009; Gollwitzer, Rothmund & Süßenbach, 2013).

Das im Rahmen des Manuskripts postulierte Modell geht davon aus, dass sozial-kognitive Verarbeitungsmuster das Ergebnis früherer (Viktimisierungs-)Erfahrungen sind, direkt und beobachtet. Solche negative Erfahrungen beeinflussen die Entwicklung von Wahrnehmungs- und Interpretationstendenzen sowie generalisierten Erwartungen über andere. Im *Social Information Processing Modell of children's social adjustment* (SIP; Crick & Dodge, 1994) wird das vorhandene sozial-kognitive Wissen als individuelle Vulnerabilität konzeptualisiert, was in aktuellen sozialen Situationen aktiviert wird und die Bewältigung von Situationen maßgeblich mitbeeinflusst (*data base*). Das im SeMI-Modell (u.a. Gollwitzer & Rothmund, 2009) postulierte *suspicious mindset* stellt solch eine individuelle Wahrnehmungs- und Interpretationstendenz dar, was wiederum das gezeigte Verhalten in Reaktion auf vorhandene Umweltbedingungen beeinflusst.

Das postulierte Modell erklärt die Stabilisierung von Opfersensibilität und des sozial-kognitiven Wissens über die Zeit durch eine zunehmende Stabilisierung des Selbst, der sozialen Umwelt sowie einer zunehmenden Passung zwischen der Person und der sozialen Umgebung, in der sich das Individuum bewegt. Selbststabilisierung bezieht sich dabei auf eine Stabilisierung von selbstbezogenem Wissen, das unter anderem in der *data base* gespeichert ist. Umweltstabilisierung resultiert aus einer zunehmenden Stabilität des sozialen Umfelds über die Lebensspanne. Die zunehmende Passung zwischen Person und sozialem Umfeld wird durch Person-Umwelt-Transaktionen (u.a. Caspi & Roberts, 1999; Neyer & Asendorpf, 2001) hergestellt, wobei dem Individuum eine aktive Rolle zugesprochen wird. Reaktive Transaktionen bilden dabei ab, dass ein und dieselbe Situation von Menschen unterschiedlich wahrgenommen und interpretiert werden kann. Analog zum SIP-Modell (Crick & Dodge, 1994)

wird davon ausgegangen, dass Menschen kognitive Schemata und Verhaltensskripte besitzen, die die Reaktion auf (soziale) Situationen beeinflussen (*data base*). Die konsistente Anwendung dieser Schemata begünstigt wiederum deren Stabilisierung. So führen kognitive Schemata dazu, dass zu Erwartungen und Konzepten kongruente Informationen selektiv ausgewählt und verarbeitet werden (u.a. Fiske & Taylor, 1991; *confirmation bias*, Nickerson, 1998). Wahrnehmungen, Attributionen und Reaktionen bestätigen dann wiederum a-priori Erwartungen im Sinne einer Feedback-Schleife. Das so gespeicherte soziale Wissen wird bestätigt und über die Zeit verfestigt. Kognitive Schemata ermöglichen so eine schema-kongruente Informationsverarbeitung, was wiederum eine Korrektur bestehender Schemata erschwert (u.a. Westen, 1991; Ickes et al., 1997). Evokative Transaktionen bilden ab, dass so hervorgerufene Reaktionen des sozialen Umfelds das sozial-kognitive Wissen bestätigen und festigen. Das bedeutet, dass bestehende Erwartungen im Sinne einer sich-selbst-erfüllenden Prophezeiung bestimmtes soziales Verhalten begünstigen können, was wiederum konsistente Reaktionen des sozialen Umfelds hervorruft und vorher bestehende Erwartungen bestätigt. Auf der anderen Seite tendieren Individuen dazu, sich mit Menschen zu umgeben, die ähnliche Präferenzen, Einstellungen, Vorlieben, etc. besitzen. Selektive Transaktionen bilden ab, dass durch die explizite Auswahl sozialer Umwelten solche Umwelten geschaffen werden, die zu bestehenden Persönlichkeitseigenschaften passen und diese wiederum verstärken (*social reinforcement*, u.a. Harris, 1995). Manipulative Transaktionen umfassen darüber hinaus aktive Versuche des Individuums, die soziale Umwelt so zu verändern, dass sie zu individuellen Erfahrungen und sozial-kognitiven Schemata passt und diese wiederum festigt. Es wurde argumentiert, dass psychologische Variablen wie interpersonale Wahrnehmung, kognitive Verzerrungen und soziales Verhalten die Ergebnisse negativer Erfahrungen sind und auch die Stabilisierung von Opfersensibilität maßgeblich mitbeeinflussen können.

In Bezug auf die aktual-genetische Entwicklung und Stabilisierung von Opfersensibilität thematisierte das postulierte Modell die Rolle von Lernprozessen. Durch assoziative

Lernprozesse (klassische und operante Konditionierung; u.a. Mowrer, 1947) werden Stimulus-Ergebnis- und Verhaltens-Ergebnis-Verbindungen gelernt. Das heißt, beispielsweise durch erfahrene Ausnutzung erhält ein ursprünglich neutraler Reiz (bspw. ein spezifischer Gesichtsausdruck oder eine bestimmte Verhaltensweise) eine besondere Bedeutung und aktiviert a-priori Erwartungen und Schemata (*suspicious mindset*). Das vermutlich bei der Lernsituation zunächst gezeigte kooperative Verhalten wird durch die erfahrene Ausnutzung bestraft, was das Zeigen kooperativen Verhaltens in der Zukunft unwahrscheinlicher macht. Das Individuum wird wahrscheinlich ähnliche Situationen oder kooperatives Verhalten vermeiden, um die unangenehmen Konsequenzen (Bestrafung) zu verhindern (negative Verstärkung). Dieses Vermeidungsverhalten stabilisiert wiederum die ursprünglichen Erwartungen, da so keine korrigierenden Erfahrungen möglich sind (*avoidance learning*; u.a. Mowrer & Miller, 1942). Das gezeigte unkooperative Verhalten begünstigt darüber hinaus auch zu a-priori Erwartungen konsistente Reaktionen des Umfelds. Zusammengefasst, wird argumentiert, dass a-priori Erwartungen und Schemata durch Lernprozesse ausgebildet werden. Das daraufhin gezeigte Vermeidungsverhalten verhindert mit Erwartungen inkongruente Erfahrungen und erwartungskonformes Verhalten begünstigt wiederum erwartungskonforme Verhaltenskonsequenzen, was wiederum a-priori Erwartungen bestätigt und festigt. In der Folge könnten zugrundeliegende Persönlichkeitsmerkmale wie Opfersensibilität stabilisiert werden. Im Rahmen des Manuskripts wurden diese theoretischen Zusammenhänge diskutiert und in zwei Rahmenmodellen zusammengefasst.

Manuskript #2 beschäftigt sich mit der Frage, inwiefern sich Neurotizismus als eines der Big Five Persönlichkeitseigenschaften auf die interpersonale Wahrnehmung auswirkt. Das PERSOC-Modell (Back et al., 2011) beschreibt die dynamischen und komplexen Wechselwirkungen zwischen der Persönlichkeit eines Individuums und dessen sozialen Beziehungen. Dieses integrative Rahmenmodell geht davon aus, dass sich Persönlichkeitsmerkmale darauf auswirken, wie sich das Individuum in seinen sozialen

Beziehungen verhält, was es wahrnimmt und wie es das Wahrgenommene interpretiert (sog. *dispositional expression process*). Soziale Interaktionen sollen nach diesem Modell wiederum einen Einfluss auf die weitere Persönlichkeitsentwicklung (sog. *dispositional development process*) nehmen. Im Rahmen der Studie wurde untersucht, inwiefern diese persönlichkeitskongruenten Wahrnehmungstendenzen das Ergebnis einer Wahrnehmungsverzerrung (*perception bias*) oder eines Selektionseffekts (*selection effects*) sind. Beim Vorliegen von Wahrnehmungsverzerrungen würden individuelle Dispositionen die Wahrnehmung sozialer InteraktionspartnerInnen beeinflussen, unabhängig davon wie diese InteraktionspartnerInnen sich selbst oder von Dritten wahrgenommen werden. Beim Zutreffen von Selektionseffekten wäre die Wahrnehmung des Individuums tatsächlich korrekt, das heißt, sie würde mit den Selbstberichten der InteraktionspartnerInnen bzw. den Urteilen Dritter über diese übereinstimmen und individuelle Dispositionen würden beeinflussen, mit wem interagiert wird. In Anlehnung an das Konzept der Person-Umwelt-Transaktionen (u.a. Caspi & Roberts, 1999; Neyer & Asendorpf, 2001) wurde angenommen, dass die individuelle, möglicherweise verzerrte Wahrnehmung des sozialen Umfelds (reaktive Transaktion) sowie die aktive Auswahl und Gestaltung sozialer Umwelten (proaktive Transaktion, u.a. Roberts et al., 2008) zu einer Stabilisierung bestehender Persönlichkeitseigenschaften beitragen könnten.

Zur Untersuchung dieser Forschungsfragen wurden interpersonale Wahrnehmungen realer Alltagsinteraktionen von 110 Teilnehmenden der CONNECT-Studie untersucht. Die CONNECT Studie wurden zwischen Oktober 2012 und Juli 2015 an der Universität Münster durchgeführt, wobei fast die gesamte Kohorte der Psychologie-Erstsemester-Studierenden wiederholt zu verschiedenen Messzeitpunkten über das Bachelorstudium hinweg befragt worden waren. Onlinefragebogen wurden genutzt, um Persönlichkeitsmerkmale im Selbstbericht zu erfassen. Interpersonale Wahrnehmungen sozialer Interaktionen wurden ereignisbezogen mithilfe von Smartphones erfasst (*experience sampling method*). Interpersonelle Dimensionen wurden dabei in Anlehnung an das *Interpersonal Circumplex*

Model (u.a. Abele & Wojciszke, 2007) mit den Dimensionen (1) Dominanz/ Unterwürfigkeit, (2) Wärme/ Kälte, (3) Geselligkeit/ Zurückgezogenheit und (4) Arroganz/ Bescheidenheit erfasst. In einer konkreten Interaktionssituation schätzten alle InteraktionspartnerInnen das eigene Verhalten sowie das Verhalten jeder anderen Person, mit der sie interagiert hatte, anhand dieser Dimensionen ein. Mithilfe von Multilevel Modeling wurde die so entstandene genestete Datenstruktur berücksichtigt und das individuelle Rating einer Versuchsperson über deren InteraktionspartnerInnen in die interessierenden Effekte zerlegt: interindividuelle Unterschiede in Wahrnehmungsverzerrungen im Zufallsterm des fixed intercepts und Selektionseffekte in den between-perceiver Regressionsanstiegen basierend auf den Selbstratings des Targets (d.h. der eingeschätzten InteraktionspartnerInnen) und den Einschätzungen weiterer Dritter, die an der gleichen Interaktion beteiligt waren. Veränderungen bzw. Stabilität in Neurotizismus über die Zeit wurden mit Latent-True-Change Modellen modelliert, wo intraindividuelle Veränderungen in interindividuellen Unterschieden auf latenter Ebene modelliert wurden. Neurotizismus zum ersten Messzeitpunkt wurde genutzt, um persönlichkeitskongruente interpersonale Wahrnehmungen vorherzusagen und diese wiederum sollten Veränderungen im Neurotizismus über die Zeit vorhersagen.

Die Ergebnisse deuteten im Gegensatz zu Vorbefunden auf eine positivere interpersonale Wahrnehmung bei Individuen mit höheren Neurotizismus-Werten hin. Neurotischere Individuen tendierten dazu, ihre InteraktionspartnerInnen als geselliger und wärmer einzuschätzen. Diese Wahrnehmungsverzerrung sagte wiederum keine Veränderungen im Neurotizismus über die Zeit vorher. Persönlichkeitskongruente Selektionseffekte konnten ebenfalls nicht nachgewiesen werden. Die Auswahl spezifischer InteraktionspartnerInnen sagte jedoch eine Veränderung in den Neurotizismus-Werten vorher. Neurotizismus nahm über die Zeit stärker ab, wenn die Individuen mit InteraktionspartnerInnen interagierten, die von Dritten als geselliger eingeschätzt wurden. Wurden die InteraktionspartnerInnen von Dritten als wärmer eingeschätzt, führte dies zu einer geringeren Abnahme im Neurotizismus über die Zeit.

Somit legen die Ergebnisse der Studie nahe, dass interpersonale Wahrnehmungen durch das Persönlichkeitsmerkmal Neurotizismus vorhergesagt werden können und dass diese eher auf Wahrnehmungsverzerrungen als auf Selektionseffekten zurückzuführen sind. Darüber hinaus konnte das soziale Umfeld eines Individuums bedeutsam intraindividuelle Veränderungen im Neurotizismus über die Zeit vorhersagen (d.h. proaktive Transaktion), was Wahrnehmungsverzerrungen in der vorliegenden Studie nicht konnten (d.h. reaktive Transaktion).

Manuskript #3 beschäftigt sich mit der Frage, wie sich Neurotizismus auf kognitiver, emotionaler und behavioraler Ebene auswirkt, und zwar insbesondere im Kontext intimer Paarbeziehungen. Neurotizismus konnte in zahlreichen Studien mit einer geringeren Qualität und Stabilität romantischer Partnerschaften in Verbindung gebracht werden (u.a. Dyrenforth, et al., 2010). Forschungsarbeiten zu den zugrundeliegenden Mechanismen für diese Zusammenhänge zeigten unter anderem, dass neurotische Individuen dazu neigen, mehrdeutiges soziales Verhalten eher negativ zu interpretieren (Finn et al., 2013), was wiederum negative Emotionen (z. B. das Gefühl, missverstanden zu werden durch den Partner) und ungünstiges Verhalten in Interaktionen beförderte (z. B. Rückzug vom Partner). So verhielten sich neurotische Menschen in Interaktionen eher negativ (Donnellan et al., 2007) und vergaben ihren PartnerInnen seltener (Braithweite et al., 2016).

Aufbauend auf dem *Vulnerability Stress Adaptation Model* (Karney & Bradbury, 1995) wurden in der Studie *adaptive processes* zur Erklärung der Auswirkung von Neurotizismus als *enduring vulnerability* untersucht, indem gleichzeitig kognitive, emotionale und behaviorale Variablen analysiert wurden. Der Argumentation von Mund und Kollegen (2016) folgend wurden die Perspektiven von beiden PartnerInnen berücksichtigt. Sie gingen davon aus, dass insbesondere interpersonale Wahrnehmungen sich bei beiden PartnerInnen unterscheiden können und Reaktionen der einen Person wiederum Prozesse auf Seiten der anderen Person mitbeeinflussen können (intrapersonale vs. interpersonale Ebene; Caughlin et al., 2000). Um beide Ebenen berücksichtigen zu können, ist das Vorliegen dyadischer Designs notwendig, wo

nicht nur das Individuum selbst befragt wird, sondern auch deren PartnerInnen. Deshalb wurden dyadische Daten des Beziehungs- und Familienpanels pairfam (*Panel Analysis of Intimate Relationships and Family Dynamics*) analysiert. Mithilfe dieses längsschnittlichen Datensatzes wurde der prädiktive Einfluss von Neurotizismus auf intime Paarbeziehungen über die Zeit sowie die Relevanz kognitiver (feindselige Attributionen), emotionaler (Angst vor Liebesentzug, wahrgenommene Unsicherheit in der Partnerschaft) und verhaltensbezogener Prozesse (dyadisches Coping, Selbstöffnung, passive-aggressives Verhalten und Rückzug) bei der Erklärung dieses Effekts untersucht. Der Einfluss der Variablen wurde darüber hinaus auf zwei Indikatoren für die Beziehungsqualität untersucht: die Beziehungszufriedenheit und die Instabilität der Beziehung. Um die komplexe Wechselwirkung zwischen den PartnerInnen zu modellieren, wurden *Actor Partner Interdependence Mediation Models* (Ledermann & Bodenmann, 2006; Ledermann, Bodenmann, Rudaz, & Bradbury, 2010) genutzt.

Die Analysen zeigten intra- und interpersonale Zusammenhänge, die mit früheren Untersuchungsergebnissen übereinstimmten. Auf der intrapersonalen Ebene sagte Neurotizismus eine negative Interpretationstendenz in Bezug auf das Verhalten der PartnerInnen vorher (*hostile attribution bias*; u.a. Finn et al., 2013; Karney et al., 1994). Neurotischere Individuen berichtete von einem höheren Erleben von Angst und wahrgenommener Unsicherheit (u.a. Gerstorf, Siedlecki, Tucker-Drob, & Salthouse, 2009). Die individuellen Neurotizismus-Werte sagten darüber hinaus typische Verhaltensweisen vorher. So neigten neurotische Individuen dazu, sich mehr passiv-aggressiv zu verhalten und zeigten mehr Vermeidungsverhalten (u.a. Vater & Schröder-Abé, 2015). Sie waren weniger bemüht, in einem Konflikt die Meinung des Gegenübers zu verstehen oder gaben ihm/ihr seltener die Gelegenheit, sich auszudrücken (dyadisches Coping, u.a. Falconier et al., 2015). Auch behielten sie ihre Gedanken und Gefühle eher für sich (Selbstöffnung; u.a. Cunningham & Strassberg, 1981). In Bezug auf interpersonale Effekte neigten nicht nur Individuen mit höheren Ausprägungen in Neurotizismus dazu, negative Erwartungen in Bezug auf die Absichten und

Verhaltensweisen ihrer PartnerInnen zu attribuierten, sondern auch die Neurotizismus-Ausprägungen der PartnerInnen sagten negative Attributions- und Interpretationsmuster vorher (u.a. Finn et al., 2013). Weiterhin sagten die Ausprägungen von Neurotizismus der weiblichen Teilnehmerinnen das Ausmaß an Angst bei den männlichen Teilnehmern vorher. In Bezug auf das gezeigte Verhalten beeinflusste Neurotizismus nicht nur das Verhalten des Individuums in negativer Weise, sondern auch PartnerInnen von neurotischen Individuen neigten dazu, negativeres Verhalten zu zeigen (Caughlin & Vangelisti, 2000; Donnellan et al., 2007).

Die Ergebnisse zeigten somit, dass Neurotizismus sowohl kognitive, emotionale als auch Verhaltensprozesse vorhersagen konnte und dass ein Teil dieser Prozesse den Zusammenhang zwischen Neurotizismus und Beziehungszufriedenheit erklären konnte. Auf intrapersonaler und interpersonaler Ebene waren höhere Werte in Neurotizismus mit mehr Attributions- und Interpretationsverzerrungen assoziiert (*hostile attributions*), was wiederum die Beziehungszufriedenheit beider PartnerInnen reduzierte (Caughlin et al., 2000; Donnellan et al., 2004; Finn et al., 2013) In Bezug auf emotionale Prozesse konnten auf der interpersonalen Ebene höhere Werte in Neurotizismus mit mehr gefühlter Unsicherheit in Verbindung gebracht werden, was wiederum auch den affektiven Zustand und die Zufriedenheit der anderen Person negativ beeinflusste (*emotional contagion process*; Caughlin et al., 2000; Hatfield et al., 1994). Neben kognitiven und emotionalen Faktoren vermittelten auch Verhaltensvariablen den Einfluss von Neurotizismus auf die Zufriedenheit in romantischen Beziehungen. Individuen mit höheren Ausprägungen in Neurotizismus neigten zu weniger dyadischem Coping und Selbstöffnung, was wiederum die Beziehungszufriedenheit beider PartnerInnen reduzierte (Bühler et al., 2000; Falconier et al., 2015; Laurenceau, Feldman Barrett, & Rovine, 2005). Das Interaktions- oder Kommunikationsverhalten wirkte sich dabei größtenteils auf der interpersonalen Ebene aus (*communication processes*, Caughlin et al., 2000; Fitzpatrick & Badzinski, 1994).

Das heißt, individuelle Dispositionen waren in der Lage, dass eigene Denken, Fühlen und Verhalten sowie das der anderen Person zu beeinflussen, was auch im Sinne sich-selbst-

erfüllender Prophezeiungen (Jones, 1977; Miller & Turnbull, 1986) wirken könnte. Es wurde argumentiert, dass wenn ein Individuum persönlichkeitskongruent zu negativen Erwartungen in Bezug auf das Verhalten der InteraktionspartnerInnen neigt, dann sollte es sich selbst entsprechend diesen negativen Erwartungen eher sozial-ungünstig verhalten. Durch dieses Verhalten könnte wiederum negatives soziales Verhalten bei den InteraktionspartnerInnen befördert werden, was die a-priori Erwartungen des Individuums weiter bestätigen und so verfestigen könnte (u.a. Brookings et al., 2003; Downey et al., 1988; Caughlin et al., 2000).

7. Abschließende Diskussion

Das vorliegende Dissertationsprojekts beschäftigte sich mit der Frage, wie sich die Persönlichkeitsmerkmale Neurotizismus und Opfersensibilität - als eine Perspektive, von der aus Individuen sensibel auf (Un-)Gerechtigkeit reagieren können, - auf die interpersonale Wahrnehmung, sozial-kognitive Prozesse sowie auf das soziale Verhalten auswirken. Persönlichkeitskongruente Effekte wurden dabei auf kognitiver, emotionaler und behavioraler Ebene betrachtet (Mund et al., 2016). Einerseits wurde untersucht, inwiefern diese durch die zugrundeliegenden Persönlichkeitsmerkmale (insb. Neurotizismus) vorhergesagt werden können oder für deren negative Auswirkungen mitverantwortlich sind (insb. auf die Qualität sozialer Beziehungen) (Fragestellung 1). Andererseits wurde untersucht, inwiefern sozial-kognitive Prozesse bei der Entstehung und Stabilisierung von Persönlichkeitsmerkmalen eine Rolle spielen (Fragestellung 2). Mithilfe von zwei längsschnittlichen Datensätzen wurden die Auswirkungen von Neurotizismus in zwei verschiedenen Beziehungsformen untersucht, (1) auf die interpersonale Wahrnehmung von Studierenden in alltäglichen sozialen Interaktionen mit ihren KommilitonInnen und (2) auf intra- und interpersonelle Prozesse, die den Einfluss von Neurotizismus auf die Zufriedenheit in heterosexuellen, intimen Paarbeziehungen vermitteln.

Die Ergebnisse der Forschungsarbeiten erbrachten wichtige Erkenntnisse für das Verständnis der Auswirkungen von Persönlichkeitsmerkmalen auf sozial-kognitive Prozesse und zu deren Einfluss auf zwischenmenschliche Beziehungen. In Manuskript #3 konnte gezeigt werden, dass höhere Ausprägungen in Neurotizismus als *enduring vulnerability* (*Vulnerability Stress Adaptation Model* nach Karney & Bradbury, 1995) kognitive, emotionale und behaviorale, *adaptive processes* im Kontext intimer Paarbeziehungen vorhersagen konnten. Auf der intrapersonalen Ebene sagte Neurotizismus eine negative Interpretationstendenz in Bezug auf das Verhalten der PartnerInnen vorher (*hostile attribution bias*; u.a. Finn et al., 2013; Karney et al., 1994). Neurotischere Individuen erlebten mehr Angst und fühlten sich unsicherer in der Partnerschaft (u.a. Gerstorff, Siedlecki, Tucker-Drob, & Salthouse, 2009). Neurotische

Individuen neigten zu mehr passiv-aggressivem und Vermeidungsverhalten (u.a. Vater & Schröder-Abé, 2015). Sie unterstützten ihre PartnerInnen weniger (dyadisches Coping, u.a. Falconier et al., 2015) und offenbarten sich ihnen gegenüber weniger (Selbstöffnung; u.a. Cunningham & Strassberg, 1981). Auf der interpersonalen Ebene konnten negative Attributions- und Interpretationsmuster auch durch die Neurotizismus-Ausprägungen der PartnerInnen vorhergesagt werden (u.a. Finn et al., 2013). Darüber hinaus führten diese persönlichkeitskongruenten Attributions- und Interpretationsverzerrungen (*hostile attributions*) auf intrapersonaler und interpersonalen Ebene zu einer reduzierten Beziehungszufriedenheit (Caughlin et al., 2000, Donnellan et al., 2004; Finn et al., 2013). Diese dynamische Wechselwirkung zwischen beiden PartnerInnen zeigte sich auch in Bezug auf emotionale und behaviorale Prozesse. Höhere Neurotizismus-Ausprägungen der Frauen waren mit einem höheren Angsterleben und mehr Unsicherheitsgefühlen bei den Männern verbunden. Im Sinne einer emotionalen Übertragung (*emotional contagion process*; Caughlin et al., 2000; Hatfield et al., 1994) konnte der individuelle Neurotizismus den affektiven Zustand und die Partnerschaftszufriedenheit der PartnerInnen negativ beeinflussen. In Bezug auf das gezeigte Verhalten beeinflusste Neurotizismus nicht nur das Verhalten des Individuums in negativer Weise, sondern auch PartnerInnen von neurotischen Individuen neigten dazu, negativeres Verhalten zu zeigen (Caughlin & Vangelisti, 2000; Donnellan et al., 2007), was wiederum die Beziehungszufriedenheit beider PartnerInnen reduzierte (Bühler et al., 2000; Falconier et al., 2015; Laurenceau, Feldman Barrett, & Rovine, 2005). Das Interaktions- oder Kommunikationsverhalten wirkte sich dabei größtenteils auf der interpersonalen Ebene aus (*communication processes*, Caughlin et al., 2000; Fitzpatrick & Badzinski, 1994). Ergebnisse aus Manuskript #3 ermöglichten somit bedeutsame Einblicke in psychologische Mechanismen, die für den in zahlreichen Studien nachgewiesenen negativen Zusammenhang zwischen Neurotizismus und Beziehungszufriedenheit mitverantwortlich sind (u.a. Dyrenforth et al., 2010; Malouff et al., 2010). Im Vergleich zu früheren Forschungsarbeiten wurden hier simultan

verschiedene, kognitive, emotionale und Verhaltensprozesse betrachtet sowie deren Einflüsse auf intra- und interpersonalen Ebene untersucht.

In Manuskript #2 wurde ergänzend zu den Befunden aus Manuskript #3 der Einfluss von Neurotizismus auf die interpersonale Wahrnehmung betrachtet. Im Sinne von *dispositional expression processes* nach dem PERSOC-Modell (Back et al., 2011) konnte gezeigt werden, dass sich die individuelle Ausprägung im Neurotizismus nicht nur darauf auswirkt, wie ein Individuum in seinen sozialen Beziehungen denkt, fühlt und handelt, sondern auch, wie es seine (soziale) Umgebung wahrnimmt. Im Gegensatz zu Vorbefunden konnte gezeigt werden, dass neurotische Individuen ihre InteraktionspartnerInnen positiver wahrnahmen: Sie schätzten diese als geselliger und wärmer ein. Diese persönlichkeitskongruente Wahrnehmungstendenz war dabei das Ergebnis einer Wahrnehmungsverzerrung (*perception bias*) und nicht eines Selektionseffekts (*selection effects*). Diese vor dem Hintergrund früherer Forschungsergebnisse zunächst unerwarteten Wahrnehmungsverzerrungen könnten die Folge eines persönlichkeitskongruenten Kontrasteffekts sein. Demnach würden neurotische Individuen ihr Gegenüber als wärmer und geselliger wahrnehmen, da sie sich selbst als weniger gesellig, wärmer und zurückhaltender einschätzen als andere.

In Manuskript #2 wurde darüber hinaus der Einfluss von Wahrnehmungsverzerrungen und Selektionseffekten auf die Entwicklung von Neurotizismus über die Zeit untersucht. Im Sinne von *dispositional development processes* nach dem PERSOC-Modell (Back et al., 2011) und in Anlehnung an das Konzept der Person-Umwelt-Transaktionen (u.a. Caspi & Roberts, 1999; Neyer & Asendorpf, 2001) zeigten die Ergebnisse, dass nicht die individuelle, verzerrte Wahrnehmung des sozialen Umfelds Veränderungen in Neurotizismus über die Zeit erklären konnte (reaktive Transaktion), sondern die Art der sozialen Umwelt selbst (proaktive Transaktion, u.a. Roberts et al., 2008). Individuelle Neurotizismus-Werte nahmen über die Zeit stärker ab, wenn die Individuen mit InteraktionspartnerInnen interagierten, die von Dritten als geselliger eingeschätzt wurden. Interagierten sie mit InteraktionspartnerInnen, die von Dritten

als wärmer eingeschätzt wurden, führte dies zu einer geringeren Abnahme im Neurotizismus über die Zeit. Zusammenfassend konnte gezeigt werden, dass Neurotizismus zu einer verzerrten, interpersonalen Wahrnehmung führte und dass das soziale Umfeld eines Individuums einen bedeutsamen Einfluss darauf ausübt, wie sich die Ausprägungen im Neurotizismus über die Zeit verändern bzw. stabilisieren. Letzteres erscheint insbesondere vor dem Hintergrund der eher maladaptiven Folgen dieses Persönlichkeitsmerkmals auf Denken, Fühlen und Verhalten relevant zu sein.

In Manuskript #1 wurden weitere, psychologische Prozesse diskutiert, die zur Entstehung und Stabilisierung eines weiteren, eher maladaptiven Persönlichkeitsmerkmals - Opfersensibilität, einer Facette von Gerechtigkeitssensitivität, - beitragen könnten. Aufbauend auf dem *Sensitivity to Mean Intentions Model* (SeMI; u.a. Gollwitzer & Rothmund, 2009), welches die negativen Folgen von Opfersensibilität zu erklären versucht, wurden vor allem sozial-kognitive Mechanismen für dessen Entstehung und Stabilisierung diskutiert. Aufgrund der konzeptuellen Nähe zwischen Neurotizismus und Opfersensibilität kann auch hier argumentiert werden, dass sozial-kognitive Prozesse von zentraler Bedeutung sind (u.a. Gollwitzer & Rothmund, 2009; Gollwitzer, Rothmund & Süßenbach, 2013). In Anlehnung an das *Social Information Processing Modell of children's social adjustment* (SIP; Crick & Dodge, 1994) wurde das im SeMI-Modell (u.a. Gollwitzer & Rothmund, 2009) postulierte *suspicious mindset* als eine individuelle Wahrnehmungs- und Interpretationstendenz eingeordnet, die Teil der *data base* ist, die durch Erfahrungen entstandenes sozial-kognitives Wissen umfasst.

Das im Manuskript postulierte Modell erklärte die Stabilisierung von Opfersensibilität durch eine zunehmende Stabilisierung des Selbst, der sozialen Umwelt sowie einer zunehmenden Passung zwischen der Person und der sozialen Umgebung, in der sich das Individuum bewegt. Selbststabilisierung bezieht sich dabei auf eine Stabilisierung von selbstbezogenem Wissen, das unter anderem in der *data base* gespeichert ist. Umweltstabilisierung resultiert aus einer zunehmenden Stabilität des sozialen Umfelds über die

Lebensspanne. Die zunehmende Passung zwischen Person und sozialem Umfeld wird durch Person-Umwelt-Transaktionen hergestellt (u.a. Caspi & Roberts, 1999; Neyer & Asendorpf, 2001). Diese gehen einmal davon aus, dass durch das vorhandene sozial-kognitive Wissen zu Erwartungen und Konzepten kongruente Informationen selektiv ausgewählt und verarbeitet werden (Fiske & Taylor, 1991). Wahrnehmungen, Attributionen und Reaktionen bestätigen dann wiederum a-priori Erwartungen. Im Sinne eines *confirmation bias* (Nickerson, 1998) wird so das gespeicherte soziale Wissen bestätigt und über die Zeit verfestigt (reaktive Transaktion). Bestehende Erwartungen können darüber hinaus auch im Sinne einer sich-selbst-erfüllenden Prophezeiung bestimmtes soziales Verhalten begünstigen, was wiederum konsistente Reaktionen des sozialen Umfelds hervorruft und vorher bestehende Erwartungen bestätigt (evokative Transaktionen). Auf der anderen Seite tendieren Individuen dazu, sich mit Menschen zu umgeben, die ähnliche Präferenzen, Einstellungen, Vorlieben, etc. besitzen. Durch die explizite Auswahl sozialer Umwelten werden so Umwelten geschaffen, die zu bestehenden Persönlichkeitseigenschaften passen und diese wiederum verstärken (selektive Transaktion oder *social reinforcement*, u.a. Harris, 1995).

Durch assoziative Lernprozesse (klassische und operante Konditionierung; u.a. Mowrer, 1947) werden darüber hinaus nach dem postulierten Modell Stimulus-Ergebnis- und Verhaltens-Ergebnis-Verbindungen gelernt. Bei einer Konfrontation mit entsprechenden Reizen oder Verhaltensweisen werden a-priori Erwartungen und Schemata aktiviert (u.a. das *suspicious mindset*). Das vermutlich zunächst gezeigte kooperative Verhalten wird durch die erfahrene Ausnutzung bestraft, was das Zeigen kooperativen Verhaltens in der Zukunft unwahrscheinlicher macht. Durch dieses Vermeidungsverhalten werden unangenehme Konsequenzen verhindert, so dass dieses Verhalten in der Zukunft häufiger gezeigt wird (negative Verstärkung). Dieses Vermeidungsverhalten stabilisiert jedoch auch die ursprünglichen Erwartungen, da so keine korrigierenden Erfahrungen möglich sind (*avoidance learning*; u.a. Mowrer & Miller, 1942). Durch solche Lernprozesse könnte sich so einerseits

das sozial-kognitive Wissen entwickeln, das das Verhalten in zukünftigen (sozialen) Situationen maßgeblich mitbeeinflusst. Andererseits könnten so spezifische Verhaltensweisen befördert werden, die durch entsprechende Verhaltenskonsequenzen im Sinne einer sich-selbsterfüllenden Prophezeiung auch a-priori Erwartungen bestätigen und festigen könnten. In der Folge könnten zugrundeliegende Persönlichkeitsmerkmale wie Opfersensibilität stabilisiert werden. Die Frage nach psychologischen Mechanismen, die bei der Stabilisierung eher maladaptiver Persönlichkeitsmerkmale eine Rolle spielen, erscheint insbesondere für die klinische Praxis relevant zu sein.

Im Folgenden werden die Ergebnisse der Forschungsarbeiten vor dem Hintergrund früherer Studien diskutiert und weiterhin offene Fragen herausgearbeitet. Es werden an verschiedenen Stellen Bezüge zur klinischen Praxis hergestellt. Darüber hinaus werden Ansätze skizziert, wie offene Forschungsthemen empirisch im Rahmen weiterer Forschungsvorhaben untersucht werden könnten.

7.1. Persönlichkeitskongruente sozial-kognitive Prozesse

In Manuskript #2 konnte gezeigt werden, dass neurotische Individuen ihr soziales Umfeld im Sinne eines *positivity bias* im Gegensatz zu Vorbefunden als geselliger und wärmer wahrnahmen (Achsen des interpersonellen Circumplex-Modell; Wiggins, 1979, 2003) als weniger neurotische Individuen. Die Studie analysierte Daten der CONNECT-Studie, in der neben Wahrnehmungen des Individuums in Bezug auf das Verhalten ihrer InteraktionspartnerInnen auch die Wahrnehmungen aller an der Interaktion beteiligten Personen erfasst wurden (*experience sampling method*). Es konnte gezeigt werden, dass diese Wahrnehmungstendenz neurotischer Individuen die Folge einer verzerrten Wahrnehmung (*perception bias*) war und nicht eine Folge der gezielten Auswahl von InteraktionspartnerInnen (*selection effect*). Der Einfluss von Neurotizismus auf die Wahrnehmung und Interpretation sozialer Hinweise konnte bereits in früheren Forschungsarbeiten aufgezeigt werden. Finn und Kollegen (2013)

konnten zeigen, dass neurotischere Individuen ihren PartnerInnen eher negative Intentionen zuschrieben. Neurotische Individuen erwarteten häufiger, dass Interaktionen negativ sein werden (Karney et al., 1994). Sie interpretierten negative Erlebnisse eher als Bedrohung (Braithwaite et al., 2016) und sie schrieben anderen eher feindselige Intentionen zu (*hostile attribution bias*; u.a. Milich & Dodge, 1984).

Dieser zunächst unerwartete Effekt könnte durch einen Kontrasteffekt erklärt werden. Demnach nehmen neurotische Individuen ihr Gegenüber positiver (und nicht negativer) wahr als sich selbst. Neurotische Individuen berichten ein geringeres Selbstwertgefühl als weniger neurotische Individuen (u.a. Watson, Suls, & Haig, 2002; Leary & Baumeister, 2000). Die Selbstwahrnehmung könnte wiederum die Wahrnehmung von anderen beeinflussen (u.a. Wood et al., 2010). Wood und Kollegen (2010) konnten in ähnlicher Weise zeigen, dass neurotische Individuen dazu tendierten, ihr Gegenüber als verträglicher wahrzunehmen, was im Gegensatz zu Verhaltenstendenzen neurotischer Individuen steht. Neurotische Individuen treten analog zu ängstlich-vermeidenden Personen eher zurückhaltend in sozialen Kontakten auf, was im interpersonellen Circumplex-Modell (Wiggins, 1979, 2003) auf der Zurückgezogenheits- (vs. Geselligkeits-) Achse verortet werden kann. Die Einschätzung des Gegenübers als geselliger und wärmer könnte somit die Folge der Selbstwahrnehmung als zurückhaltend sein. Die eigene gegensätzliche Verhaltenstendenz könnte dazu führen, dass die Verhaltens-tendenzen bei anderen als entsprechend stärker ausgeprägt wahrgenommen werden. Die Stichprobe von Wood und Kollegen (2010) umfasste ebenfalls Studierende, wobei diese sich selbst in Kleingruppen selektierten, so dass die überwiegende Anzahl der Gruppenmitglieder sich bereits seit mehr als drei Jahren kannten. Die Einschätzungen der InteraktionspartnerInnen basierte hier jedoch nicht auf der ereignis-basierten Erfassung konkreter Interaktions-situationen, sondern wurde mithilfe eines Persönlichkeitsfragebogens erfasst, den die Versuchspersonen einmal für sich selbst und für jede Person, mit der sie interagierten, ausfüllten.

In einer neueren Arbeit konnte im Gegensatz zu unseren Befunden gezeigt werden, dass neurotische Individuen das Verhalten ihres Gegenübers sowie das eigene Verhalten in Interaktionssituationen (ebenfalls erfasst mittels *experience sampling method*) als weniger gesellig/expressiv wahrnahmen, was wiederum die Zufriedenheit in diesen sozialen Beziehungen vermittelte (Wieczorek et al., 2021). Im Gegensatz zu den Daten der CONNECT-Studie, wo alltägliche Interaktionen zwischen Studierenden untersucht wurden, wurden hier verschiedene Interaktionskontexte (Familie, Freundschaften, etc.) untersucht, wobei der Großteil der Interaktionen im familiären Kontext stattfand. Der Widerspruch zu den Ergebnissen aus Manuskript #2 könnte darauf zurückzuführen sein, dass hier das Verhalten in intimeren Beziehungen betrachtet wurde. Wahrnehmungsverzerrungen könnten sich in intimen Beziehungen anders äußern als in weniger intimen Beziehungen. In einer Studie von Peters und Overall (2019), wo der Einsatz von Strategien zur Emotionsregulation in Partnerschaften untersucht wurde, konnte gezeigt werden, dass die Wahrnehmung von emotionaler Suppression in einer Diskussion mit dem Partner/ der Partnerin starken Verzerrungen unterlag, insbesondere bei Individuen, die selbst zu emotionaler Suppression neigten. Im Sinne eines *projection bias* könnten neurotische Individuen, die eher zu negativen Strategien der Emotionsregulation neigen (Vater & Schröder-Abé, 2015), eigene Tendenzen auf das Gegenüber projiziert haben. Dieser Idee folgend könnten neurotische Individuen in intimen Beziehungen im Vergleich zu weniger intimen Beziehungen dazu neigen, eigene Tendenzen auf das Gegenüber zu projizieren und sie/ihn dementsprechend als weniger gesellig/expressiv einschätzen.

Eine zweite mögliche Erklärung für die unterschiedlichen Effekte in Bezug auf die Wahrnehmung geselligen Verhaltens bei InteraktionspartnerInnen könnte sein, dass sich neurotische Individuen in intimen Beziehungen anders verhalten als in eher alltäglichen Interaktionen mit KommilitonInnen. Basierend auf Befunden zu Zusammenhängen zwischen Neurotizismus und unsicheren Bindungsstilen (u.a. Nofle & Shaver, 2006; Shaver & Brennan, 1992) könnten neurotische Individuen dazu tendieren, sich in intimen Beziehungen weniger zu

öffnen (Cunningham & Strassberg, 1981), da sie eventuell befürchten, vom Partner/ der Partnerin zurückgewiesen zu werden. Brock und Lawrence (2014) konnten zeigen, dass Neurotizismus-Werte beider PartnerInnen das Ausmaß an Intimität in der Partnerschaft negativ vorhersagen konnten, was als Vermeidungsverhalten bei unsicheren Bindungsstilen angesehen werden kann. Dass das Gegenüber in intimeren Beziehungsformen von neurotischen Individuen bei Wieczorek und KollegInnen (2021) als weniger gesellig wahrgenommen wird, könnte also damit erklärt werden, dass neurotische Individuen sich selbst weniger gesellig verhalten, da die Angst vor Zurückweisung salienter ist und sie dies auf das Gegenüber projizieren.

Eine dritte Erklärung könnte ferner sein, dass sich das Gegenüber bei Interaktionen mit neurotischen Individuen tatsächlich weniger gesellig verhält, so dass die Wahrnehmung an sich korrekt ist. Wieczorek und Kollegen (2021) kontrollierten im Gegensatz zum vorliegenden Dissertationsprojekt nicht für mögliche Selektionseffekte. Basierend auf Befunden von Marshall und Kollegen (2015) wäre es plausibel, dass neurotische Individuen den Kontakt zu verträglichen Individuen eher meiden, da die spezifische Kombination von neurotischen und verträglichen PartnerInnen zu einem höheren Ausmaß depressiver Symptome bei neurotischen PartnerInnen führte. Die Wahrnehmung neurotischer Individuen, dass sich deren InteraktionspartnerInnen weniger gesellig verhalten, könnte somit auch eine korrekte Wahrnehmung sein.

Zukünftige Forschungsarbeiten sollten somit einerseits verschiedene Beziehungs- und Interaktionsarten berücksichtigen sowie andererseits nicht nur Einschätzungen des Individuums selbst, sondern auch von weiteren TeilnehmerInnen erfassen, um auszuschließen, dass Wahrnehmungsverzerrungen nicht nur auf der gezielten Auswahl von InteraktionspartnerInnen beruhen (*selection effect*). Darüber hinaus könnte so die Generalisierbarkeit der Ergebnisse auf verschiedene Beziehungskontexte sichergestellt werden.

In Manuskript #3 wurde der Einfluss von Neurotizismus auf weitere kognitive, emotionale und Verhaltensprozesse untersucht sowie deren vermittelnde Rolle auf den in verschiedenen Studien nachgewiesenen Zusammenhang zwischen Neurotizismus und der

Zufriedenheit in Partnerbeziehungen (u.a. Dyrenforth et al. 2010). Auf intra- und interpersoneller Ebene sagten die Neurotizismus-Ausprägungen beider PartnerInnen die Zuschreibung feindseliger Intentionen in Bezug auf das Verhalten des Gegenübers vorher. Höhere Ausprägungen in Neurotizismus waren auch mit dem Erleben von mehr negativen Emotionen (Angst und Unsicherheit) sowie dem Zeigen ungünstigen (Rückzug, passiv-aggressives Verhalten) bzw. dem selteneren Zeigen günstigen Paarverhaltens (dyadisches Coping, Selbstöffnung) verbunden. Persönlichkeitskongruente Wahrnehmungs- und Interpretationstendenzen, emotionale Prozesse (d.h. *emotional contagion*, Caughlin et al., 2000) und negative Verhaltensweisen (d.h. *communication processes*, Caughlin et al., 2000) sagten wiederum die Beziehungszufriedenheit vorher.

Aufbauend auf dem *Social Information Processing Model of Children's Social Adjustment* (SIP; Crick & Dodge, 1994) und dem *Vulnerability Stress Adaptation Model* (Karney & Bradbury, 1995) wurde argumentiert, dass Neurotizismus als individuelle Disposition oder Vulnerabilität die *data base* des Individuums beeinflusst. Das in der *data base* gespeicherte sozial-kognitive Wissen beeinflusst wiederum die Wahrnehmung und Interpretation einer Situation, die zur Verfügung stehenden Verhaltensalternativen und schließlich die Auswahl des letztlich gezeigten Verhaltens in der Situation. Der Einfluss von Persönlichkeitsmerkmalen auf die interpersonale Wahrnehmung, wie er in Manuskript #2 gezeigt werden konnte, wurde bereits diskutiert. Die zentrale Rolle des zur Verfügung stehenden (sozial-) kognitiven Wissens wurde in verschiedenen Studien und Ansätzen hervorgehoben (u.a. Mathews & MacLeod, 1994; Bradbury & Fincham, 1988, 1991). Auch in Bezug auf Stabilisierungsprozesse werden sozial-kognitive Prozesse diskutiert (siehe auch theoretische Überlegungen in Manuskript #1).

Ein Grundgedanke der kognitiven Verhaltenstherapie (u.a. Ellis, 1973; Beck, 1964) ist bereits seit vielen Jahren, dass kognitive Prozesse, bewusste wie unbewusste, einen zentralen Einfluss auf emotionale und behaviorale Reaktionen, angemessene wie unangemessene, haben.

Das kognitive Modell geht davon aus, dass ein auslösendes äußeres oder innerpsychisches Ereignis, wie zum Beispiel, dass die Partnerin/der Partner einem nicht zugehört hat, aufgrund bestimmter bewusster oder unbewusster Überzeugungen, Bewertungsmuster, Einstellungen oder Lebensregeln, die in der auslösenden Situation aktiviert werden, bewertet wird (analog zur *data base* im SIP-Modell). Die Bewertung der Ereignisse ruft wiederum emotionale Reaktionen und Verhaltensweisen hervor (z. B. Trauer, Sorge, Angst). Am Beispiel des Zusammenhangs von Neurotizismus und Beziehungszufriedenheit verdeutlicht, ist die Annahme, dass die Bewertung einer Situation, beispielsweise meine Partnerin/mein Partner versteht mich nicht oder sie/er wendet sich von mir ab, Auswirkungen auf die emotionale (bspw. Ärger, Traurigkeit) und behaviorale Reaktion hat (bspw. Rückzug, aggressives Verhalten). Aus Erfahrungen resultierende Erwartungen, die als Teil des sozial-kognitiven Wissens in der *data base* gespeichert sind, beeinflussen wiederum ebenfalls die gezeigte Reaktion. Hat ein Individuum beispielsweise wiederholt Zurückweisung erfahren, hat er/sie womöglich die generalisierte Erwartung entwickelt, dass andere ihn/sie zurückweisen werden. Um dies zu verhindern, wird er/sie zukünftig seine Umwelt nach entsprechenden Hinweisen absuchen (Aufmerksamkeitslenkung) und sich in sozialen Beziehungen eher zurückhaltend verhalten, um eine erneute Zurückweisung zu verhindern (negative Verstärkung). Das Individuum wird so jedoch nicht die Erfahrung machen, von anderen nicht abgewiesen zu werden (*avoidance learning*; u.a. Mowrer & Miller, 1942). Darüber hinaus werden durch das Vermeidungsverhalten zu den vorher bestehenden Erwartungen passende Verhaltensweisen befördert, die vom Umfeld entsprechend gespiegelt werden (bspw. ebenfalls zurückhaltender, distanzierter), was die ursprünglichen Erwartungen bestätigt.

Persönlichkeitskongruente Wahrnehmungs- und Interpretationstendenzen und Erwartungen (über sich selbst, andere und generalisierte Erwartungen) können somit substanziell emotionale und Verhaltenskonsequenzen beeinflussen. Schoebi, Perrez und Bradbury (2012) argumentierten in ähnlicher Weise, dass Erwartungen und Attributionen in

Bezug auf das Verhalten des Gegenübers spezifische defensive Reaktionen beim Individuum auslösen. Sollten diese Wahrnehmungen, Attributionen oder Erwartungen jedoch auf Verzerrungen beruhen, könnte das Individuum sozial-unangepasstes Verhalten zeigen, was wiederum die soziale Anpassung beeinträchtigt. Im Sinne evokativer Transaktionen könnte das auf negativen Erwartungen beruhende soziale Verhalten negative Verhaltensweisen bei den InteraktionspartnerInnen begünstigen, was wiederum die ursprünglichen, negativen Erwartungen bestätigt (sich-selbst-erfüllende Prophezeiung, u.a. Jones, 1977; Miller & Turnbull, 1986) und sogar Einfluss auf die Persönlichkeitsentwicklung nehmen könnte (siehe weiter unten).

Die Idee solcher interpersoneller Teufelskreise findet sich auch bei einer Psychotherapieform, der *Cognitive Behavioral Analysis System of Psychotherapy* (CBASP, u.a. Brakemeier, Schramm & Hautzinger, 2012), die insbesondere für die Behandlung chronischer Depressionsformen entwickelt worden ist. Aufgrund von negativen Erfahrungen in der Herkunftsfamilie (bspw. Misshandlungen, Vernachlässigung) entstehen nach diesem Behandlungsansatz sogenannte Prägungen im Sinne von Denkschemata, die zu bestimmten Verhaltensweisen oder -defiziten beitragen, die wiederum zu interpersonellen Problemen führen. Das Therapierational geht davon aus, dass PatientInnen durch die frühen, traumatisierenden Beziehungserfahrungen spezifische Wahrnehmungs- und Verhaltensmuster entwickeln. Oft sind PatientInnen wie von ihrem sozialen Umfeld „entkoppelt“, das heißt, sie sind sich nicht bewusst, wie sie auf ihr soziales Umfeld wirken und dass Reaktionen des Umfelds auf ihr eigenes Verhalten zurückzuführen sind. Durch diese Entkoppelung erleben sie sich als hilflos angesichts immer wieder auftretender, negativer Beziehungserfahrungen. PatientInnen erleben durch diese Prägungen und Wahrnehmungsmuster immer wieder ähnliche negative Beziehungserfahrungen, die an sich durch eigenes Verhalten (mit-)bedingt sind. Ziel der Therapie ist es, dass PatientInnen unter anderem mittels Situationsanalysen lernen, ihre Wahrnehmungen, Interpretationen und das in einer Situation gezeigte Verhalten kritisch zu

reflektieren. Kleinschrittig sollen Interpretationen in einer Situation analysiert und korrigiert werden sowie zielführendes Verhalten erarbeitet werden. Mithilfe von Rückmeldungen sollen Wahrnehmungsmuster hinterfragt und die Bewusstheit für die Folgen eigenen Verhaltens gefördert werden. Soziale Fertigkeiten sollen trainiert werden, um Verhaltensdefizite zu reduzieren. PatientInnen sollen sich dann kritischen Situationen aussetzen, um ursprüngliche Erwartungen gezielt überprüfen und so verändern zu können. Die Relevanz der gezielten Überprüfung von Befürchtungen insbesondere bei Angsterkrankungen wird in verschiedenen Behandlungsmanualen thematisiert (allgemein für Expositionsverfahren, u.a. Neudeck, 2014). So ist es wichtig, dass im Vorfeld Befürchtungen konkret operationalisiert werden und deren tatsächliches Eintreten in Expositionen oder Verhaltensexperimenten überprüft wird.

In Bezug auf therapeutische Ansätze zur Behandlung neurotischer Persönlichkeitsstrukturen erscheint eine gewisse, konzeptuelle Nähe zu depressiven Erkrankungen relevant zu sein. Sowohl Neurotizismus als auch chronische Depressionen führen zu spezifischen Wahrnehmungsmustern, die wiederum problematisches Verhalten und Schwierigkeiten in der sozialen Anpassung begünstigen. Beide Konstrukte sind charakterisiert durch die individuelle Tendenz, sich Sorgen zu machen oder zu grübeln sowie Ereignisse als stressiger zu bewerten (u.a. Widiger, Hurt & Frances, 1984). Darüber hinaus wird eine gestörte Emotionsregulation bei beiden Konstrukten als mitursächlich angesehen. Studien konnten zeigen, dass Neurotizismus mit dem Auftreten depressiver Symptome im Zusammenhang stand (u.a. Kendler, Gatz, Gardner, & Pedersen, 2006, Ormel, Oldehinkel, & Vollebergh, 2004) und dass Individuen mit höheren Ausprägungen in Neurotizismus mit höherer Wahrscheinlichkeit an chronischen Depressionen erkrankten (u.a. Rhebergen et al., 2009). Barnhofer und Chittka (2010) erklärten diese Zusammenhänge mit dem Konzept der *cognitive reactivity*. Kognitive Reaktivität umfasst dabei, dass einmal entstandene, negative Denkmuster in kritischen Situationen leichter reaktiviert werden können. Sie argumentierten, dass Individuen mit hohen Ausprägungen in Neurotizismus ein erhöhtes Risiko dafür haben, einerseits negative

Denkmuster auszubilden (bspw. Grübeln, Hoffnungslosigkeit, Suizidgedanken) und andererseits, dass diese beispielweise bei der Konfrontation mit einer niedergedrückten Stimmung leichter reaktiviert werden können. Therapeutische Ansätze zur Behandlung der Depression könnten somit auch geeignet sein, um neurotische Persönlichkeitszüge therapeutisch zu bearbeiten. Das bedeutet, dass individuelle Wahrnehmungen von Situationen oder auch Selbstwahrnehmungen sowie Denkverzerrungen exploriert und gegebenenfalls hinterfragt werden sollten. Interpretationen der Reaktionen von anderen sollten vor dem Hintergrund biografischer Erfahrungen eingeordnet werden. Alternative Interpretationen, die in der konkreten Situation verankert sind, sollten ebenfalls erarbeitet werden. Schließlich erscheint ein soziales Kompetenztraining indiziert, um etwaige Verhaltensexzesse oder -defizite verändern zu können.

Dass neue Erfahrungen vor dem Hintergrund des zur Verfügung stehenden sozialen Wissens interpretiert und eingeordnet werden, kann als therapeutische Herausforderung angesehen werden. Auch erwartungsunkonforme Erfahrungen führen so nicht automatisch zu einer Veränderung der ursprünglichen Erwartungen. Zukünftige Forschungsarbeiten sollten sich deshalb auch vermehrt mit der Frage beschäftigen, unter welchen Bedingungen sozial-kognitives Wissen veränderbar ist, insbesondere, wenn dieses zu maladaptiven Folgen für die Betroffenen führt. Mit den analysierten Daten konnten solche interpersonellen Teufelskreise bzw. sich-selbst-erfüllende Prophezeiungen aufgrund der Datenstrukturen nicht untersucht werden. Hier sind zukünftig experimentelle Ansätze notwendig, um gezielt negative Erwartungen zu induzieren. So könnte untersucht werden, wie sich Erwartungen auf das danach gezeigte Verhalten beispielsweise in Interaktionssituationen mit der Partnerin/ dem Partner auswirken und inwiefern sich durch soziale Erfahrungen a-priori Erwartungen verändern lassen. Weiter unten wird auf ein neueres Modell Bezug genommen, das die Frage adressiert, wie Erwartungen entstehen und wie sich diese verändern lassen. Insbesondere im klinischen Bereich spielen Erwartungen bei der Entstehung und Aufrechterhaltung psychischer

Erkrankungen eine zentrale Rolle und deren Veränderung ist ein explizites Ziel im Rahmen des therapeutischen Prozesses.

7.2. Emotionale Variablen als vermittelnde Variablen

Therapieansätze der sogenannten dritten Welle betonen zusätzlich die Relevanz emotionaler Prozesse bei der Behandlung psychischer Erkrankungen (u.a. Emotionsfokussierte Therapie siehe Auszra, Herrmann, & Greenberg, 2016, oder Schematherapie siehe Jacob, 2015). Lerner und Arsenio (2000) argumentierten in ähnlicher Weise, dass nicht nur kognitive Prozesse eine Rolle bei der sozialen Anpassung des Individuums spielen, sondern auch emotionale Prozesse wie die individuelle Emotionalität und die Fähigkeit zur Regulation von Emotionen. Sie gingen davon aus, dass emotionale Prozesse sowie das vorhandene sozial-kognitive Wissen die soziale Informationsverarbeitung entscheidend mitbeeinflussen, das heißt, im Sinne einer Vulnerabilität fungieren können. So unterscheiden sich Individuen darin, wie intensiv sie Emotionen empfinden und wie sie diese kontrollieren und modifizieren können, um sozial angemessen reagieren zu können. Die ForscherInnen versuchten deshalb emotionale Prozesse an verschiedenen Stelle im *Social Information Processing Model of Children's Social Adjustment* (SIP; Crick & Dodge, 1994) zu integrieren und das Modell darum zu erweitern (siehe Abbildung 2).

So könnten im Sinne einer emotionalen Beweisführung - einer typischen depressiven Denkverzerrung - Emotionen die Interpretationen von Situationen beeinflussen. Fühlt sich ein Individuum schuldig für ein Ereignis, unabhängig von der objektiven Schuld, wird es sich entsprechend beim Gegenüber entschuldigen, Sühne leisten oder sich selbst bestrafen. Eine bereits gestresste Person wird eher zur aktuellen Stimmung kongruente Informationen wahrnehmen (bspw. Aktenstapel auf dem Schreibtisch, der noch bearbeitet werden muss vs. bereits bearbeitete Akten) und wird wahrscheinlich in geringerem Maß auf zur Verfügung

stehende Strategien zur Stress- oder Emotionsregulation (bspw. Pause machen, tief durchatmen, sich Hilfe holen) zurückgreifen können.

Analog zum *Vulnerability Stress Adaptation Model* (Karney & Bradbury, 1995) zeigten Studien, dass neurotische Individuum eine höhere Vulnerabilität bei der Konfrontation mit Stressoren besitzen (u.a. Costa & McCrae, 1992), stärkere emotionale Zustände empfinden (u.a. Wilson & Gullone, 1999), diese zeigen (*emotional expressiveness*, u.a. Keltner, 1996; Watson & Clark, 1992) und eher ungünstige Strategien zu deren Regulation einsetzen (u.a. Vater & Schröder-Abé, 2015). Es konnte auch bereits gezeigt werden, dass emotionale Zustände den Einfluss von Neurotizismus auf die Beziehungszufriedenheit mediieren (u.a. English, John, Srivastava, & Gross, 2012; Hagemeyer et al., 2013; Hagemeyer, Schönbrodt, Neyer, Neberich, & Asendorpf, 2015; Lavee & Ben-Ari, 2004; Vater & Schröder-Abé, 2015), wobei Menschen mit hohen Ausprägungen in Neurotizismus insbesondere Schwierigkeiten im Umgang mit Stress in intimen Beziehungen zu haben schienen (DeLongis & Holtzman, 2005; Gunthert, Cohen, & Armeli, 1999; Lee-Baggley, Preece, & DeLongis, 2005; O'Rourke, 2005). Neurotische Individuen scheinen dabei stärker durch den aktuellen emotionalen Zustand ihrer PartnerInnen beeinflusst zu werden als weniger neurotische Individuen. Neben dem Prozess der emotionalen Übertragung (Caughlin et al., 2000) könnte dies dadurch erklärt werden, dass neurotische Individuen mehr Aufmerksamkeit auf die emotionalen Zustände anderer legen, da diese mögliche Hinweise auf Bedrohungen enthalten und somit stärker überwacht werden (Larsen, 1992; Paelecke, Paelecke-Habermann, & Borkenau, 2012; Prehn, Heekeren, Blasek, Lapschies, Mews, & van der Meer, 2008; Rijdsdijk et al., 2009). Neurotische Individuen könnten somit stärker auf die emotionalen Zustände ihrer PartnerInnen reagieren, da sie wichtige soziale Hinweise enthalten (u.a. Mueller, Wagner, Hülür, Hoppmann, Ram, & Gerstorf, 2020).

Mueller und Kollegen (2020) untersuchten diesbezüglich den Einfluss von Neurotizismus auf die Verbindung der affektiven Zustände von älteren Paaren (Altersbereich zwischen 67 und 93 Jahren) und inwiefern sich die gegenseitige Beeinflussung der affektiven Zustände auf

Veränderungen im Neurotizismus auswirken (Abstand von 18 Monaten). Die teilnehmenden PartnerInnen schätzen dafür über den Zeitraum einer Woche mehrfach am Tag ihren emotionalen Zustand ein. Die ForscherInnen konnten zeigen, dass der positive wie negative Affekt von neurotischen Individuen stärker mit dem positiven wie negativen Affekt ihrer PartnerInnen verbunden war als bei weniger neurotischen Individuen. Darüber hinaus konnte der positive Affekt der PartnerInnen oder eine stärkere Verbindung mit deren affektiven Zuständen zu einer Abnahme von Neurotizismus über die Zeit beitragen. Berichteten die PartnerInnen dagegen weniger oft von positiven Affekten, war dies mit einer Zunahme im Neurotizismus verbunden. Dem erweiterten SIP Model von Lemerise und Arsenio (2000) folgend sollten in zukünftigen Forschungsarbeiten auch emotionale Prozesse stärker berücksichtigt werden. In Manuskript #2 konnte gezeigt werden, dass erwartungskonform neurotische Individuen mehr Angst und Unsicherheit in der intimen Paarbeziehung berichteten, was in unserer Studie jedoch nicht die Beziehungszufriedenheit beeinflusste.

In zukünftigen Studien sollten somit emotionale Zustände stärker berücksichtigt werden. Sie sollten jedoch nicht nur gemessen werden, sondern auch in experimentellen Ansätzen gezielt manipuliert und die Folgen dessen auf Interaktionsverhalten und Zufriedenheit der PartnerInnen untersucht werden. Hier könnten die Versuchspersonen beispielweise instruiert werden, sich so lebhaft wie möglich an eine Situation aus ihrem Leben zu erinnern, die eine bestimmte Gefühlslage ausgelöst hat oder sie könnten mit spezifischen emotionsauslösenden Materialien konfrontiert werden, auch um die individuelle emotionale Reagibilität erfassen zu können. Im Anschluss könnten die Versuchspersonen beispielweise die Aufgabe bekommen, mit ihren PartnerInnen gemeinsam ein Problem zu lösen und der Erfolg der Problemlösung oder die Zufriedenheit beider PartnerInnen mit der Problemlösung könnten als abhängige Variable erfasst werden.

In den oben erwähnten therapeutischen Ansätze (u.a. Schematherapie, Jacob, 2015) wird davon ausgegangen, dass emotionale Prozesse in den therapeutischen Prozess miteinbezogen

werden sollten, insbesondere bei PatientInnen, die lang überdauernde, maladaptive Verhaltensweisen besitzen, die sich bereits in der Kindheit und Jugend ausgeprägt haben (u.a. für sogenannte Persönlichkeitsstörungen, siehe u.a. Arntz & van Genderen, 2010). Durch die Erfahrungen in Kindheit und Jugend sollen sich nach diesem Behandlungsansatz „emotionale Knöpfe“ herausgebildet haben, die in kritischen Situationen aktiviert werden und zu typischen, langfristig eher negativen Reaktionsmustern führen. Hat ein Kind beispielsweise nicht gelernt, mit eigenen, als überfordernd wahrgenommenen Gefühlen und Bedürfnissen umzugehen, wird es im Erwachsenenalter eher versuchen, das Auftreten von Gefühlen zu vermeiden, beispielsweise durch das Unterdrücken von Emotionen oder Ablenkung von diesen. Diese Reaktionen fungierten in der Vergangenheit als adaptive Bewältigungsreaktionen, erschweren jedoch im Erwachsenenleben die soziale Anpassung, beispielsweise da sie von ihren PartnerInnen als distanziert-kalt und verschlossen wahrgenommen werden oder eher wechselnde, instabile Partnerschaften führen. Im Rahmen der Therapie sollen solche dysfunktionalen Bewältigungsstrategien und emotionale Schemata (oder auch „Knöpfe“) verändert werden. Durch eine gewisse, konzeptuelle Nähe zwischen Neurotizismus und der Borderline-Persönlichkeitsstörung (u.a. Zusammenhang mit negativen bis hin zu traumatischen Erfahrungen in Kindheit und Jugend, erhöhte Emotionalität bis hin zu emotionaler Instabilität, unsichere Bindungsstile; siehe u.a. Baryshnikov et al., 2017) könnte somit bei der therapeutischen Arbeit mit neurotischen Individuen auch auf entsprechende Behandlungsansätze zurückgegriffen werden (neben der Schematherapie gibt es v.a. Wirksamkeitsnachweise für die Dialektisch-Behaviorale Therapie, u.a. Bohus & Wolf, 2012).

7.3. Entstehung und Stabilisierung von Persönlichkeitsmerkmalen

Die zweite Fragestellung im vorliegenden Dissertationsprojekte beschäftigte sich mit dem Einfluss sozial-kognitiver Mechanismen bei der Entstehung und Stabilisierung von Persönlichkeitsmerkmalen. In Manuskript #1 wurden Erkenntnisse aus der Entwicklungs-,

Persönlichkeits- und Lernpsychologie zusammengetragen und in einem theoretischen Rahmenmodell integriert. Die empirische Überprüfung des Modells steht jedoch größtenteils noch aus. Manuskript #1 fokussierte sich auf die Frage, wie Opfersensibilität entsteht und sich über die Zeit stabilisiert. Es wurde argumentiert, dass sozial-kognitive Prozesse hier eine zentrale Rolle spielen. Um die darin postulierten Einflüsse und Zusammenhänge adäquat untersuchen zu können, sind einerseits Kohorten- oder Längsschnittstudien notwendig (u.a. wie in Manuskript #2 und #3), um die dynamische Wechselwirkung zwischen Persönlichkeit und sozial-kognitiven Strukturen untersuchen zu können und andererseits sind experimentelle Studien vonnöten, wo zentrale Prozesse und Variablen explizit erfasst und manipuliert werden können, um deren (kausale) Einflüsse einschätzen zu können.

Zwei Beispiele für solche experimentellen Untersuchungen sind die Arbeiten von Maltese und Kollegen (2016) und Süssenbach, Gollwitzer, Mieth, Buchner & Bell (2016). Wie im Modell argumentiert, konnten die Forschungsarbeiten zeigen, dass Hinweise auf Un-/Vertrauenswürdigkeit im Sinne assoziativer Lernprozesse gelernt werden können, beispielsweise durch die Darbietung von Gesichtern in Kombination mit Hinweisen auf deren Vertrauenswürdigkeit (Label wie Professor vs. Gangmitglied) oder im Rahmen eines kooperativen Tests mit einer fiktiven Person, wo deren Verhalten Rückschlüsse auf deren Vertrauenswürdigkeit zuließ. In Anlehnung an die *asymmetry hypothesis* des SeMI-Modells (u.a. Gollwitzer & Rothmund, 2009; Gollwitzer et al., 2013) lenkten Individuen mit hohen Ausprägungen in Opfersensibilität ihre Aufmerksamkeit dabei stärker auf Hinweise auf Unvertrauenswürdigkeit anstatt auf Vertrauenswürdigkeit (Süssenbach et al., 2016). Es konnte weiterhin gezeigt werden, dass sich durch diese Lernprozesse Erwartungen in Bezug auf das Verhalten des Gegenübers ausbildeten, insbesondere wenn opfersensible Menschen dabei tatsächlich eine unfaire Behandlung durch Dritte erfuhren (Maltese et al., 2016). Erwartungen wurden dabei durch eine Satzergänzungsaufgabe erfasst (Süssenbach et al., 2016) oder explizit trainiert (Maltese et al., 2016). Wie im Modell argumentiert, konnte die Aktivierung von

Erwartungen in Bezug auf die Un-/Vertrauenswürdigkeit anderer wiederum das in einem *trust game* gezeigte Verhalten vorhersagen. In diesem kooperativen Spiel mit einer fiktiven Person wird ein soziales Dilemma erzeugt, in dem Vertrauen eine zentrale Rolle spielt. Die Versuchsperson entscheidet dabei, wie viel Vertrauen sie der fiktiven Person schenkt, das heißt, wie viel Geld sie ihr gibt, wobei gegebenes Geld verdreifacht wird. Der Spielpartner/die Spielpartnerin entscheidet dann wiederum, wie viel Geld an den anderen zurückgegeben wird. Somit hat das Verhalten beider SpielpartnerInnen einen Einfluss auf die Belohnung, die beide SpielpartnerInnen erhalten. Das kooperative Verhalten war in diesem Spiel am niedrigsten, wenn Individuen mit hohen Ausprägungen in Opfersensibilität mit einer unfairen Behandlung durch die SpielpartnerInnen konfrontiert waren, was durch Erwartungen in Bezug auf die Unvertrauenswürdigkeit anderer vermittelt wurde (*defection hypothesis* im SeMI-Modell). Das Ausbleiben kooperativen Verhaltens in einer gemeinsam zu lösenden Aufgabe kann dabei als Vermeidungsverhalten angesehen werden, um die befürchtete negative Konsequenz, ausgenutzt zu werden, zu verhindern. Durch das Vermeidungsverhalten wird wiederum die ursprüngliche Erwartung an das Gegenüber bestätigt, da gegenteilige Beweise ausbleiben (u.a. eine als unvertrauenswürdig angesehene Person verhält sich doch vertrauenswürdig). Im Sinne einer sich-selbst-erfüllenden Prophezeiung könnten so auch vorher bestehende Annahmen bestätigt werden, da das Gegenüber auf das unkooperative Verhalten mit hoher Wahrscheinlichkeit ebenfalls unkooperativ reagiert. Da in diesen Studien jedoch mit fiktiven InteraktionspartnerInnen gearbeitet wurde, konnte diese Annahme nicht untersucht werden.

Süssenbach und Kollegen (2016) untersuchten darüber hinaus, ob sich gebildete Erwartungen über das Gegenüber verändern, wenn gegenteilige Hinweise präsentiert werden. Im Sinne einer schema-konsistenten Informationsverarbeitung neigen Menschen dazu, gegenteilige Beweise beispielsweise durch selektive Wahrnehmung auszublenden, was die entsprechenden Schemata bestätigt und weiter verfestigt (*confirmation bias*). Nachdem sich die TeilnehmerInnen der Experimentalbedingung vorstellen sollten, durch andere ausgenutzt zu

werden, und sie Vertrauenswürdigkeitserwartungen zu Gesichtern erneut über Labels (Professor vs. Gangmitglied) gelernt hatten (T1), wurden ihnen in einem zweiten Durchgang dazu teilweise inkonsistente Informationen in Form von Verhaltensbeschreibungen (vertrauenswürdiges oder unvertrauenswürdiges Verhalten) präsentiert (T2). Die ForscherInnen konnten zeigen, dass sich die Vertrauenswürdigkeitseinschätzungen nicht veränderten (T2-T1), wenn zunächst positiven Einschätzungen durch unvertrauenswürdige Verhaltensbeschreibungen widersprochen wurde, unabhängig von vorher induzierten Un-/Vertrauenswürdigkeitserwartungen und der Ausprägungen in Opfersensibilität. Das heißt, opfersensible Individuen passten ihre Einschätzungen des positiv bewerteten Gegenübers nicht an, auch wenn sie neue Informationen zu dessen unvertrauenswürdigem Verhalten erhalten hatte. Im Gegensatz dazu veränderten sich die Einschätzungen Opfersensibler jedoch, wenn (1) die Möglichkeit des Ausgenutztwerdens in der Experimentalgruppe salient gemacht wurde (d.h. aktivieren des *suspicious mindset*) und (2) ursprünglich als unvertrauenswürdig bewertete Personen sich nun vertrauenswürdig verhielten (*trustworthy trickster*). Der Effekt trat jedoch nicht auf, wenn ursprünglich als unvertrauenswürdig bewertete Personen ihre Unvertrauenswürdigkeit im Verhalten bestätigten. Die AutorInnen erklärten diesen Effekt damit, dass opfersensible Individuen anderen habituell Unvertrauenswürdigkeit zuschreiben, so dass unvertrauenswürdiges Verhalten für sie erwartungskonform ist. Solch sozial-kognitives Wissen soll die soziale Informationsverarbeitung erleichtern, indem sie unter anderem die Aufmerksamkeitslenkung beeinflusst. Da bestehendes Wissen auch inkorrekt sein kann, erscheint es plausibel, dass die Aufmerksamkeit vor allem auf schema-inkonsistente Informationen gelenkt wird, um bestehendes Wissen gegebenenfalls anzupassen. In Bezug auf Opfersensibilität würde dies zu den Ergebnissen passen, da der Fokus stärker auf unvertrauenswürdigen Menschen lag, die sich dann doch vertrauenswürdig verhalten hatten.

In Bezug auf das Persönlichkeitsmerkmal des Neurotizismus wurden in Manuskript #2 auf Basis eines längsschnittlichen Datensatzes ebenfalls die Einflüsse einer schema-

kongruenten Informationsverarbeitung auf die Entwicklung von Neurotizismus untersucht. Reaktive Transaktionen, wie sie bereits Finn und Kollegen (2015) nachweisen konnten, zeigen sich darin, dass individuelle (verzerrte) Wahrnehmungs- und Interpretationsprozesse auf Veränderungen in Neurotizismuswerten über die Zeit wirken. Finn und Kollegen (2015) fanden, dass bei Paaren im jungen Erwachsenenalter eine Reduktion in Ausprägungen des Interpretationsbiases eine Abnahme in Neurotizismus über die Zeit (Abstand von 9 Monaten) vorhersagen konnte. In Manuskript #2 konnte zwar eine persönlichkeitskongruente Wahrnehmungsverzerrung (*positivity bias*) aufgezeigt werden, diese sagte jedoch nicht Veränderung in Neurotizismus über die Zeit vorher (Abstand von 8 Monaten). Finn und Kollegen (2015) untersuchten in ihrer Arbeit die dynamische Wechselwirkung zwischen PartnerInnen, die in einer intimen Beziehung zueinanderstanden. Sie untersuchten, inwiefern sich Neurotizismus-Werte und Interpretationsverzerrungen beider PartnerInnen über die Zeit beeinflussten und ob eine stabile Partnerschaft normative Veränderungen im Neurotizismus im jungen Erwachsenenalter beschleunigen könnte. Im Gegensatz zur Arbeit von Finn und Kollegen (2015) wurden im vorliegenden Dissertationsprojekt alltägliche Interaktionen zwischen KommilitonInnen untersucht, die ein Studium begannen, sich jedoch im Vorfeld kaum kannten. Der Beginn eines Studiums sowie die Fortführung einer stabilen Partnerschaft können als normative Ereignis im jungen Erwachsenenalter angesehen. Normative Ereignisse sollen mit stärkeren Einflüssen der sozialen Umgebung auf die Persönlichkeitsveränderung einhergehen, da diese durch die Übernahme neuer Rollen in gewisser Art und Weise vorgezeichnet sind (u.a. Neyer et al., 2014). Da neurotische Individuen neue Situationen eher als bedrohlich wahrnehmen (u.a. MacLeod & Cohen, 1993) und stärker auf wahrgenommene soziale und nicht-soziale Bedrohungen (Denissen & Penke, 2008) und Veränderungen (u.a. Ormel & Wohlfahrt, 1991) reagieren, erscheint es plausibel, dass solch eine an sich normative Transition wie der Beginn eines Studiums bei neurotischen Individuen eher Verunsicherung begünstigt und somit eher den Charakter einer non-normativen Transition annimmt. Neyer und

KollegInnen (2014) argumentierten, dass bei der Konfrontation mit non-normativen Lebensereignissen Persönlichkeitseffekte stärker ausfallen. Bei non-normativen Ereignissen sollen im Sinne des *corresponsive principles* (Roberts, Caspi, & Moffitt, 2003) ursprüngliche Persönlichkeitsmerkmale eher verstärkt werden. Soziale Beziehungen sollen in ungewissen Phasen eher so gestaltet werden, dass sie zu vorher bestehenden Eigenschaften passen. Wobei in stabilen Umwelten kontinuierliche, reziproke Wechselwirkungen und entsprechende Persönlichkeitsveränderungen erwartet werden. Wenn das sozial-kognitive Wissen als persönlichkeitskongruente Denk- und Verhaltensweisen konzeptualisiert wird, erscheint es plausibel, dass sich dieses angesichts einer stabilen Partnerschaft wie bei Finn und KollegInnen (2015) über die Zeit verändert, sich bei einer für neurotische Individuen eher unsicheren Umbruchphase wie beim Beginn eines Studiums mit zahlreichen neuen Sozialkontakten dagegen jedoch eher stabilisiert und es entsprechend nicht zu Persönlichkeitsveränderungen durch Veränderungen im sozial-kognitiven Wissen kommt.

Im Gegensatz dazu zeigte sich ein Einfluss der sozialen Umwelt auf die Veränderung von Neurotizismus (proaktive Transaktion). Proaktive (oder selektive) Transaktionen konzeptualisieren, dass Individuen sich (soziale) Umwelten suchen oder die Umwelt dahingehend aktiv gestalten, dass sie zu eigenen Persönlichkeitsmerkmalen passen, was wiederum bestehende Eigenschaften verstärkt (*social reinforcement*; Harris, 1995). Wenn sich Individuen mehr mit Personen umgaben, die von Dritten als geselliger eingeschätzt wurden, führte dies zu einer stärkeren Abnahme von Neurotizismus. Wie bereits erwähnt, zeigen neurotischere Individuen eher gegensätzliche Verhaltensweisen (zurückhaltend, vermeidend). Der Kontakt mit geselligen, freundlichen Menschen könnte neue Lernerfahrungen ermöglichen, was wiederum vorher bestehende soziale Ängste, Unsicherheiten und daraus resultierendes zurückhaltendes Verhalten mit der Zeit reduzieren könnte. Analog zur Argumentation zu Erwartungsveränderungen bei opfersensiblen Individuen, könnten neurotische Individuen eine generalisierte Wahrnehmung anderer haben, beispielsweise, dass diese sich ihnen gegenüber

unfreundlich verhalten werden. Reagieren InteraktionspartnerInnen ihnen gegenüber nun aber freundlich, verletzt dies die ursprünglichen Erwartungen wie bei den *trustworthy trickster* (Süssenbach et al., 2016), was eine Veränderung von Erwartungen und habituellem Verhalten nach sich ziehen könnte.

Ein weiterer Befund in Manuskript #2 war, dass der Kontakt zu Menschen, die von Dritten als wärmer eingeschätzt wurden, zu einer schwächeren Abnahme in Neurotizismus über die Zeit beitrug. In diesem Lebensabschnitt finden sich Zunahmen in emotionaler Stabilität als typische Entwicklungsrichtung (u.a. Roberts, Robins, Caspi, & Trzesniewski, 2003; Caspi, Roberts, & Shiner, 2005). Dieser Zusammenhang ist überraschend und kann zum aktuellen Zeitpunkt nur post-hoc erklärt werden. Studien sind nötig, um zu verstehen, was warmes Verhalten des Gegenübers bei neurotischen Individuen an möglichen Erlebensweisen auslöst.

Warmes Verhalten umfasst ein freundliches, liebevolles und offenes Handeln. Wie bereits erwähnt, reagieren neurotische Individuen insbesondere in intimen Beziehungen mit mehr Stress (DeLongis & Holtzman, 2005; Gunthert et al., 1999; Lee-Bagglely et al., 2005). Sie scheinen stärker auf Verhaltensweisen beim Gegenüber zu achten, die als bedrohlich bewertet werden, wie die Emotionalität der PartnerInnen (u.a. Mueller et al., 2020). Auch wenn die Richtung des Effekts genau gegensätzlich zu Befunden von Mueller und Kollegen (2020) ist (positive Emotionalität sagte eine Abnahme im Neurotizismus vorher), liegt die Vermutung nahe, dass das offen-freundliche Verhalten hier von KommilitonInnen, mit denen die Versuchspersonen erst seit kurzem bekannt waren, im Vergleich zu seit Jahren bestehenden Partnerschaften wie bei Mueller und Kollegen (2020), bei neurotischen Individuen zentrale Erwartungen und Befürchtungen (evtl. zurückgewiesen zu werden, *hostile attributions*) aktivieren. Durch den Rückgriff auf das in der *data base* gespeicherte sozial-kognitive Wissen könnte wiederum mit Befürchtungen konsistentes Verhalten gezeigt werden (d.h. zurückhaltendes Verhalten). Das gezeigte Verhalten könnte wiederum beim Gegenüber entsprechendes Verhalten auslösen, was a-priori Erwartungen im Sinne einer sich-selbst-

erfüllenden Prophezeiung bestätigt und persönlichkeitskongruente Verhaltensweisen weiter festigen. Dazu passend sagte Neurotizismus beispielweise verschlossenes Verhalten vorher, unabhängig davon, wie viel Selbstöffnung das Gegenüber zeigte (Cunningham & Strassberg, 1981). Das gezeigte verschlossene Verhalten könnte somit als Vermeidungsverhalten (*avoidance learning*, u.a. Mowrer & Miller, 1942) konzeptualisiert werden, wodurch korrigierende Erfahrungen verhindert werden und a-priori Erwartungen verfestigt werden.

In zukünftigen Forschungsarbeiten sollten somit auch dynamische Wechselwirkungen zwischen Erlebens- und Verhaltensweisen von InteraktionspartnerInnen näher betrachtet werden, um solche Erklärungen verifizieren zu können. In experimentellen Untersuchungen könnten zunächst relevante Erwartungen beim Gegenüber aktiviert werden, beispielsweise durch eine Satzergänzungsaufgabe erfasst wie bei Süssenbach und Kollegen (2016) oder explizit trainiert wie bei Maltese und Kollegen (2016). Im Anschluss könnte in einer realen Interaktionssituation das gezeigte Verhalten mit InteraktionspartnerInnen mit unterschiedlichem Beziehungsstatus (Fremde, Bekannte und enge Vertraute) mittels Verhaltensbeobachtung erfasst werden. Schließlich könnte dann das beobachtete Verhalten mit Einschätzungen der Individuen zum eigenen Verhalten und dem ihrer InteraktionspartnerInnen verglichen werden und das erlebte Stressausmaß oder Zufriedenheit mit der Interaktion von beiden PartnerInnen erfragt werden. Die Frage wäre dann, ob neurotischere Individuen sich in Abhängigkeit vorher bestehender Erwartungen anders verhalten, wie realistisch vs. verzerrt deren Wahrnehmung des eigenen Verhaltens und das der InteraktionspartnerInnen ist und ob sich das Erleben der Interaktion unterscheidet, je nachdem ob entsprechende Erwartungen salient gemacht worden sind oder nicht sowie in Abhängigkeit des von den InteraktionspartnerInnen gezeigten Verhaltens.

7.4. Die Rolle von Erwartungen und wie sich diese verändern lassen

Eine darauf aufbauende wichtige Forschungsfrage ist, wie sich insbesondere ungünstige Erwartungen verändern lassen, die die Tendenz haben, sich durch erwartungskonformes Verhalten selbst über die Zeit zu bestätigen und zu verfestigen. Gerade im klinischen Bereich ist die Frage relevant, unter welchen Bedingungen sich Erwartungen verändern lassen. Studien konnten hier zeigen, dass zu ursprünglichen Erwartungen konträre Informationen nicht automatisch zu einer Veränderung der Erwartungen führen. Aufbauend auf solchen Befunden postulierten ForscherInnen der Universität Marburg das *ViolEx (violated expectations) model* (u.a. Rief, Glombiewski, Gollwitzer, Schubö, Schwarting & Thorwart, 2015), das zu erklären versucht, wann Erwartungen sich nach der Präsentation erwartungsunkonformer Informationen verändern oder wann sie persistieren. Drei zentrale Prozesse als Reaktion auf Erwartungsverletzungen werden im Modell beschrieben: Immunisierung, Assimilation und Akkommodation. Immunisierung meint, dass unerwartete Informationen in ihrer Bedeutung entwertet werden, indem sie beispielsweise ignoriert oder angezweifelt werden (bspw. als Ausnahme von der Regel). Assimilation meint, dass konträre Informationen in vorher bestehende Erwartungen integriert werden, indem Ereignisse so wahrgenommen oder uminterpretiert werden, dass sie in vorher bestehende Schemata passen. So könnte das ursprünglich negative Label des Gegenübers beispielsweise angezweifelt werden, damit sein vertrauenswürdiges Verhalten erklärbar wird. Akkommodation schließlich meint, dass Überzeugungen oder kognitive Schemata angepasst werden, um neue Informationen integrieren zu können, so dass sie mit dem unerwarteten Ereignis zusammenpassen. Die Erfahrung, dass sich das Gegenüber unerwartet doch vertrauenswürdig verhalten hat, könnte beispielsweise zur neuen Erwartung beitragen, dass nicht alle Menschen unvertrauenswürdig sind. Somit kann Akkommodation im Vergleich zu Immunisierung und Assimilation eine Veränderung von generalisierten Erwartungen ermöglichen (Gollwitzer, Thorwart, & Meissner, 2018).

Da die Konfrontation mit schema-inkonsistenten Informationen nicht automatisch zu einer Anpassung des zugrundeliegenden sozial-kognitiven Wissens führen muss, verzerrte Schemata jedoch Reaktionen befördern, die die soziale Anpassung gefährden können, erscheint die Forschungsfrage relevant, unter welchen Bedingungen sozial-kognitives Wissen veränderbar ist oder dazu tendiert, sich selbst zu bestätigen. Viele verhaltenstherapeutische Ansätze zielen explizit darauf ab, Erwartungen zu hinterfragen und zu verändern, um dadurch entstandene Psychopathologien zu verändern. In zukünftigen Arbeiten sollte somit der Fokus auch stärker daraufgelegt werden, wie generalisierte Erwartungen (u.a. in Bezug auf die Unvertrauenswürdigkeit anderer wie das *suspicious mindset*) bei der Konfrontation mit inkompatiblen Erfahrungen verändert werden können.

7.5. Einschränkungen und weiterer Forschungsbedarf

Das Dissertationsprojekt weist fünf methodische Einschränkungen auf, die im Rahmen weiterer Forschungsarbeiten adressiert werden sollten. Erstens soll erwähnt werden, dass die Analysen in Manuskript #2 und #3 auf längsschnittlichen Datensätzen beruhen (CONNECT-Studie und pairfam), die die Generalisierbarkeit der Ergebnisse einschränken. Einerseits ermöglichte dies, die Einflüsse von Persönlichkeitsmerkmalen auf psychologische Mechanismen sowie deren Auswirkungen auf soziale Beziehung und die weitere Persönlichkeitsentwicklungen zu untersuchen. Durch das zusätzliche Einbeziehen von Daten von InteraktionspartnerInnen und PartnerInnen konnte darüber hinaus die dynamische Wechselwirkung zwischen dem Individuum und seinem sozialen Umfeld untersucht werden. Gleichzeitig schränkt diese Form der Daten die Aussagekraft der Ergebnisse aufgrund von möglichen Kohorten- oder Selektionseffekten jedoch ein. In Manuskript #2 wurden Studierenden der Psychologie befragt und in Manuskript #3 heterosexuelle Paare, die zwischen 1973 und 1993 geboren wurden und im Mittel seit 113 Monaten zusammen waren. Verschiedene demografische Variablen (Alter, Bildungshintergrund, Beziehungsdauer etc.)

wurden nur eingeschränkt in den Stichproben abgebildet und könnten somit als konfundierende Variablen fungieren. In Bezug auf den pairfam Datensatz können wiederum Selektionseffekte nicht ausgeschlossen werden.

Die Generalisierbarkeit der Befunde ist zweitens dadurch eingeschränkt, dass zwar zwei unterschiedliche Beziehungsformen (ErstsemestlerInnen, die sich noch kaum kennen und Paare, die seit mehreren Monaten zusammen sind) untersucht worden sind, jedoch andere Beziehungsformen vernachlässigt wurden. In der CONNECT-Studie wurden wahrscheinlich vornehmlich Interaktionen berichtet, die eher alltäglich waren und durch wenig Vertrautheit gekennzeichnet waren. Im pairfam Datensatz traf genau das Gegenteil zu: heterosexuelle Paare, deren Beziehung seit mehreren Monaten bestand, so dass wahrscheinlich schon mehr Erfahrungen bei der gemeinsamen Problembewältigung gesammelt werden konnten und die Zufriedenheit mit der Beziehung hoch genug war, um sich nicht zu trennen. Somit ist die Übertragbarkeit der Ergebnisse der beiden Studien nicht gewährleistet beispielsweise für Paare, die erst vor kurzem die Partnerschaft begonnen haben, für enge Freundschaften oder Familienbeziehungen. Gerade intimere Beziehungen könnten bei neurotischen Menschen jedoch zu mehr Stress und Bedrohungsgefühlen führen, so dass verzerrte Wahrnehmungs-, Interpretations- und Verhaltenstendenzen dort stärker ausgeprägt sein könnten. Gleichzeitig ist es vorstellbar, dass gerade in den ersten Monaten einer Beziehung Ängste und Unsicherheiten präsenter sind, so dass persönlichkeitskongruente Verzerrungen eine zentrale Rolle dabei spielen, ob Beziehungen fortgeführt werden oder nicht. Langandauernde Partnerschaften oder Partnerschaften in höherem Alter könnten wiederum dahingehend verschieden sein, dass normative Entwicklungstendenzen in einer Zunahme von emotionaler Stabilität bestehen und durch im Laufe des Lebens gemachte Erfahrungen das sozial-kognitive Wissen differenzierter wird oder sich dieses verfestigt, da Individuen durch Selektionseffekte in immer passenderen Umwelten leben. Wie diese nicht erschöpfenden Beispiele zeigen, ist es notwendig, die vorliegenden Ergebnisse in anderen Beziehungs- und Interaktionsformen zu replizieren.

Drittens erscheint es von zentraler Bedeutung, die Spezifität der gefundenen Ergebnisse für die im Rahmen des Dissertationsprojekts untersuchten Persönlichkeitsmerkmale zu überprüfen. In Manuskript #3 wurden analoge Vorhersagemodelle für die anderen Big Five Persönlichkeitsmerkmale analysiert. Im Sinne des *Vulnerability Stress Adaptation Model* (Karney & Bradbury, 1995) fungierten auch die anderen Big Five Merkmale als Vulnerabilitäten und sagten adaptive Prozesse vorher. So berichteten extravertierte Menschen weniger feindselige Attributionen und mehr Selbstöffnung, was deren Beziehungszufriedenheit positiv beeinflusste. Auf der interpersonalen Ebene berichteten PartnerInnen von extravertierten Individuen weniger Angst und Unsicherheit, mehr Selbstöffnung und dyadisches Coping sowie weniger Vermeidungsverhalten, was wiederum die Beziehungszufriedenheit erhöhte. Somit scheinen kognitive, emotionale und Verhaltensvariablen für die Gestaltung sozialer Beziehungen im Allgemeinen relevant zu sein und sind zumindest in Teilen durch Persönlichkeitsmerkmale beider PartnerInnen beeinflusst. Neben den Big Five Persönlichkeitsmerkmalen könnten auch bei Eigenschaften wie Trait Ängstlichkeit (u.a. Karney & Bradbury, 1995, 1997; McNulty, 2008), Bindungsstilen (u.a. Mikulincer & Shaver, 2003) und dem Selbstwertgefühl (u.a. Erol & Orth, 2016; Bellavia & Murray, 2003) sozial-kognitive Mechanismen eine Rolle bei der Entstehung und Stabilisierung spielen. Zukünftige Forschungsarbeiten sollten die Ergebnisse des vorliegenden Dissertationsprojektes mit anderen Vulnerabilitäten replizieren, um zu untersuchen, welche Mechanismen spezifisch bei Neurotizismus oder Opfersensibilität bedeutsam sind.

Eine vierte Einschränkung beruht auf der eingesetzten Methodik. In Manuskript #2 wurden interpersonale Wahrnehmungen der an einer Interaktion beteiligten Personen ereignisbasiert mittels *experience sampling* via Smartphones erhoben. Einerseits ermöglichte dies, dass interpersonale Wahrnehmungen zeitnah zu Interaktionen erfasst und eine große Anzahl von Interaktionen berichtet werden konnten (2863 Interaktionen für die dyadische Daten vorlagen). Andererseits musste aus ökonomischen Gründen dadurch die Anzahl

einzuschätzender Dimensionen reduziert werden. Aufbauend auf dem interpersonellen Circumplex-Modell (Wiggins, 1979, 2003) wurden Dimensionen zur Beschreibung sozialen Verhaltens präsentiert, die jedoch nicht erschöpfend sind. Weitere Wahrnehmungsdimensionen könnten insbesondere in Bezug auf Neurotizismus und Opfersensibilität von Bedeutung sein, um mögliche Wahrnehmungsverzerrungen untersuchen zu können. Einschätzungen in Bezug auf Kompetenz/Status, Bedrohlichkeit oder Vertrauenswürdigkeit des Gegenübers könnten in zukünftigen Studien erfasst werden. In Manuskript #3 könnte der aus ökonomischen Gründen gewählte Einsatz von Selbstberichtsmaßnahmen das Geben von sozial-erwünschten Antworten befördert haben. In zukünftigen Studien sollten neben Selbstberichten auch Verhaltensbeobachtungen oder Szenarien (bspw. *relationship-specific interpretation bias*, Finn et al., 2013) genutzt werden, um interessierende Konstrukte zu operationalisieren.

Die fünfte Einschränkung bezieht sich darauf, dass, wie bereits bei der theoretischen Diskussion der Befunde erwähnt, experimentelle Untersuchungen notwendig sind, um die Kausalität der gefundenen Zusammenhänge zu untersuchen. Zukünftige Forschungsarbeiten sollten in Ergänzung zu den hier verwendeten längsschnittlichen Daten auch experimentell interessierende Variablen wie Erwartungen und emotionale Zustände herstellen, um die Auswirkung dessen auf das gezeigte Erleben und Verhalten untersuchen zu können.

7.6. Schlussfolgerungen und Ausblick

Ziel des vorliegenden Dissertationsprojektes war es, zu untersuchen, inwiefern sich Persönlichkeitsmerkmale (Neurotizismus und Opfersensibilität) auf die interpersonale Wahrnehmung, sozial-kognitive Prozesse sowie auf das soziale Verhalten auswirken (d.h. persönlichkeitskongruente Effekte) und ob diese psychologischen Variablen wiederum Einfluss auf die Stabilisierung der Persönlichkeitsmerkmale über die Zeit ausüben. In Manuskript #1 wurde theoretisch die Frage adressiert, wie sich Opfersensibilität aus lebensgeschichtlicher Perspektive sowie in konkreten sozialen Interaktionen entwickeln und stabilisieren könnte. Die

Überlegungen wurden in zwei theoretischen Rahmenmodellen integriert. In Manuskript #2 und #3 wurde ein Teil der diskutierten psychologischen Prozesse genauer untersucht, die die Auswirkungen von Persönlichkeit auf soziale Beziehungen erklären könnten (interpersonale Wahrnehmung, feindselige Attributionen, Ängste und wahrgenommene Unsicherheit, Selbstöffnung, dyadisches Coping, passiv-aggressives Verhalten, Rückzug). Mithilfe von zwei längsschnittlichen Datensätzen wurden die Auswirkungen des Persönlichkeitsmerkmals Neurotizismus in zwei Beziehungsformen untersucht: (1) die interpersonale Wahrnehmung von Studierenden in alltäglichen Interaktionen mit ihren KommilitonInnen (Manuskript #2) und (2) intra- und interpersonelle Prozesse, die den Einfluss von Neurotizismus auf die Zufriedenheit in heterosexuellen, intimen Paarbeziehungen vermitteln (Manuskript #3).

Die im Rahmen des Dissertationsprojekts gewonnenen Ergebnisse zeigten einmal, dass individuelle Dispositionen das eigene Denken, Fühlen und Verhalten sowie das der PartnerInnen im Sinne einer dynamischen Wechselwirkung zwischen beiden PartnerInnen beeinflussen können. So schrieben neurotische Individuen ihren PartnerInnen eher feindselige Absichten zu, erlebten mehr Angst und Unsicherheit in ihrer Paarbeziehung und zeigten eher ungünstiges Beziehungsverhalten. Darüber hinaus konnte nicht nur der eigene Neurotizismus diese maladaptiven Reaktionsweisen befördern, sondern auch im Sinne interpersonaler Effekte der Neurotizismus der PartnerInnen. Die maladaptiven Reaktionen wirkten sich wiederum negativ auf die Beziehungszufriedenheit beider PartnerInnen aus. Darüber hinaus konnte gezeigt werden, dass neurotische Individuen ihr soziales Umfeld habituell positiver wahrnahmen (d.h. geselliger und wärmer). Durch den Vergleich mit Einschätzungen von Dritten über deren InteraktionspartnerInnen konnte festgestellt werden, dass die Wahrnehmungstendenz verzerrt war, das heißt, einem *positivity bias* entspricht.

Aufbauend auf dem *Social Information Processing Model of Children's Social Adjustment* (Crick & Dodge, 1994) wurde im Rahmen des Dissertationsprojekts argumentiert, dass gerade persönlichkeitskongruente Wahrnehmungs- und Interpretationstendenzen sowie

das zur Verfügung stehende sozial-kognitive Wissen eine zentrale Rolle bei der sozialen Anpassung eines Individuums spielen, da sie früh im Prozess der sozialen Informationsverarbeitung eingreifen. Neigen Individuen beispielsweise dazu, persönlichkeitskongruent anderen eher negative Intentionen zuzuschreiben, ihre Aufmerksamkeit auf spezifische Hinweise zu fokussieren und aufbauend auf den negativen Erwartungen in Bezug auf das Verhalten anderer sich eher sozial-ungünstig zu verhalten, könnte dies weitreichende Folgen für deren soziale Beziehungen haben. Durch dieses Verhalten könnte beispielsweise negatives soziales Verhalten bei den InteraktionspartnerInnen ausgelöst werden, die einerseits auf das Verhalten des Individuums reagieren, und andererseits so dessen a-priori Erwartungen bestätigen (u.a. Brookings et al., 2003; Downey et al., 1988; Caughlin et al., 2000).

Diese dynamische Wechselwirkung zwischen dem Individuum und dem sozialen Umfeld wurde bereits in zahlreichen Ansätzen beschrieben, unter anderem im *dynamic transactionism* (Caspi & Roberts, 1999; Neyer & Asendorpf, 2001; Neyer et al., 2014) und im PERSOC-Modell (Back et al., 2011). Diese Modelle gehen davon aus, dass sich Persönlichkeitsmerkmale in interpersonalen Wahrnehmungen und sozialem Verhalten zeigen, dass sich Persönlichkeitsmerkmale aufgrund von Umwelteinwirkungen entwickeln (u.a. durch Lernprozesse) und dass das Individuum eine aktive Rolle bei der Beeinflussung und Veränderung der sozialen Umwelt und so auch bei der Persönlichkeitsentwicklung spielt (Person-Umwelt-Transaktionen, u.a. Caspi, 1998). So könnten beispielsweise eigene Interpretations- und Bewertungsprozesse im Sinne eines *confirmation bias* (Nickerson, 1998) die soziale Informationsverarbeitung verzerren. Wahrnehmungsfehler oder Erwartungen könnten das gezeigte soziale Verhalten beeinflussen und im Sinne einer sich-selbst-erfüllenden Prophezeiung (u.a. Jones, 1977; Miller & Turnbull, 1986) a-priori Erwartungen durch das eigene Verhalten bestätigen. Dies könnte wiederum vorher bestehende persönlichkeitskongruente Muster festigen und so die soziale Anpassung mitbeeinflussen.

Im Rahmen des Dissertationsprojekts wurde der Einfluss von sozial-kognitiven Mechanismen auf die Persönlichkeitsentwicklung zunächst theoretisch beschrieben und in einem nächsten Schritt mithilfe längsschnittlicher Daten untersucht. Entgegen den Erwartungen konnten lediglich Einflüsse der sozialen Umwelt auf die Persönlichkeitsentwicklung aufgezeigt werden (selektive oder proaktive Transaktion). Die individuelle, verzerrte Wahrnehmung der sozialen Umwelt hatte keinen Einfluss auf die Entwicklung von Neurotizismus über die Zeit (reaktive Transaktion). Hier sind jedoch weitere Forschungsarbeiten notwendig, um einerseits die Generalisierbarkeit der gefundenen Zusammenhänge zu überprüfen und die dynamische Wechselwirkung zwischen ihnen (u.a. Erwartungen-Verhalten-Erwartungsveränderung oder -stabilisierung) genauer betrachten zu können. Die vorliegenden Befunde konnten hierzu erste wichtige Ansatzpunkte liefern. Zukünftig scheinen jedoch insbesondere experimentelle Ansätze notwendig zu sein, um die Kausalität der Zusammenhänge untersuchen zu können.

8. Manuskript #1

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Victimization experiences and the stabilization of victim sensitivity

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People reliably differ in the extent to which they are sensitive to being victimized by others. Importantly, “victim sensitivity” predicts how people behave in social dilemma situations: Victim-sensitive individuals are less likely to trust others and more likely to behave uncooperatively—especially in socially uncertain situations. This pattern can be explained with the sensitivity to mean intentions (SeMI) model, according to which victim sensitivity entails a specific and asymmetric sensitivity to contextual cues that are associated with untrustworthiness. Recent research is largely in line with the model’s prediction, but some issues have remained conceptually unresolved so far. For instance, it is unclear why and how victim sensitivity becomes a stable trait and which developmental and cognitive processes are involved in such stabilization. In the present article, we will discuss the psychological processes that contribute to a stabilization of victim sensitivity within persons, both across the life span (“ontogenetic stabilization”) and across social situations (“actual-genetic stabilization”). Our theoretical framework starts from the assumption that experiences of being exploited threaten a basic need, the need to trust. This need is so fundamental that experiences that threaten it receive a considerable amount of attention and trigger strong affective reactions. Associative learning processes can then explain (a) how certain contextual cues (e.g., facial expressions) become conditioned stimuli that elicit equally strong responses, (b) why these contextual untrustworthiness cues receive much more attention than, for instance, trustworthiness cues, and (c) how these cues shape spontaneous social expectations (regarding other people’s intentions). Finally, avoidance learning can explain why these cognitive processes gradually stabilize and become a trait: the trait which is referred to as victim sensitivity.

Keywords: victim sensitivity, personality development, stabilization, cognitive processes, social justice

Introduction

Imagine the following situation: your colleague asks you to do a favor for her, such as switching shifts with her because she says she needs to see a doctor. You agree and take her early-morning shift. A couple days later, you learn that your colleague never saw a doctor (and never intended to do so); instead, she needed to sleep in that day because she had been partying the other night. What you probably feel in that very moment is a mixture between anger, moral outrage, disappointment, helplessness, and regret. You trusted your colleague, but your trust was betrayed, and you will most probably decide that you will never trust her again—and maybe you will not even trust any other of your colleagues. The incident has probably made you more sensitive to the fact that other people can exploit your goodwill.

Although such incidents of betrayed trust are certainly aversive to everyone, the extent to which people react emotionally to such an incident and ruminate about the injustice that it implies differs considerably between individuals: some people merely feel a sting of anger which quickly dissolves as time goes by. Others experience a powerful and overwhelming range of negative emotions and ruminate for a long time about the incident and what it says about them. The latter kind of individuals can be referred to as having a strong sensitivity to injustice from the victim's perspective (or "victim sensitivity"). Victim sensitivity is a personality trait that has originally been developed to measure individual differences in the justice motive (Schmitt et al., 1995; Schmitt, 1996). Later, it has been conceptualized as one of four perspectives from which people can be sensitive toward injustice (the other perspectives are: observers, beneficiary, and perpetrator; cf. Schmitt et al., 2010). Unlike the other perspectives, victim sensitivity has been found to predict suspicious cognitions, social mistrust, egoism, and uncooperativeness (Fetchenhauer and Huang, 2004; Gollwitzer et al., 2005; Gollwitzer and Rothmund, 2011). According to a model that aims at explaining these effects (i.e., the "sensitivity to mean intentions" or SeMI model; cf. Gollwitzer and Rothmund, 2009; Gollwitzer et al., 2013), victim-sensitive individuals can be characterized as harboring a latent fear of being exploited and as being chronically hypersensitive to cues that are associated with untrustworthiness. From this perspective, their antisocial and egoistic behavior can be conceptualized as a defensive reaction to prevent exploitation: victim-sensitive individuals behave uncooperatively toward others because they expect others to behave uncooperatively toward them.

Many empirical findings are in line with that notion: Victim-sensitive individuals are more sensitive to even slight cues of untrustworthiness (Gollwitzer et al., 2009, 2012), even if these cues have only limited prognostic validity for a situation in which one might be exploited (Rothmund et al., 2011, 2015). Victim-sensitive individuals are more likely to behave aggressively (Bondü and Krahé, 2014) and destructively, especially if they sense a risk of being exploited (Schmitt and Mohiyeddini, 1996; Mohiyeddini and Schmitt, 1997; Schmitt and Dörfel, 1999). They make more egoistic choices in social dilemmas (Fetchenhauer and Huang, 2004), and are less willing to help others in need (Gollwitzer et al., 2005), both in interpersonal and in intergroup situations (i.e., when there is a certain danger that the goodwill of one's ingroup might be exploited by an outgroup; Süssenbach and Gollwitzer, 2015). They are more envious and more jealous (Schmitt et al., 2005), less willing to accept apologies from their partners (Gerlach et al., 2012), and more likely to oppose political reforms because they think that politicians act out of ulterior motives (Agroskin et al., in press).

As any personality trait that deserves this attribute, victim sensitivity remains relatively stable over time: In a representative sample of German adults (mean age: 47.6 years), 60% of the true-score variance in victim sensitivity, measured at three occasions with a time lag of 2 years, can be attributed to a latent trait, whereas only 33% of the true-score variance can be attributed to occasion-specific influences (Schmitt et al., 2005). In line with this finding, several studies have shown that victim sensitivity reliably predicts social behavior in lab experiments even though victim sensitivity

was measured weeks or even months before the lab experiment took place (e.g., Gollwitzer and Rothmund, 2011; Gollwitzer et al., 2012). This stability is remarkable, and it demands a psychological explanation. What makes victim sensitivity a stable trait? As we will see, addressing this question requires an elaborate theoretical framework assuming systematic interactions between social experiences, cognitive representations, and learning processes. We will sketch such a theoretical framework in the present article.

The overarching question—how victim sensitivity stabilizes—consists of two facets or sub-questions. A first sub-question concerns the "ontogenetic" development of victim sensitivity: when do individuals begin to become victim-sensitive, and what are the psychological processes that catalyze the emergence and stabilization of victim sensitivity during the life course? Our attempt to provide answers to this question bears on insights from lifespan developmental psychology and personality psychology. The second sub-question concerns the "actual-genetic" development of victim sensitivity: how does victim sensitivity stabilize in the course of specific social situations in which justice and trustworthiness are an issue—situations like the one we described at the beginning of this article? How do victim-sensitive individuals perceive and interpret such situations, and how do these perception and interpretation processes contribute to a further stabilization of victim sensitivity? Our attempt to provide answers to this particular question mainly refers to research on associative learning and social cognition. We believe that the General Process Model of Threat and Defense (Jonas et al., 2014) is particularly suitable to explain how victim-sensitive individuals react to cues associated with untrustworthiness in their social worlds.

When and How Does Victim Sensitivity Begin to Emerge and Stabilize?

The "SeMI" model assumes that victim sensitivity is rooted in a specific cognitive dissonance: the dissonance between a need to trust others and a stable expectation that others are not trustworthy (Gollwitzer and Rothmund, 2009). According to the SeMI model, victim-sensitive individuals would love to live in a world in which other people can be trusted, in which the risk of being exploited is close to 0, and in which cooperation is always likely to pay off for everybody in the end. However, at one or several points in their lives, these individuals have experienced that other people are not as trustworthy and as reliable as they had hoped. We assume that such victimization experiences establish the basis for developing victim sensitivity. More concretely, we hypothesize that if victimization experiences constitute "critical" life events and if these events are coped with in a dysfunctional way, victim sensitivity is likely to increase and stabilize. Victimization experiences can have many different faces. Victimization can mean emotional or even physical abuse, betrayal of trust, or social rejection. All of these different experiences have one thing in common: they thwart a particular need, the need to trust.

The Need to Trust

The need to trust other people has been conceptualized as one of the five "core social motives" (Fiske, 2009). To trust means to

believe in other people's trustworthiness, that is, in their abilities, their integrity, and—most importantly—their benevolence (cf. Mayer et al., 1995). Trusting others is not only beneficial; it is essential for maintaining relationships and contributing to social groups. Trust helps us master uncertain or novel situations; it is a key component in many social interactions, from bargaining to loving, and it is considered to be at the roots of economic systems, the core of social capital, and the driving machine of democratic societies (Coleman, 1990; Putnam, 2000).

Integrity and benevolence are especially relevant in interdependence situations, that is, when the effect of one's own behavior on the desirability of different outcomes crucially depends on the behavior of other people (Thibaut and Kelley, 1959; Kelley and Thibaut, 1978). One particular type of interdependence situation is the "social dilemma" (cf. Komorita and Parks, 1995), in which one's own willingness to cooperate with others or to contribute to a common good might be exploited by others. Typical social dilemmas are the prisoner's dilemma, the public goods dilemma, or the trust game. The trust game, for instance, consists of two players (cf. Berg et al., 1995). One player, the "truster," can decide to entrust a certain amount of his or her endowment to the other player. This amount is then multiplied by the experimenter and transferred to the other player (the "trustee"), who can then decide to split the total amount or to keep it all for him-/herself. The principal is: trusting one's partner can benefit both players, but only if the "trustee" is cooperative. The situation described at the beginning of this article is a typical "trust game" situation: your colleague asks you for a favor, and your willingness to help her might either be exploited (which was the case in this example) or rewarded because you actually helped her in a difficult situation. Trust is the most important predictor of one's behavior in these kinds of games (e.g., Pruitt and Kimmel, 1977; De Cremer, 1999), and distrust (due to a fear of being exploited) strongly predicts one's unwillingness to cooperate (Coombs, 1973; Orbell and Dawes, 1981; Kerr, 1983). Given that trust is so immensely functional, both on the interpersonal as well as on the intergroup level, it makes sense to assume that trusting others is something that people are motivated to do in general.

Theories of psychosocial development echo the notion that trust is a basic human motive and that the opportunity to lead a happy, healthy life depends on whether people have developed a general sense of trust in their social worlds. Erikson's (1950, 1959) theory of life tasks (and their resolution) assumes that the very first task in life is to develop trust in a caregiver. A toddler whose basic needs (such as food, warmth, and closeness) are thwarted is—according to this theory—likely to develop a deep sense of mistrust, anxiety, and insecurity in later life. In a similar vein, attachment theory (Bowlby, 1982, 1988) also focuses strongly on the infant-caregiver bond and highlights the importance of support and caregiving processes for the development of trust and for the quality of intimate relationships in later life. More precisely, attachment theory posits that early parent-child interactions provide the basis for the development of inner working models (Bowlby, 1982) by forming expectations regarding future interactions. Inner working models correspond to mental representations of oneself, of others, and of relationships in general. These

representations result in attachment patterns, which can be qualitatively categorized into "secure" vs. "insecure" attachment styles (e.g., anxious/ambivalent, anxious/avoidant, and disorganized; Ainsworth et al., 1978). Notably, "insecure" attachment styles are associated with representations of others as being untrustworthy and of oneself as being incapable (and/or unworthy) of obtaining others' cooperation.

Taken together, these theories imply that the capability (or the willingness) to trust others as an adult may depend strongly on the kind of experiences people have had in their childhood. However, this does not necessarily mean that generalized expectations regarding other people's trustworthiness crystallize in early childhood. Empirical findings rather suggest that social trust stabilizes later—especially between early and late adolescence (e.g., Flanagan and Stout, 2010). Thus, adolescence may be considered a critical period in life in which social trust crystallizes and in which people shape their general views about the trustworthiness of other people in accordance with the kind of experiences they had. Additionally, findings from life-span developmental psychology have shown that parental influences on the child's personality development decrease gradually during late childhood and especially during early adolescence, whereas "extra-familial" influences, such as peers, friends, and especially intimate partners, become increasingly relevant (Caspi, 1998).

Victimization Experiences

Social experiences are likely to shape the formation of trust and expectations regarding the trustworthiness of others. The question is which kinds of social experiences have the potential to affect these expectations. We assume that expectations concerning other people's untrustworthiness are learned via experiences of victimization (cf. Baumert and Maltese, 2014). These experiences could include *direct* as well as *observed* victimization.

Direct Experiences of Victimization

Childhood and adolescence are rife with situations that challenge the notion that our fellow humans' intentions are universally good and benevolent. In early adolescence, such victimization experiences can include physical or emotional abuse (Björkqvist et al., 2011), (cyber)bullying (König et al., 2010), or unfair treatment by authorities (Pretsch et al., in press). These situations imply violations of fairness standards—standards of distributive fairness (e.g., equality, equity, or need), of procedural fairness (e.g., the opportunity to "voice" one's opinion), or of interactional fairness (e.g., the right to be treated respectfully). We assume that such violations, especially if they occur repeatedly and if they constitute "critical" life events (see below), contribute to the development and stabilization of victim sensitivity during childhood and adolescence. In addition, experiences of *social rejection*—that is, being excluded from a social relationship or social interaction—are likely to contribute to the development of victim sensitivity as experiences of social rejection can advance generalized negative expectations concerning others' trustworthiness. Relevant experiences of social rejection include parental rejection, but also peer rejection or indirect bullying (cf. Rivers and Smith, 1994; Ettekal and Ladd, 2015).

Observed Experiences of Victimization

Although some degree of directly experienced victimization is probably necessary for the development of victim sensitivity, experiences of victimization that are observed from a third-party perspective are likely to play a role as well. Observing social rejection, interpersonal transgressions, and violations of fairness standards might be just as suited to form generalized negative expectations concerning others' trustworthiness as actually experiencing them. Drawing on research on vicarious traumatization (McCann and Pearlman, 1990), observed experiences of victimization might be particularly influential under conditions that promote empathy with the victim, for instance, when a family member or one's best friend is bullied, exploited, or otherwise treated badly. Notably, observed victimization of (significant) others may elicit moral outrage and motivate observers to fight against injustice on behalf of the victim—but these observations may nonetheless make observers more sensitive to victimization. A special instance of observed victimization is witnessing injustice in the media. Media consumption can have sustainable effects on normative beliefs, values, and self-as well as world views (Huesmann and Guerra, 1997; Möller and Krahé, 2009). For example, Rothmund et al. (2015) have recently demonstrated that exposure to violent video games at the age of 14 can contribute to a decrease in interpersonal trust 1 year later. These findings suggest that not only directly experienced, but also indirectly experienced confrontations with violence and untrustworthiness (e.g., in the media) can influence adolescents' trustworthiness expectations (see also Rothmund et al., 2013).

Victimization Experiences as Critical Life Events

Building on research from life-span developmental psychology, certain victimization experiences—both directly experienced and indirectly observed ones—can be considered “critical” life events. Critical life events are specific kinds of stressors that can be differentiated from “normal” life events by several characteristics (see below; Philipp and Aymanns, 2010). Among these are (1) the extent to which the event is informative about oneself (i.e., relevant for one's self-concept or self-esteem), (2) the extent to which the event interferes with plans and reduces the freedom to act, (3) the unpredictability, and (4) the uncontrollability of the event. The more a victimization experience is self-relevant, goal-obstructing, unpredictable, and uncontrollable, the more likely it will have a strong impact on general beliefs about trustworthiness and the stabilization of those beliefs. Again, not only directly experienced instances of victimization, but also indirectly observed instances of victimization can constitute critical life events that can shape a person's dispositional untrustworthiness expectations. For instance, learning that one's best friend had been exploited and cheated upon by his or her partner for years can reduce one's trust into others—maybe even to the same extent as having suffered exploitation oneself can do.

In addition, individual characteristics, vulnerabilities, and resources (e.g., self-concept aspects, individual norms, sensitivities, interpersonal integration, opportunities for social support, etc.) are relevant for how a person copes with the event. The extent to which a particular victimization experience shapes

trustworthiness expectations (and, thus, promotes the stabilization of victim sensitivity) thus depends on characteristics of the event itself *in conjunction with* characteristics of the person.

Social Information Processing Patterns

One such person characteristic is how people tend to perceive, interpret, and react to social situations. The social information-processing (SIP) model of children's social adjustment (Crick and Dodge, 1994) assumes that these perceptions, interpretations, and reactions to social events are critically influenced by so-called “data base” information stored in memory. This “data base” consists of general social knowledge structures such as inner working models of relationships (Bowlby, 1982), cognitive schemas, self-concepts, and behavioral scripts (Schank and Abelson, 1977). When confronted with particular social situations, individuals often rely on this social knowledge. Thus, the “data base” critically influences how cues are perceived and interpreted and how people react toward these cues. And, in the sense of a feedback loop, social situations and their outcomes may stabilize and reinforce this social knowledge if the outcomes are consistent with prior expectations.

The notion of a “data base” in the SIP model (Crick and Dodge, 1994) is perfectly compatible with the SeMI model (Gollwitzer and Rothmund, 2009; Gollwitzer et al., 2013). The SeMI model proposes that being confronted with contextual cues associated with untrustworthiness evokes a “suspicious mindset” among victim-sensitive individuals. Past experiences of betrayal, rejection, or unfair treatment (which, according to the SIP model, are stored in a person's “data base”) thus contribute to a generalized expectation that people are not trustworthy and unreliable, an attributional bias including a heightened availability of hostile interpretations of others' intentions, and a stabilized behavioral script that favors uncooperativeness in social exchange situations. As we will discuss in Section “How Does Victim Sensitivity Perpetuate Itself Across Social Situations?”, the way victim-sensitive individuals perceive, interpret, and react to social encounters in which untrustworthiness cues are present reinforces their cognitive schemas, and thus, their dispositional victim sensitivity even further.

Ontogenetic Stabilization Processes

In the previous paragraphs we have discussed which kinds of victimization experiences—in combination with particular personal characteristics—are likely to contribute to the emergence and stabilization of victim sensitivity during childhood and adolescence. We will now discuss the processes that may be useful to explain how victim sensitivity stabilizes “ontogenetically” over time. First, we will discuss self-stabilization and environment stabilization as two important sources of stabilization according to life-span personality psychology (e.g., Lang et al., 2006). Next, we will discuss person-environment transaction processes and their relevance for the stabilization of victim sensitivity.

Self- and Environment Stabilization

Personality theories focus mainly on three different sources for stabilization: (1) an increasing self-stabilization, (2) an increasing

stabilization due to a more stable environment, and (3) a stabilizing contribution of the genome.¹ *Self-stabilization* refers to the stabilization of self-relevant knowledge, one's self-concept, over time (Kagan, 1980). Victim-sensitive individuals might develop a "victim self-concept," which includes self-related views such as "I am easy prey" or "I am a person who attracts the attention of bullies;" and the stabilization of such a self-concept may, in turn, increase (and stabilize) one's sensitivity to victimization. *Environment stabilization*, on the other hand, means that social environments become increasingly stable across the life span, which, in turn, also has a stabilizing effect on one's personality. Self- and environment stabilization processes are not independent of each other; nevertheless, personality → environment effects can be empirically differentiated from environment → personality effects via longitudinal studies (e.g., Asendorpf and Wilpers, 1998). In general, "core" personality traits (such as the "Big Five") have a stronger effect on the environment than *vice versa*, whereas "surface" personality traits (such as self-worth or loneliness; cf. Asendorpf and van Aken, 2003) are more likely to be shaped by environments. For instance, Asendorpf and van Aken (2003) found that extraversion (a "core" personality trait) predicted changes in social relations (e.g., increased support from peers), but not *vice versa*; changes in global self-worth or loneliness (two "surface" traits), however, were predicted by social relations, but not *vice versa*. Victim sensitivity can be conceptualized as having both "core" and "surface" characteristics. Thus, personality → environment effects of victim sensitivity are likely to be as strong as environment → personality effects on victim sensitivity.

Person-Environment Transactions

Dynamic-interactionistic approaches explain the stabilization of personality by an increasing "fit" between persons and the environments they find themselves in (Caspi, 1998). According to Caspi and Roberts (1999, 2001), this increase in fit is a function of four potential "transactions": (1) reactive transactions, (2) evocative transactions, (3) selective transactions, and (4) manipulative transactions. We will now discuss these transactions—and their relevance for the stabilization of victim sensitivity in particular—in more detail.

Reactive transaction refers to the fact that different individuals react differently to the same objective situation. As the SIP model (Crick and Dodge, 1994) as well as social-cognitive personality theories (e.g., Bandura, 1999; Cervone and Shoda, 1999; Shoda and Mischel, 2000; Fleenor, 2001) suggest, cognitive schemas and behavioral scripts shape how a person perceives, attributes, and reacts to social situations (see also Social Information Processing Patterns). In turn, consistently applying these perceptions, attributions, and reactions also reinforces—and, thus, stabilizes—the schema. Consistently attributing "mean intentions" to others reinforces a person's victim sensitivity. In other words, schema-

congruent information processes imply a *confirmation bias* that stabilizes the schema (Nickerson, 1998).

Evocative transactions refer to the processes by which people elicit reactions from others that are consistent with their *a priori* expectations. This stabilizes these expectations. Stated differently, people's behavioral patterns create a consistency in other people's reactions toward them; a "self-fulfilling prophecy." If victim-sensitive individuals perceive and interpret situations against the background of their negative assumptions (others' untrustworthiness) and react accordingly (e.g., uncooperatively), others may react to this behavior in a similar way (e.g., uncooperatively), which, in turn, confirms the negative beliefs that victim-sensitive individuals have about other people's untrustworthiness (see also How Does Victim Sensitivity Perpetuate Itself Across Social Situations?).

Selective transactions refer to the active selection of environments. Based on their individual preferences, attitudes, and competences, people actively seek out environments that "fit" their personality. For instance, adolescents prefer peers that are similar to themselves; this preference, in turn, stabilizes behavioral dispositions due to social reinforcement (Newcomb et al., 1993; Harris, 1995). Victim-sensitive individuals may thus select friends, partners, colleagues, etc., who are similarly suspicious about others' intentions as they are. This "confirms" the correctness of their (negative) assumptions and stabilizes them accordingly.

Finally, *manipulative transactions* involve active behaviors that establish environments which are consistent with one's own individual experiences and behaviors. Victim-sensitive individuals might influence their environment (their friends, colleagues, relatives, and children) to become just as suspicious as they are. By manipulating their environment in this way, victim-sensitive individuals therefore "create" social relationships that are in line with their own expectations, which, in turn, stabilizes their victim sensitivity even further.

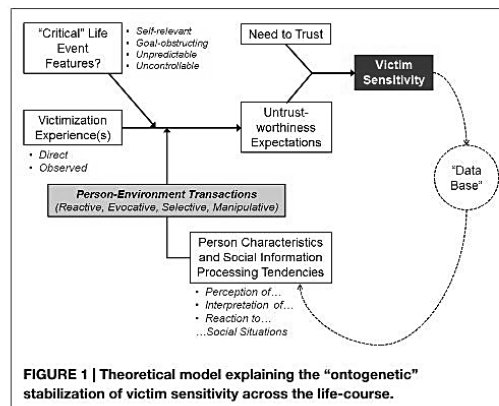
According to Caspi (1998; see also Caspi et al., 1989), these four transactions can influence person-environment fit both in a direct and in a more indirect way. The indirect way describes a cumulative effect over a longer period of time. The latter one is also referred to as the principle of "cumulative continuity." It assumes that the possibility to establish a person-environment fit increases as one gets older. This implies that the stability of personality traits increases as a function of our capacity to select and control the environments we live in.

Conclusion

The arguments we discussed and the theories and studies we reviewed so far can be used to describe a model which describes the "ontogenetic" stabilization of victim sensitivity (see **Figure 1**). We started this discussion by referring to the "need to trust" as a core social motive that is likely to be innate and that requires attention and satisfaction already at very early age. As any other motive, the "need to trust" may differ between individuals, but a certain level of this need can most likely be found in all humans. Nevertheless, people with a strong need to trust may be particularly likely to develop a high sensitivity to victimization later in life.

Given its strong motivational component, people become sensitive to instances in which the need to trust is thwarted. We

¹Genome-related stabilization effects will not be further discussed in this text since this would go beyond the scope of this article. It should be noted, however, that twin studies have demonstrated that a considerable amount of the variance in social trust is accounted for by an additive genetic component (e.g., Oskarsson et al., 2012).



referred to these instances as victimization experiences. Victimization can be directly experienced or observed from a third-party perspective. More importantly, victimization experiences can constitute “critical” life events if they are (a) self-relevant, (b) goal-obstructing, (c) unpredictable, and (d) uncontrollable. Depending on characteristics of the person (i.e., vulnerabilities, sensitivities, opportunities for social support, etc.) and—especially—on habitual tendencies to perceive, interpret, and react to social situations (which, in turn, are rooted in social knowledge structures, the “data base”), victimization experiences shape future expectations regarding other people’s trustworthiness. These expectations become increasingly stable via self- and environmental stabilization, and, especially, via person-environment “transactions.” Stabilized and generalized untrustworthiness expectations in conjunction with a strong need to trust make a person dispositionally sensitive to victimization—the “dependent variable” in our model (see Figure 1). Victim sensitivity, in turn, feeds back into the “data base,” that is, victim sensitivity shapes how people perceive, interpret, and react to similar situations containing similar cues (in the SeMI model, this is referred to as the “suspicious mindset,” cf. Gollwitzer and Rothmund, 2009; Gollwitzer et al., 2013).

We have also argued that late childhood and early adolescence may be a particularly critical age for the formation and stabilization of victim sensitivity, because both (a) the need to trust others—especially peers, friends, and partners—and (b) the likelihood of being confronted with instances of victimization are particularly high during this phase. To date, there are no empirical studies in which the stabilization of victim sensitivity in adolescence is systematically investigated. The only study that may be informative in this regard has been published by Bondü and Krahe (2014). These authors have shown that victim sensitivity can be reliably assessed and distinguished from other constructs by the age of 9. In this study, the predictive effect of victim sensitivity over and above other factors (e.g., rejection sensitivity) on aggressive behavior was examined in a large sample with ages ranging between 9 and 19 years. Victim sensitivity turned out to be the strongest predictor of various forms and functions of aggressive behavior. Interestingly, victim sensitivity was the only

variable that increased as children grew older. This is in line with Flanagan and Stout’s (2010) finding that social trust declines during adolescence.

How Does Victim Sensitivity Perpetuate Itself Across Social Situations?

After having discussed the “ontogenetic” development and stabilization of victim sensitivity across the life course, we will now turn to our second question: how do specific instances of victimization contribute to a stabilization of victim sensitivity across situations? This question addresses the “actual-genetic” stabilization of victim sensitivity. We will argue that this stabilization can be reasonably well explained by associative learning and avoidance learning processes. As outlined above, victim-sensitive individuals are not only characterized by a high need to trust but also by a stabilized and generalized negative expectation concerning others’ trustworthiness—probably due to experiences of victimization. These experiences are relevant for associative learning processes. According to the SeMI model, victim-sensitive individuals are particularly sensitive toward “cues” in their social environments that are associated with untrustworthiness (Gollwitzer et al., 2013). Being confronted with these cues evokes a “suspicious mindset” and makes preventive reactions, such as pre-emptive selfishness, more likely. Associative learning can explain why and how a sensitivity to “untrustworthiness cues” generalizes and, thus, stabilizes across situations.

Associative Learning, Untrustworthiness Cues, and Trusting Behavior

Associative learning refers to the process by which associations between stimuli (including behavior) are learned. Associative learning encompasses classical, operant, and evaluative conditioning. In *classical conditioning* (or Pavlovian conditioning), a neutral stimulus is paired with an unconditioned stimulus (i.e., a reflex-evoking stimulus) until the neutral stimulus acquires the unconditioned stimulus’ capability to evoke the reflex; thus, a *stimulus-outcome association* is learned. In *operant conditioning*, a behavior is paired with a pleasant (reinforcement) or unpleasant (punishment) stimulus/action until the frequency of the behavior is changed; thus, a *behavior-outcome association* is learned. In *evaluative conditioning*, a neutral stimulus is paired with an affective stimulus until the neutral stimulus acquires the valence of the affective stimulus; thus, a *stimulus-stimulus association* is learned. In the following, we discuss three processes that are relevant for the generalization (and, thus, the stabilization) of victim sensitivity across situations.

Conditioned Stimuli

A first relevant assumption is that previously unconditioned stimuli that are associated with victimization become “conditioned.” After this association is learned, such stimuli function as “untrustworthiness cues” that activate a suspicious mindset among victim-sensitive individuals (Gollwitzer and Rothmund, 2009). Importantly, whereas some untrustworthiness cues are rather idiosyncratic (e.g., the first name of a perpetrator, the location at which a victimization took place), others are more

universal: expressions of anger (e.g., angry facial expressions, aggression-related behavioral patterns, hostile verbal remarks) are arguably less idiosyncratic untrustworthiness cues as they are associated with perceived aggression and victimization in general. In one of our recent studies (Gollwitzer et al., 2012), participants rated the trustworthiness of targets whose emotional facial expression varied from happy to angry. Results showed that victim-sensitive persons were more distrustful of angry (and neutral) but not of happy faces. We suggest that associative learning can explain how certain stimuli, such as angry facial expressions or even behavioral cues (such as a colleague asking for a favor), become “untrustworthiness cues” for victim-sensitive individuals. However, it is important to keep in mind that victim sensitivity is assumed to entail a heightened responsiveness to *any* information that indicates untrustworthiness, irrespective of how that information was acquired. Thus, instances of *observed* non-cooperation (Gollwitzer et al., 2009) or the activation of culturally shared stereotypes (e.g., untrustworthy car salesman) might suffice to trigger a suspicious mindset in relevant contexts.

Exploitation as Punishment

Two other processes that are relevant for explaining the stabilization of victim sensitivity are operant conditioning (via punishment) and avoidance learning. Punishment occurs when cooperative behavior (e.g., telling a friend a secret, agreeing to switch shifts with a colleague) is followed by victimization (e.g., being betrayed, learning that one’s helpfulness was exploited). In line with operant conditioning, one might say that one’s willingness to trust others was “punished” and therefore becomes less likely to occur. Furthermore, behavior that reduces the likelihood of victimization becomes more frequent (via avoidance learning; see Avoidance Learning and the Stabilization of Victim Sensitivity).

Implicit Cognition

Finally, direct (and observed) experiences of victimization may not only influence people’s *explicit* evaluations of others’ trustworthiness (via propositional processes), but are also likely to affect people’s *implicit* evaluations of others (via associative processes). More precisely, victim-sensitive individuals might implicitly associate other people with untrustworthiness. According to the affective-propositional evaluation (APE) model (Gawronski and Bodenhausen, 2006), such negative implicit evaluations of others are particularly likely to drive explicit evaluations and behaviors in situations in which no inconsistent propositional information is considered (e.g., failing to realize that a different colleague requesting a favor has demonstrated her trustworthiness in the past), or in situations in which self-regulation resources are low (e.g., after having suppressed one’s bad mood at work for a while, see Hofmann et al., 2007). By default, victim-sensitive individuals’ evaluation of a new interaction partner can thus be understood as an affirmation of more general negative implicit expectations of others (Gilbert, 1991) unless contradictory trustworthiness cues are present. Taking victim-sensitive individuals’ implicit evaluations of others’ trustworthiness into account might be particularly important when it comes to changing their expectations of others’ (un)trustworthiness. Whereas the APE model describes a number of ways in which implicit associations can

be influenced, research on evaluative conditioning suggests that affective reactions are highly resistant to extinction (De Houwer et al., 2001) and, thus, more difficult to alter than individuals’ explicit beliefs.

To sum up, we assume that associative learning plays a key role in the explanation of (a) victim-sensitive individuals’ heightened responsiveness toward certain untrustworthiness cues, (b) victim-sensitive individuals’ reduced trusting behavior, and (c) their implicit evaluations of other people’s trustworthiness (and accompanied affective reactions). Importantly, whereas probably all people have been victimized in their lives to some extent, we assume that victim-sensitive individuals not only have *more* of these aversive experiences, but also that they experience them *more intensely* due to their strong need to trust. More concretely, a high need to trust is likely associated with more attention and stronger negative emotions elicited by experiences of victimization (cf., Gollwitzer and Rothmund, 2011), thereby rendering these experiences psychologically more meaningful. Thus, a high need to trust exacerbates associative learning in victimization experiences because it increases the intensity of the unconditioned stimulus (Passey, 1948; Pearce and Hall, 1980)—especially if this stimulus occurs unpredictably and uncontrollably (see our discussion of critical life events in Section “When and How Does Victim Sensitivity Begin to Emerge and Stabilize?”; cf. Filipp and Aymanns, 2010).

Avoidance Learning and the Stabilization of Victim Sensitivity

Avoidance learning is a basic learning principle that refers to a process of behavior modification by which an animal or human reduces exposure to an aversive stimulus through an avoidance response. In early studies on avoidance learning (e.g., Mowrer and Miller, 1942), animals learned that an aversive stimulus (e.g., electric shock) was preceded by a warning signal (e.g., a tone). The aversive stimulus could, however, be postponed with a certain response (e.g., change of location). Avoidant behavior demonstrated in these studies could not be explained by a purely behavioristic stimulus-response pattern because the avoidant response occurred without direct reinforcement (it was in fact driven by the *non-occurrence* of an aversive stimulus). Consequently, avoidance learning was explained as a combination of two factors: classical and operant conditioning (Mowrer, 1947). First, due to its pairing with the unconditioned stimulus (e.g., the electric shock), the former neutral stimulus (e.g., the tone) becomes a conditioned stimulus (i.e., classical conditioning). Importantly, the conditioned stimulus is assumed to elicit fear when it occurs. Second, when the organism then happens to perform the avoidance response in the presence of the conditioned stimulus and thus prevents the occurrence of the unconditioned stimulus, the fear elicited by the conditioned stimulus is reduced. This, in turn, reinforces the avoidance response (i.e., operant conditioning). Thus, avoidance learning is assumed to be driven and maintained by feelings of fear. However, cognitive aspects such as expectations are likely to be involved in human avoidance learning as well (see Rescorla and Wagner, 1972; Lovibond, 2006; Declercq et al., 2008).

In clinical psychology, avoidance learning is considered a crucial factor for the maintenance of anxiety disorders; it refers to the

process by which individuals reduce their exposure to a phobic stimulus through avoidant behavior (Bouton et al., 2001; Mineka and Zinbarg, 2006). Trying to avoid an aversive stimulus deprives the individual of positive learning experiences in which the conditioned stimulus might *not* be followed by the aversive stimulus. Thus, avoidant behavior is strongly self-reinforcing.

Associative learning and avoidance learning are likely to play a central role for the stabilization of victim sensitivity across situations. As described earlier, operant conditioning can explain how behavior related to victimization—such as cooperation and trusting others (e.g., doing a colleague a favor)—becomes less frequent when followed by victimization (i.e., “punishment”). Consistent with this notion, highly victim-sensitive individuals have been found to withdraw their cooperation in a trust game after experiencing victimization in an entirely different context, such as a virtual world (e.g., Rothmund et al., 2011). Furthermore, classical conditioning can explain how stimuli that indicate victimization (such as angry facial expressions) are learned and become untrustworthiness cues. Drawing on avoidance learning, we assume that due to their connection with victimization, untrustworthiness cues may elicit fear as a conditioned response.

Uncooperative Behavior as a Defense Reaction

Confrontations with “untrustworthiness cues” signal a threat to a particular need, the need to trust (see The Need to Trust). As described in the previous section, one way to cope with this threat would be to avoid the threat. Victim-sensitive individuals should tend to avoid situations in which they might fall prey to the egoistic intentions of others and instead prefer situations in which exploitation is unlikely. For instance, victim-sensitive individuals can be expected to prefer individual (i.e., independent) over cooperative (i.e., interdependent) work situations and situations in which free-riding is rigorously punished over situations in which free-riding is unlikely to be detected. Of course, these situational preferences also have an impact on the quantity and quality of their friendships and, especially, the extent to which a close relationship remains stable and satisfactory for both partners (cf. Gerlach et al., 2012).

However, research shows that victim sensitivity is not exclusively related to avoidance-oriented behaviors; victim-sensitive individuals show typical “approach-oriented” behaviors as well: whenever untrustworthiness cues are present, victim-sensitive individuals tend to behave uncooperatively in social dilemma situations (Fetchenhauer and Huang, 2004; Gollwitzer et al., 2009; Rothmund et al., 2011), even at the cost of their own benefit. Notably, victim-sensitive persons are not more egoistic *per se*; rather, they tend to be more hostile when faced with injustice. For instance, when given the opportunity to punish a defector or to compensate a victim in a third-party intervention game, victim-sensitive individuals prefer punishing the offender over compensating the victim, even if punishment is costly for them (Lotz et al., 2011).

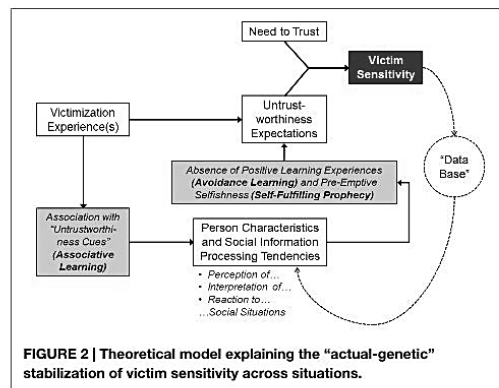
The General Process Model of Threat and Defense (Jonas et al., 2014) provides a helpful and informative theoretical framework for explaining why and when avoidance-oriented behaviors turn into approach-oriented ones. This model posits that being

confronted with threat (of any kind) first activates the behavioral inhibition system (including anxious arousal and attentional vigilance toward fear-eliciting cues) and facilitates avoidance-oriented defense reactions. Since a state of avoidance is perceived as inherently unpleasant, avoidance-oriented behaviors eventually turn into approach-oriented behaviors. These approach-oriented behaviors can be more or less concrete (e.g., seeking stimulation or social affiliation; attacking the source of the threat) vs. abstract (e.g., increased adherence to personal and moral values; endorsing punitive systems).

Regarding victim sensitivity, it is reasonable to assume that, when confronted with untrustworthiness cues, victim-sensitive individuals initially show avoidance-oriented reactions such as an increased attentional vigilance toward untrustworthiness. Prior research has shown that, even in the absence of an untrustworthiness prime, victim-sensitive persons show a greater attentional vigilance toward justice- and injustice-related semantic concepts (Baumert et al., 2012), and more recent research shows that, in the presence of an untrustworthiness prime (i.e., a victimization experience), victim-sensitive individuals are more likely to associate ambiguous social situations with injustice (Maltese et al., 2014). Especially the latter finding is in line with the notion that victim-sensitive individuals show avoidance-oriented reactions after being confronted with untrustworthiness cues. Avoidance, however, may eventually transform into approach, such as hostility, uncooperativeness, and recklessness. In other words, avoidance- and approach-related behaviors can be positively related to each other.

According to the General Process Model of Threat and Defense (Jonas et al., 2014), hostile, uncooperative, aggressive, and cynical behavioral reactions toward experienced or anticipated victimization can be regarded approach-related reactions that aim to defend or satisfy a certain need: for victim-sensitive persons, it is the need to trust. Such distal defense reactions tend to reinforce themselves, as we have discussed before. Uncooperativeness and selfishness as “pre-emptive” reactions to anticipated victimization therefore stabilize over time. Notably, such selfishness may backfire: Other people may take the “pre-emptive” selfishness displayed by victim-sensitive individuals as a cue for the fact that these individuals cannot be trusted, and behave uncooperatively in return. This, in turn, confirms what victim-sensitive individuals had expected. The pre-emptive selfishness that victim-sensitive persons are likely to display in social interdependence situations and the fear of exploitation that triggered this hostility both create a self-reinforcing system; a self-fulfilling prophecy.

Taken together, experiences of victimization increase avoidance-related (e.g., attentional vigilance toward untrustworthiness cues) and approach-related behaviors (e.g., pre-emptive selfishness). Whereas direct experiences of victimization are the starting ground for these processes to unfold, the nature of the behavioral reactions toward them contributes to the stabilization of victim sensitivity across situations. Because avoiding social exchange and social dilemma situations deprives individuals of contrary learning opportunities (e.g., changing shifts with a colleague who does you a favor in return) and because pre-emptive selfishness as an approach-oriented response will generate non-cooperation in response (e.g., loafing in a joint task), these behaviors eventually



reinforce negative expectations concerning others' trustworthiness.

Conclusion

In Section "How Does Victim Sensitivity Perpetuate Itself Across Social Situations?" of this article, we focused on the role of general learning mechanisms for the formation and stabilization of victim-sensitive individuals' biased responses to untrustworthiness cues as well as their non-cooperative behavior. The model that results from these arguments is displayed in **Figure 2**. Associative learning can explain how victimization experiences result in (a) a generalization of untrustworthiness cues (via associative learning), (b) decreasing levels of trusting behavior (via operant conditioning due to punishment), and (c) the stabilization of negative implicit trustworthiness expectations. In addition, avoidance learning and self-fulfilling prophecies create a self-reinforcing cycle which stabilizes generalized untrustworthiness expectations as well as low trusting behavior both via avoidant and pre-emptively selfish or hostile behavior.

Notably, some of the processes we discussed with regard to the "actual-genetic" stabilization of victim sensitivity in the present Section can be meaningfully related to the four person-environment transactions that we discussed with regard to the "ontogenetic" stabilization of victim sensitivity in Section "When and How Does Victim Sensitivity Begin to Emerge and Stabilize?". For instance, by selectively seeking social environments that reinforce their untrustworthiness expectations ("selective transactions" according to Caspi and Roberts, 1999, 2001), victim-sensitive individuals never challenge these expectations—which resembles an instance of avoidance learning. And self-fulfilling prophecies, as we defined them here, resembles what Caspi and Roberts (1999, 2001) referred to as evocative transactions: victim-sensitive individuals behave in ways that indirectly validate their beliefs that others are untrustworthy.

Summary and Outlook

In this article, we developed a theoretical framework (or, rather, two theoretical frameworks) that aim at explaining how and why

victim sensitivity emerges and stabilizes. Notably, victim sensitivity is not only a risk factor for antisocial behaviors in various kinds of social encounters (e.g., Gerlach et al., 2012; Gollwitzer et al., 2013), but also for a number of behavioral problems during adolescence, such as aggressiveness (Bondü and Krahe, 2014), anxious and angry rejection sensitivity and conduct problems (Bondü and Elsner, 2015) as well as symptoms related to attention deficit/hyperactivity disorders (Schäfer and Kraneburg, 2012; Bondü and Esser, 2015).

In Section "When and How Does Victim Sensitivity Begin to Emerge and Stabilize?", we borrowed concepts from developmental psychology, research on coping with critical life events, and life-span personality psychology to derive a model that explains the "ontogenetic" stabilization of victim sensitivity during the life span. Victimization experiences and social information processes that describe how a person copes with these experiences are assumed to play a major role for the stabilization of victim sensitivity—more precisely, for the tendency to expect other people to be untrustworthy. From this model, which is depicted in **Figure 1**, testable hypotheses can be derived.

First, we assume that victimization experiences during late childhood and early adolescence increase a person's victim sensitivity especially when these experiences are (a) self-relevant, (b) imply an obstruction of relevant personal goals, (c) are unpredictable, and (d) uncontrollable—in other words, when these experiences fulfill the criteria of "critical" life events. Examples for such events could be experiences of being bullied, cyber-mobbed, or socially excluded by significant peers. *Second*, we hypothesize that victim-sensitive individuals actively contribute to a stabilization of this trait by reacting consistently to potential victimization situations ("reactive transactions"). More precisely, we assume that victim sensitivity provides people with a set of cognitive schemas (e.g., attributional styles regarding other people's untrustworthiness) and behavioral scripts (e.g., behaving uncooperatively) that bias their information processing in specific situations—situations that are marked by social interdependence and uncertainty regarding other people's intentions and behaviors (i.e., social dilemma situations). A *third* hypothesis that can be deduced from our framework is that victim-sensitive individuals actively select environments (e.g., peers, friends, partners, etc.) that fit their own attitudes and worldviews ("selective transactions"). Such a fit between personality and the social environment reinforces victim sensitivity and stabilizes it over time. All of these hypotheses can be tested in carefully designed cohort—or, even more preferably, longitudinal—studies in which the variables that are assumed to predict the formation and stabilization of victim sensitivity are either measured or experimentally manipulated. We believe that late childhood to mid-adolescence is a critical phase for the formation and stabilization of victim sensitivity. Thus, cohort studies should at least compare age groups ranging between 9 and 15 years (Bondü and Elsner, 2015).

In Section "How Does Victim Sensitivity Perpetuate Itself Across Social Situations?", we borrowed concepts from research on associative learning and social cognition to explain why and how victim sensitivity perpetuates across social situations. Associative learning can explain how neutral stimuli can become "untrustworthiness cues" for victim-sensitive persons, and

avoidance learning can explain why social expectations regarding the untrustworthiness of other people reinforce themselves. In addition, approach-oriented behavior such as “pre-emptive” hostility and selfishness, which may be regarded a distal defense to threats to the “need to trust,” create a vicious cycle or a self-fulfilling prophecy: the degree of pre-emptive hostility displayed by victim-sensitive individuals in the face of untrustworthiness cues may lead their interaction partners to infer that cooperation is futile, which, in turn, reinforces the expectations held by victim-sensitive individuals. Again, a number of predictions follow from the framework we developed in Section “How Does Victim Sensitivity Perpetuate Itself Across Social Situations?” (see also Figure 2).

First, untrustworthiness cues are “stronger” unconditioned stimuli for people high (than for people low) in victim sensitivity. This hypothesis could be tested in an evaluative conditioning study featuring untrustworthiness and trustworthiness cues as well as neutral stimuli. In such a design, participants’ victim sensitivity should predict the change of liking toward neutral stimuli that were paired with untrustworthiness cues (but not with trustworthiness-related or neutral cues). Second, victim-sensitive individuals should harbor negative implicit evaluations of others’ trustworthiness due to associative learning. Using a single-target Implicit Association Test, it could be investigated whether victim-sensitive individuals associate “others” more readily with untrustworthiness relative to trustworthiness. More importantly, the influence of participants’ implicit untrustworthiness expectations on behavior (i.e., cooperation) should be examined *vis-à-vis* their explicit untrustworthiness expectations (i.e., victim sensitivity) in different situations (e.g., under ego depletion; in the presence vs. absence of trustworthiness information). Third, drawing on avoidance learning as well as the General Process Model of Threat and Defense (Jonas et al., 2014), we assume

that in potentially exploitative situations, victim-sensitive individuals will first show avoidance-related reactions (e.g., a higher attentional vigilance to untrustworthiness cues), which eventually transform into approach-related reactions (e.g., “pre-emptive” selfishness). Fourth, victim-sensitive individuals contribute to the confirmation of their expectations and create cycles of non-cooperation through their own behavior (self-fulfilling prophecy or “evocative transactions”). This hypothesis could be tested in a repeated public goods game in which players have to decide how much to contribute to a common good (and do so iteratively for a number of rounds). In such a paradigm, we would expect, for instance, that one highly victim-sensitive individual eventually reduces the other players’ willingness to contribute, which confirms this individual’s *a priori* expectation: that other people are untrustworthy and harbor mean intentions.

To sum up, research on victim sensitivity, and on justice sensitivity in general, has gained momentum in various areas during recent years, and most of what we know about this trait so far is that it is a double-edged sword: in a way, it represents a true concern for justice and trust, but this concern leads to maladaptive behavioral decisions when social situations become uncertain. Thus, understanding how such a trait that is correlated with so many problematic behavioral tendencies emerges and stabilizes is therefore of vital importance, not only from a theoretical, but also an applied psychological perspective.

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9. Manuskript #2

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Neuroticism and interpersonal perception: Evidence for positive, but not negative, biases

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Abstract

Objective: Personality dispositions predict how individuals perceive, interpret, and react to social interactions with others. A still unresolved question is (a) whether these personality-congruent interpersonal perceptions reflect perception biases, which occur when perceivers' dispositions systematically predict deviations between perceivers' and other people's perceptions of the same interaction, and/or selection effects, which occur when perceivers' dispositions predict their selection of interaction partners, and (b) whether these effects feed back into perceivers' personality.

Method: Data from 110 psychology freshmen involving repeated assessments of Neuroticism and repeated interpersonal perceptions of social interactions with fellow students were analyzed to address these questions, focusing on Neuroticism.

Results: There is evidence for a Neuroticism-related positivity bias in interpersonal perceptions (i.e., perceivers high in Neuroticism tended to make more positive judgments of others' sociability and warmth), but little evidence for personality-congruent selection effects (i.e., Neuroticism-related preferences for interaction partners). The positivity bias did not predict intrapersonal changes in Neuroticism over time, but the selection of specific interaction partners did.

Conclusions: These findings help to shed light on the interpersonal perception dynamics of Neuroticism in a real-life context and add to our understanding of the psychological mechanisms underlying the interplay of personality and interpersonal perceptions.

KEYWORDS

interpersonal perception, Neuroticism, perception bias, personality-congruent information processing, selection effect

1 | INTRODUCTION

Perceptions of the social world around us do not only depend on objective features of this world, but also on the lens through which we view it. Whenever we make judgments about the extent to which an interaction partner is trustworthy, cooperative, reliable, or knowledgeable, we take our interaction partner's behavior and our prior knowledge into

account. At the same time, these judgments are heavily influenced by our own personality.

Showing that such personality-congruent social perceptions exist is one thing; explaining them is another thing, and arguably the more difficult one. The personality and social relationships (PERSOC) framework (Back et al., 2011) aims at conceptualizing the interplay of PERSOC in general. Following this model, associations between individual dispositions (i.e.,

personality traits) and general interpersonal perception tendencies (“perceiver effects;” see Srivastava, Guglielmo, & Beer, 2010; Wood, Harms, & Vazire, 2010) can be the outcome of two different psychological processes. First, personality-congruent interpersonal perceptions might reflect a bias on the side of the perceiver (“perception bias”): A perceiver’s individual dispositions shape how other people are perceived in social interactions, irrespective of how these interaction partners view themselves or how they are viewed by third parties. Second, such associations might reflect personality-congruent selection effects, in a way that individual dispositions predict with whom people are interacting in the first place. In this case, self- and third-party ratings of interaction partners would systematically vary as a function of perceivers’ dispositions.

Notably, the PERSOC model also assumes that such perceiver effects feed back into the development of personality. Here, stabilizing effects (i.e., personality dispositions become less likely to change over time) as well as intra-individual changes (i.e., personality dispositions become more pronounced over time) are possible.

Here, the present study will contribute to a better understanding of the complex interplay between personality and social perceptions, focusing on one particular personality trait, Neuroticism. Neuroticism, as one of the Big Five personality traits, is particularly suitable for investigating the influence of personality on interpersonal perceptions given that recent research has demonstrated that Neuroticism is associated with both cognitive biases (Finn, Mitte, & Neyer, 2013) as well as selection tendencies (e.g., Marshall, Simpson, & Rholes, 2015). We decided to focus on one personality trait to be able to better understand the psychological processes underlying personality-consistent perceiver effects rather than studying these processes for several personality traits in general. Neuroticism was chosen because of theoretical and empirical evidence for the existence of Neuroticism-dependent perceiver effects. The generalizability of our results to other personality traits, thus, has to be tested in further studies. Before we develop our hypotheses for Neuroticism, we will explain the two psychological processes underlying personality-consistent interpersonal perceptions in more general terms.

1.1 | Personality-congruent perception biases

One prominent theoretical model arguing that personality-congruent social perceptions reflect a perception bias is Crick and Dodge’s (1994) *Social-Information Processing (SIP) Model of Children’s Adjustment*. This model describes six consecutive steps of information processing (e.g., how an event is perceived and causally interpreted, what the perceiver aims to achieve with his or her reaction, which reactions are feasible, etc.) that shape the extent to which a child shows socially competent and desirable versus socially incompetent and

undesirable (e.g., aggressive) behaviors. An important part of the SIP model is the so-called “database,” which includes prior experiences, social schemas, scripts, and acquired rules, which are stored in memory. According to the model, the database can influence each information processing step. If, for example, a child has been shoved from behind in the schoolyard, the way this event is cognitively interpreted (was it an accident? has someone done this on purpose?) depends on how often the child had been treated similarly before and on how strong is the child’s dispositional tendency to attribute these events in a particular manner. Numerous studies have demonstrated that individual differences in the readiness to attribute others’ behavior to their hostile intentions (“hostile attribution bias”; Crick & Dodge, 1994) predict how a child responds in an ambiguous situation. Vice versa, dispositionally aggressive children (especially boys) tend to interpret others’ behaviors as more hostile than less aggressive children (e.g., Nasby, Hayden, & DePaulo, 1980; Orobio de Castro, Veerman, Kooops, Bosch, & Monshouwer, 2002). This might reflect a bias in the sense that aggressive children see hostile intentions where, in fact, intentions are benign (Crick & Dodge, 1996). This bias was also found in a group of emerging adults (Bailey & Ostrov, 2008). Thus, the SIP explains the influence of personality dispositions on the processing of social information, thus a personality-congruent or -dependent processing of information.

Research on justice sensitivity (JS) provides another illustration of personality-congruent perception biases. JS is a personality trait reflecting how strongly people react to experienced, observed, or caused injustice (Schmitt, Baumert, Gollwitzer, & Maes, 2010; Schmitt, Gollwitzer, Maes, & Arbach, 2005). Notably, JS shapes how individuals process social information. For instance, people high in JS (from the victim’s perspective) tend to distrust other people and to underestimate their cooperativeness compared to people low in JS (see Gollwitzer & Rothmund, 2009; Gollwitzer, Rothmund, & Süßenbach, 2013). Moreover, people high in JS (from a victim’s perspective) were found to be highly motivated to avoid being exploited by others, which is why they are hypersensitive to cues of exploitation even if these cues have no predictive validity (e.g., Gollwitzer, Rothmund, Alt, & Jekel, 2012). Thus, in cases when a partner’s intentions are ambiguous, people high in JS tend to attribute the partner’s behavior to their assumed malicious intentions. These findings have been interpreted in terms of a personality-congruent bias in social perceptions.

To sum up, these examples suggest that perceivers’ personality characteristics predict systematic biases in social perceptions.

1.2 | Personality-congruent selection effects

An alternative explanation for personality-congruent social perceptions is that they reflect a selection effect rather than a

perception bias. People tend to prefer others who indeed are similar to themselves (e.g., Selfhout et al., 2010). Therefore, people select and acquaint themselves with people who have previously been perceived as similar. As a consequence, valid perceptions of the interaction partners are necessary to actively select similar interaction partners. The example on the relation between dispositional aggressiveness and hostile attributions, as described in the previous section, can also be interpreted in light of such a selection effect. According to the SIP model, the finding that aggressive children tend to interpret others' behaviors as hostile does not necessarily provide evidence for a perception or interpretation bias; it is also possible that aggressive children's social perceptions are correct. After all, aggressive children have more aggressive friends (Nangle, Erdley, & Gold, 1996; Poulin & Boivin, 2000) and are more likely to be involved in deviant peer networks (Dishion, Andrews, & Crosby, 1995). Thus, the personality-congruent assumption that other people's intentions are hostile may reflect an accurate person perception that is based on a selection effect rather than on biased person perception. In general, personality-congruent selection effects have been empirically demonstrated for a number of personality traits, such as Agreeableness, Extraversion, and Openness (Selfhout et al., 2010).

1.3 | Neuroticism and social perceptions

Neuroticism, as one of the Big Five personality traits, is conceptualized as emotional instability with anxiety as one of its major aspects. Highly neurotic people are characterized as more anxious and vulnerable, they are more easily intimidated, they get angry more easily, and they react more negatively to threat (social and nonsocial, Denissen & Penke, 2008) and changes (e.g., Costa & McCrae, 1992; Ormel & Wohlfahrt, 1991). Due to the conceptual overlap with anxiety, highly neurotic people may have fears that influence their SIP. Building on this research, we test how perceivers' Neuroticism is related to social perceptions and—if such personality-congruent social perceptions exist—whether they reflect a perception bias, a selection effect, or both. Furthermore, Neuroticism is considered a risk factor for a number of undesirable outcomes, including depression and anxiety (e.g., Roelofs, Huibers, Peeters, & Arntz, 2008), and less satisfying relationships (e.g., Roberts, Kuncel, Shiner, Caspi, & Goldberg, 2007); thus, understanding the social cognitive processes that underlie this trait's stabilization is particularly relevant.

Evidence for a potential personality-congruent perception bias comes, for instance, from research on the relation between Neuroticism and relationship satisfaction. Finn et al. (2013) found that Neuroticism predicts the extent to which one's partner's behavior is perceived as negative or threatening. This biased interpretation of social cues, in turn, is

negatively related to further information processing and leads to decreases in subjective relationship satisfaction. Thus, this interpretation bias works like a “lens” through which neurotic people “negatively” see the world around them. In addition, Neuroticism was strongly related with low self-esteem (Watson, Suls, & Haig, 2002) and a lack of confidence (Caspi, Roberts, & Shiner, 2005). Consequently, highly neurotic individuals may be more sensitive to potential interpersonal threat (e.g., Denissen & Penke, 2008), experience social interactions as more negative (e.g., Hampson, 2012; Watson & Clark, 1984), and view oneself as inferior compared to low neurotic individuals.

But there may also be theoretical reasons to assume a personality-congruent *selection effect*: Building on the notion that similarity in personality dispositions leads to a better understanding of the thoughts, feelings, and behaviors of one's interaction partners, highly neurotic people may prefer to interact with others who share their own self- and world-views. Thus, neurotic individuals might want to interact more with other neurotic individuals because they feel understood by them. Alternatively, neurotic people may prefer to interact with partners who can alleviate their emotional instability to some extent. In line with this notion, prior research has shown that the combination of high actor Neuroticism and low partner Agreeableness leads to higher levels of depressive symptoms among actors (Marshall et al., 2015). Therefore, highly neurotic individuals may actively select more agreeable partners because these partners alleviate their own concerns, fears, and worries.

1.4 | Person–environment transactions: Effects of perceiver effects on personality change

The present study is mainly concerned with elucidating whether subjective perceptions of social interactions with specific targets depend on perceivers' Neuroticism, and, if so, whether these effects reflect a perception bias, a selection effect, or both. A secondary question that we are also able to address with the current dataset is whether personality-congruent perceiver effects have an influence on intraindividual changes in perceivers' Neuroticism over time. The theoretical rationale underlying this particular question comes from classic and more recent research on person–environment transactions. Person–environment transactions are a central part of the transactional dynamic theory of personality development (e.g., Caspi & Roberts, 1999; Neyer & Asendorpf, 2001), which explains personality trait development by a dynamic, continuous, and reciprocal interaction (or transaction) between individuals and their environment (Caspi, 1999). The theory assumes that people play an active role in shaping their environment and that the environment itself influences and stabilizes personality traits.

One specific transaction has been coined reactive transactions. Reactive transactions suggest that personality changes (and stabilizes) not only as a function of the situations that individuals encounter in their lives, but also as a function of how they perceive, interpret, and react to these situations—their SIP styles. Thus, the idea underlying reactive transactions is that personality-congruent social perceptions contribute to a stabilization of personality. Regarding Neuroticism, one could assume that the extent to which social perceptions are consistent across interaction partners stabilizes one's Neuroticism over time. In line with this idea, Finn, Mitte, and Neyer (2015) have found that decreases in interpretation biases predicted decreases in Neuroticism over time. More precisely, time-to-time decreases in the amount of negative interpretations of ambiguous relationship scenarios predicted declines in one's own Neuroticism. Thus, changes in an individual's social perceptions were related to changes in personality traits over time.

Another transaction has been coined proactive transactions (Roberts, Wood, & Caspi, 2008). Generally, proactive transaction refers to individuals selecting or creating environments that are personality-congruent, and that this selectiveness influences personality in turn (e.g., due to social reinforcement; Harris, 1995). Regarding Neuroticism, one could assume that the extent to which neurotic people are attracted to and select others who are similar to themselves in terms of shy/inhibited social behaviors stabilizes one's Neuroticism over time.

1.5 | The present research

Investigating the dynamic interplay between personality and social perceptions require adequate data collected in adequate designs (Geukes et al., 2017). Such data would have to include interpersonal perceptions of (a) a particular perceiver perceiving several targets to assess perceivers' perception biases, (b) multiple perceivers judging the same target to reliably assess targets' characteristics and, thus, potential selection effects, and (c) multiple measurement occasions to assess influences of perceiver effects on personality development (e.g., Nestler, Geukes, Hutteman, & Back, 2017). We used such data to address our research questions. The

data were collected at the University of Münster, Germany, during October 2012 and June/July 2015 (the "CONNECT" study¹). In this study, approximately 120 freshmen in psychology were tested repeatedly across the entire program. We used a part of the data set capturing a time interval of 9 months in their first year (i.e., their first and second semester). Neuroticism was repeatedly assessed via online surveys and interpersonal perceptions were measured via experience-sampling smartphone-based assessments in several waves (see timeline in Figure 1). To ensure that interpersonal perceptions were based on a sufficient amount of information, 10 participants who reported less than five interactions were deleted, resulting in a total sample of 110 participants.

With regard to the considered interpersonal perception dimensions, we followed previous research showing that, in the interpersonal context, the main judgment dimensions are represented in the Interpersonal Circumplex (Wiggins, 1979, 2003), with the main axes of Agency and Communion (Abele & Wojciszke, 2007; Bakan, 1966; Hopwood, 2018). Within this circumplex, four dimensions are typically distinguished: dominance (vs. submissiveness), mapping on the agency axis, warmth (vs. coldness), mapping on the Communion axis, sociability (vs. reclusiveness), rotated 45 degree from the Agency axis toward the warmth pole of the communion axis, and arrogance (vs. modesty), rotated 45 degree from the Agency axis toward the coldness pole of the communion axis. While we aimed at a mainly exploratory analysis of how Neuroticism relates to specific interpersonal judgments, the selected judgment dimensions allow to comprehensively capture the four circumplex dimensions and to capture varying degrees of both, an increased negativity (particularly captured in the warmth vs. coldness dimension, less so in arrogance and sociability) and increased feelings of inferiority (particularly captured in the dominance vs. submissiveness dimensions, less so in arrogance and sociability), both of which are accentuated among neurotic individuals.

Focusing on the key dimensions of interpersonal perception, we tested (a) to what extent interpersonal perceptions in an interaction were influenced by perceivers' Neuroticism at the beginning of the first semester (t_1) and whether these personality-congruent interpersonal perceptions reflect a perception bias or a selection effect, and (b) to what extent

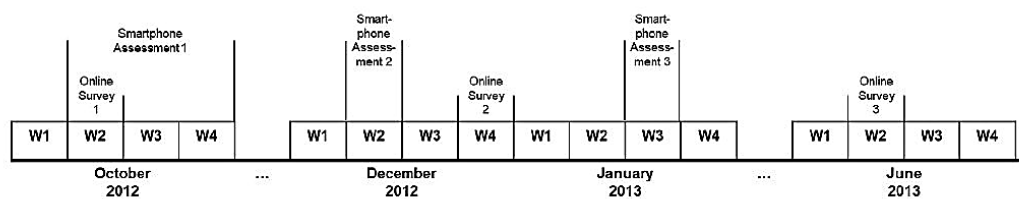


FIGURE 1 Overview of timeline of the used part of the CONNECT study data

Note. Measurement occasions of online surveys and smartphone-based assessment periods are marked. W = week.

perceiver effects (perception biases or selection effects) predicted further changes (vs. stabilization) in perceivers' Neuroticism between t_1 and 2 months later (t_2) as well as between t_2 and 6 months later (t_3).

In this paper, we are primarily interested in whether a participant perceives a target differently based on personality characteristics. The amount of agreement between perceivers' ratings and other-ratings of a particular interaction would be another interesting research question, but this was not the objective of our present analyses.

2 | METHOD

This manuscript bases on data of the CONNECT study, a longitudinal, multimethodological study in which we followed one whole cohort of psychology students throughout their Bachelor degree to target processes underlying the expression, development, and mutual influence of personality and social relationships. Within this method section, we describe (a) which specific measures were used, as not all measures of the CONNECT study were included and provide detailed information on all procedures and measures used and not used in this study, within a codebook available at <https://osf.io/2pmcr/>, (b) all data exclusions, and (c) how we determined the sample size. Moreover, (d) the study did not involve any experimental conditions or manipulations.

2.1 | Participants

The maximum sample size was defined by the actual number of psychology students who started their undergraduate program ("Bachelor of Science") in psychology at the University of Münster, Germany, in October 2012 ($N = 138$). Following an invitation, more than 90% of the possible sample agreed to participate, resulting in a sample of 131 participants (107 female), of whom, subsequently, five further participants dropped out ($N = 126$). For the present study, the final sample involved 110 participants who provided data for the analyses reported here. This sample consisted of 89 female (81%) and 21 male (19%) freshmen. The number of participants providing data at the different measurement occasions varied slightly.² We used a Full Maximum Likelihood estimation approach (FIML; see Enders, 2010) to deal with missing values (maximum of 30% missing data). The mean age of the sample at t_1 was 21.04 years ($SD = 3.74$ years) with an age range between 18 and 42 years. At t_1 , 93% ($N = 102$) reported German as their mother tongue. The majority of participants ($N = 78$, 71%) were singles at t_1 , 28% ($N = 31$) were in a relationship, and one was married. This distribution remained quite stable over time (64% and 70% were singles at t_2 and t_3 , 35% and 30% were in a relationship at t_2 and t_3 ; the number of married participants was the same).

2.2 | Procedures

The present study draws on data from three online surveys assessing, among other variables, participants' demographics (age, gender, relationship status, etc.) and various personality traits (e.g., the Big Five, narcissism, shyness, sensation seeking, etc.). Data were collected in three waves: in October 2012 (t_1), in December 2012 (t_2), and in June 2013 (t_3).

In addition, we used data from three waves of event-based assessments via an experience-sampling smartphone-based survey.³ These data were collected during a total of 5 weeks of participants' first semester. The event-based assessment started with 3 weeks at the very beginning of the semester (October; period 1; parallel to the first online survey) and continued during 1 week in early December 2012 (period 2; before the second online survey) and ended with 1 week in the end January 2013 (period 3; before the third online survey). Within each of these 5 weeks of event-based assessments, participants were asked to report on any social interaction they had with a fellow student from the same cohort, that is, a fellow student who also participated in this study as nearly all of them participated. As participants attended an official CONNECT kick-off meeting in early October 2012, and since then the same classes and because the cohort was relatively small, they usually knew whether interaction partners were participating in the study; otherwise, they were required to directly ask their interaction partners about whether or not they were participating in the study and an interaction report was needed. An interaction was defined as an encounter with one or more people that lasts at least 5 min, and in which one responds to the behavior of the other persons. Participants were asked to report on these interactions directly after it had taken place (either on their smartphone or on a paper-and-pencil sheet) and, ideally, to report on all of them. However, a minimum of 10 interaction reports per week was mandatory to receive the course credit or financial reward for this type of assessment. Within each interaction report, participants were asked to report on the situation type, on the duration of the interaction, on the number of interaction partners, and to identify them based via photographs (smartphone-based version) or via their CONNECT numbers (paper-pencil version). Moreover, they were asked to rate their own and every interaction partner's behaviors. As social interactions could involve more than one interaction partner, participants rated at least one but up to six interaction partners, depending on how many were present in a given social interaction. Based on this comprehensive interaction information, it was possible to match reciprocal information (i.e., information by a participant with information on a participant) for specific interactions. An overview of measurement occasions for all data can be found in Figure 1.

Specifically, in each interaction participants had with others (i.e., the "targets"), participants (i.e., "perceivers") rated

their own dominance, sociability, warmth, and arrogance in that specific interaction (henceforth referred to as “participant rates participant” or PRP scores) as well as their targets’ dominance, sociability, warmth, and arrogance (henceforth referred to as “participant rates target” or PRT scores). Given the reciprocal nature of the data, each participant served as perceiver and target simultaneously. In Social Relations Model (Bak & Kenny, 2010) terms, the average of the PRT scores of a perceiver reflects the perceiver effect of this participant. Also, targets rated themselves in these specific interactions (“target rates target” or TRT scores) and they also rated the participant (“target rates participant” or TRP scores). In accordance with our research questions PRT and TRT scores were included while TRP as well as PRP scores were not included in the present analyses. In addition, targets also interacted with other individuals in other interactions, and they were thus rated by these other individuals. In Social Relations Model terms, these ratings reflect target effects. We used these third-party ratings about a target averaged across all other interactions a target had and we refer to these ratings as “others rate target” or ORT scores. An exemplary configuration of three interactions to explain the analyzed data structure can be found in Figure 2.

Using “Interaction 1” in Figure 2 as an example, participant A served as a perceiver and evaluated target B’s behavior in “Interaction 1.” A’s PRT score about target B’s behavior was predicted by target B’s self-rating of his/her behavior in this interaction, that is, B’s TRT score. This constellation is depicted in Figure 2. Likewise, participant C served as a

perceiver and evaluated target B’s behavior in “Interaction 1.” Here, C’s PRT score about target B’s behavior was similarly predicted by B’s TRT score from this interaction. When participant B served as a perceiver and evaluated target A’s or C’s behavior, the constellation was analogous: for B rating target A’s behavior, B’s PRT score about target A’s behavior was predicted by A’s TRT score from “Interaction 1”; for B rating target C’s behavior, B’s PRT score about target C’s behavior was predicted by C’s TRT score from “Interaction 1.” Based on a total of 10,681 single event-based reports (PRT scores) in the CONNECT study that refer to 4,695 interactions, 2,863 reports were selected for further analyses because these reports referred to 1,031 interactions for which dyadic, reciprocal data were available. Thus, for these interactions, two interaction partners (perceiver and target in a particular interaction) contributed data so that both, PRT and TRT scores that based on the same interaction were available. The median number of recorded interactions per participant was 23 with a range between 1 and 73 interactions. As described above, participants who reported less than five interactions during at least one particular assessment period (1, 2, or 3) were deleted, resulting in the total sample of 110 participants.

2.3 | Measures

2.3.1 | Neuroticism

Neuroticism was assessed three times with the German short version of the Big Five Inventory (BFI-S; Hahn, Gottschling,

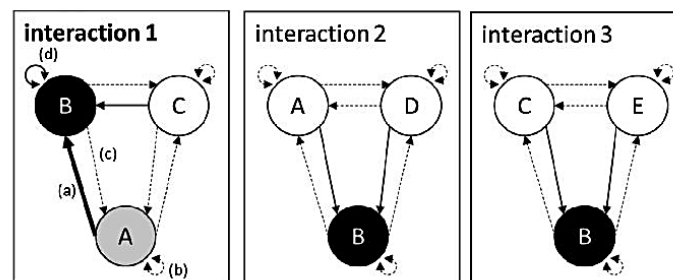


FIGURE 2 Illustration of three social interactions to explain the analyzed data structure

Note. First, the illustration exemplifies the different rating sources: For each reported interaction situation, each participant rated his own (depicted by curved double arrows) as well as their interaction partners’ behaviors (depicted by normal arrows) in a particular interaction. Based on the dyadic, reciprocal data, participants were both, perceiver and target. Thus, collected data contain: (a) perceiver’s ratings of their targets’ behavior (participant rates target and PRT scores), (b) perceiver’s ratings of their own behavior (participant rates participant and PRP scores), (c) target’s ratings of their perceivers (target rates participant and TRP scores) and (d) target’s ratings of their own behavior (target rates target and TRT scores). Second, the illustration exemplifies the data structure used in our analyses. To evaluate a perceiver’s interpersonal perception, we used perceiver’s ratings of their target (PRT scores), the target’s self-ratings (TRT scores) as well as third-party ratings of the target (other rate target and ORT scores). For the exemplary interaction between perceiver A (highlighted in grey) and target B (highlighted in black), we predicted A’s rating of B’s behavior (depicted by a thicker arrow) as level-1 outcome variable by regressing it on B’s self-rating in the particular interaction (depicted by a solid curved double arrow) as well as ratings about B averaged across all interactions B had reported (depicted by solid normal arrows). For example, in interaction 2 and 3. Ratings that were not used in the exemplary interaction between A and B are shown dashed.

& Spinath, 2012; Lang, John, Lüdtke, Schupp, & Wagner, 2011). The Neuroticism scale consisted of three items (e.g., “I see myself as someone who worries a lot.”) which were presented with a 7-point Likert-scale, ranging from 1 (*does not apply at all*) to 7 (*applies perfectly*). The reliability and construct validity of the short version has been investigated in several studies (e.g., Gerlitz & Schupp, 2005; Hahn et al., 2012). In our study, the reliability of the three-item scale was sufficient (ranging between 0.77 and 0.84 for the three measurement occasions): confirmatory factor analyses showed that between 62% and 85% of the variance in observed variables could be explained by an underlying common factor.

2.3.2 | Interpersonal perceptions

Interpersonal perceptions were assessed with the smartphone-based survey mentioned earlier. For each interaction, participants first indicated the type of situation they were in (e.g., during class, at the cafeteria, at home, on Facebook, etc.), reported the number of partners with whom they have interacted, and the duration of these interactions. Next, participants evaluated themselves and each interaction partner on a number of 7-point Likert scale dimensions. Here, we selected⁴ the following four dimensions on the basis of the interpersonal circumplex (Wiggins, 1979, 2003): (1) dominance (1 = *dominant*, 7 = *submissive, reverse-coded*), (2) sociability (1 = *sociable*, 7 = *reclusive, reverse-coded*), (3) warmth (mean of friendliness: 1 = *friendly*, 7 = *unfriendly, reverse-coded*, and cooperativeness: 1 = *exploiting*, 7 = *co-operative*), and (4) arrogance (1 = *arrogant*, 7 = *modest, reverse-coded*).

All responses were centered around the midpoint of a respective response scale so that a value of 0 always represented this midpoint (e.g., neither dominant nor submissive). Based on the Interpersonal Circumplex Model, item scores above 0 indicated a more dominant, more sociable, warmer, or more arrogant evaluation of a target; item scores below 0 indicated more submissive, more reclusive, colder, or more modest evaluation of a target.

2.4 | Analysis models

2.4.1 | Disentangling perceiver effects into perception biases and selection effects

To predict perceiver effects by perceivers' Neuroticism and to elucidate whether they reflect perception biases, selection effects, or both, PRT (perceiver rates target) scores were regressed on TRT (target rates him-/herself) and ORT (others rate target, averaged across third-party interactions) scores, simultaneously. TRT and ORT scores were used to assess a target's characteristics and, thus, an individual's social context, based on two different sources of information:

self-reports and ratings by third-parties. Here, it is important to mention that ORT scores included ratings of the target's behavior evaluated by the respective perceiver in the same (i.e., the PRT score) as well as in other interaction situations. Furthermore, TRT and ORT scores were disaggregated into a within-perceiver component (by centering TRT and ORT scores around the perceiver-specific mean in a given assessment period) and a between-perceiver component (by including perceiver-specific means of TRT and ORT scores into the model; see Curran & Bauer, 2011).

Given the reciprocal nature of the data, each participant served as perceiver and target simultaneously. Thus, participants' ratings were nested in different interaction situations. By applying multilevel modeling (MLM), we controlled for dependencies of interaction-specific ratings (level-1) that are nested within participants (level-2 units). We did not model interaction as a separate random effect in the MLM but rather used participants ratings as an outcome variable (e.g., the “PRT” scores) and as predictor variables (e.g., the “TRT” scores). The respective hierarchical regression (i.e., multilevel) model consisting of two levels (level 1: interactions, and level 2: perceivers) is as follows:

$$\text{Level 1: PRT}_{mi} = \pi_{0i} + \pi_{1i} \times \text{TRT (within)}_{mi} + \pi_{2i} \times \text{ORT (within)}_{mi} + e_{mi}$$

$$\text{Level 2: } \pi_{0i} = \beta_{00} + \beta_{01} \times \text{TRT (between)}_i + \beta_{02} \times \text{ORT (between)}_i + r_{0i}$$

$$\pi_{1i} = \beta_{10} + r_{1i}$$

$$\pi_{2i} = \beta_{20} + r_{2i}$$

with $m = \{1, \dots, k\}$ interactions (i.e., level-1 units) nested in $i = \{1, \dots, n\}$ perceivers (i.e., level-2 units).

This MLM was run for each of the four interpersonal perception dimensions (dominance, sociability, warmth, and arrogance), separately. In order to explain our interpretation of the model parameters in more detail, we will use the dimension “dominance” as an example.

In this model, each PRT score (see Figure 2 for an illustration of data sources) has been decomposed in the following components: β_{00} (the “fixed intercept”) represents perceivers' ratings of a target's dominance when target self-report ratings (TRT scores) and third-party ratings (ORT scores) equal 0 (i.e., the theoretical midpoint of a response scale on any interpersonal perception dimension). Thus, this intercept can be interpreted as the degree to which all perceivers, on average, overestimate ($\beta_{00} > 0$) or underestimate ($\beta_{00} < 0$) their targets' dominance. Importantly, this intercept can vary between perceivers. In other words, there may be interindividual differences in perceivers' perception biases regarding a target's dominance. These interindividual differences are indicated

by the random-effect term r_{0i} in the respective equation. For reasons of simplification, we will refer to this random-effect term as *perception bias*.

The parameters β_{10} and β_{01} describe the extent to which perceivers' ratings of a target's dominance depend on targets' self-reported dominance. The within-perceiver parameter β_{10} can be interpreted as the extent to which perceivers are sensitive to differences in their targets' self-rated dominance. This *sensitivity effect* (i.e., the slope) can vary between perceivers as indicated by the random-effect term r_{1i} . The between-perceiver parameter β_{01} is a contextual effect: a significant effect would indicate that perceivers' average ratings of their targets' dominance are influenced by the average self-ratings of their targets over and above targets' self-ratings. If this parameter was positive (and significant), this would mean that perceivers who rate others' dominance as higher are likely to interact with targets who perceive themselves as more dominant. For the sake of simplicity, we will refer to this parameter as *contextual effect based on targets' self-ratings*.

The parameters β_{20} and β_{02} describe the extent to which perceivers' ratings of a target's dominance depend on how this target's dominance has been rated by others. Again, this within-perceiver parameter can be interpreted as the extent to which perceivers are sensitive to differences in their targets' dominance as rated by third parties (*sensitivity effect based on third-party ratings*), while the between-perceiver parameter β_{02} can be interpreted as a *contextual effect based on third-party ratings*: it describes to what extent the average interpersonal perceptions of targets' dominance depend on these targets' dominance as rated by others. If this parameter was positive (and significant), this would mean that perceivers who rate others' dominance as higher actually acquaint themselves with others who are rated as more dominant by third-parties.

Regarding the separation of perception biases and selection effects, the random-effect term of the fixed intercept represents an individual's *perception bias*; by contrast, *selection effects* are represented by two parameters: contextual effects based on targets' self-ratings (β_{01}) and contextual effects based on ratings by third-parties (β_{02}).

The MLMs were run with the open-source statistical software R (package lme4; Bates, Maechler, Bolker, & Walker, 2015). All parameters were estimated with the Restricted-Maximum Likelihood (REML) method. Furthermore, the MLMs were conducted for each assessment period and behavioral dimension, separately.

2.4.2 | Predicting personality change by perceiver effects

Changes in personality between the three measurement occasions were modeled via Latent-True-Change (LTC)

models (e.g., McArdle, 1988; McArdle & Hamagami, 2001; Steyer, Eid, & Schwenkmezger, 1997; Steyer, Partchev, & Shanahan, 2000). In this model (see Figure 3), interindividual differences in intraindividual changes are modeled on a latent level. We used a neighbor-change model in which changes between two consecutive measurement occasions (i.e., between t_1 and t_2 and between t_2 and t_3 , respectively) were modeled as two latent variables. We assumed that both the quality and the quantity of participants' social interactions differ between t_1 and t_2 (i.e., during the first 2 months of the first semester) and between t_2 and t_3 (i.e., between the end of the first to almost the end of the second semester).

Our LTC model consisted of three latent state variables (state1, state 2, and state3) representing Neuroticism scores at the three measurement occasions, and two latent difference variables (diff2_1 and diff3_2). Later state variables (state 2 and state 3) were completely determined by baseline (state 1) values plus the latent difference variables representing changes between the two measurement occasions regarding perceivers' Neuroticism. These effects were fixed to 1 (see McArdle, 2009), and the residuals of the later state variables were fixed to 0. All other correlations between latent state variables and latent difference variables were freely estimated. To identify latent means, intercepts of the first indicator variables, respectively, were fixed at 0 over time. Factor loadings of the first indicator variables, respectively, were fixed at 1 over time. Furthermore, we established strong measurement invariance over time by restricting factor loadings and intercepts to be equal over time. To account for method effects, we additionally included two indicator-specific factors (their correlation was estimated freely). LTC analyses were conducted with Mplus 7.1 (Muthén & Muthén, 1998–2012), and all parameters were estimated via maximum likelihood robust because standard errors and test statistics can be estimated so that they are robust to non-normality of observations.

2.4.3 | The total models

In our Total Models (see Figure 4 for *perception biases*, Figure 5 for *selection effects based on targets' self-ratings*, and *selection effects based on third-party ratings*), we investigated the influence of Neuroticism on interpersonal perceptions and the influences of these personality-congruent perceiver effects on changes in Neuroticism over time (reactive or proactive transaction). The random parameters of each behavioral dimension in period 1 were regressed on state1 Neuroticism. Furthermore, the latent difference variables (diff2_1 and diff3_2) were regressed on random parameters of later smartphone-based assessment periods (periods 2 and 3, respectively). Autoregressive effects between measurement occasions were estimated freely for each interpersonal perception dimension, respectively. Furthermore, all

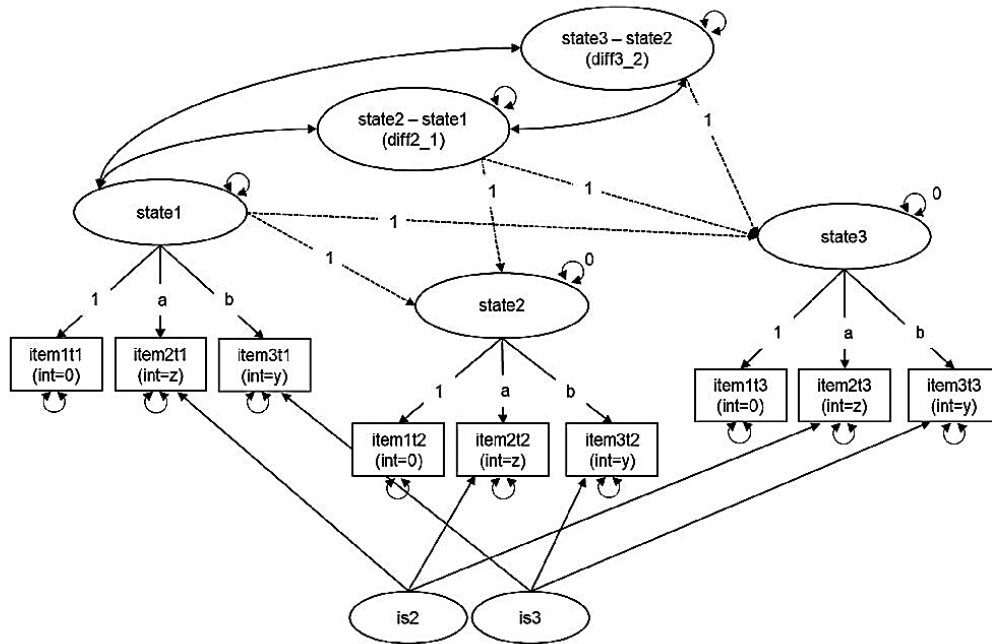


FIGURE 3 Diagram of the unpredicted Latent True Change model to illustrate model specification
 Note. Dashed lines represent fixed effects. int = intercept of manifest indicators. Same letter indicates equality constraints of the respective parameters.

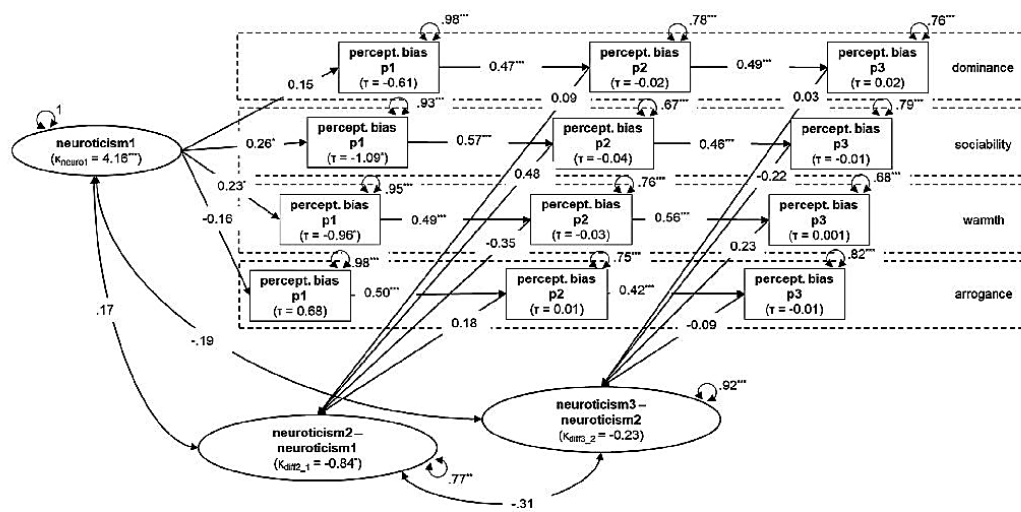


FIGURE 4 Total Model 1 to test influences of perception biases
 Note. Figure shows standardized parameters. κ = latent means. τ = intercept of manifest indicators. percept. bias = perception biases. p1, p2, p3 = period1, period2, or period3, respectively. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

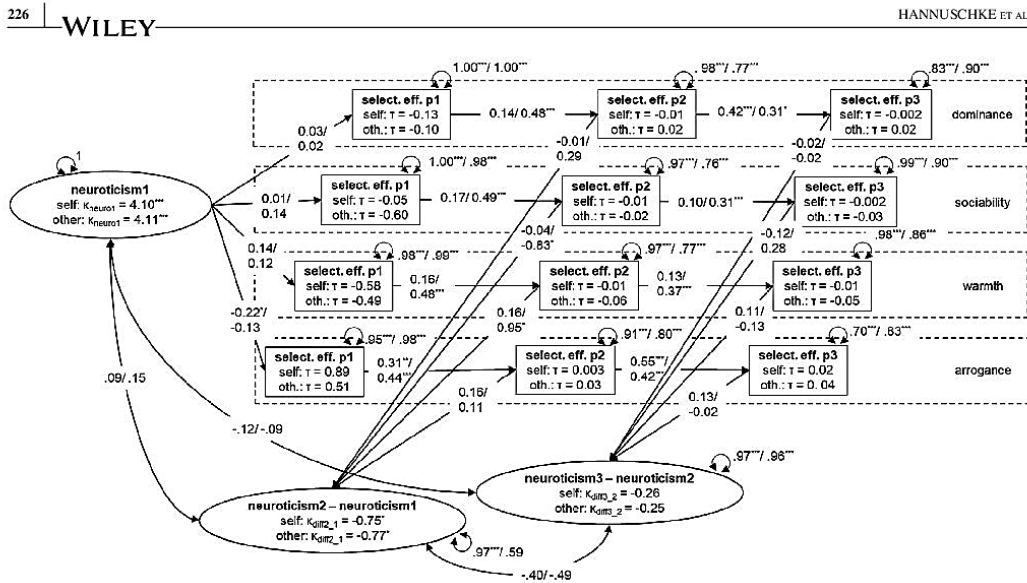


FIGURE 5 Total Model 2 and 3 to test influences of selection effects based on self-reports (coefficients before forward slash) or other-ratings (coefficients behind forward slash)
 Note. Figure shows standardized parameters. κ = latent means. τ = intercept of manifest indicators. select. eff. = selection effect. self = based on self-reports. oth. = based on third-party ratings. p1, p2, p3 = period 1, period 2, or period 3, respectively. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

interpersonal perception parameters were allowed to correlate at a given measurement occasion to assess measurement occasion-specific influences (in the sense of situation-specific influences).

3 | RESULTS

All data and syntaxes needed to reproduce our analyses are available on the open science framework platform (<https://osf.io/uv3ft/>).

3.1 | Preliminary analyses

3.1.1 | Attrition analyses

Although the dropout rate in the CONNECT study was rather low, we assessed whether dropouts were systematically related to any of the measured variables. Those who did participate at t_3 did not differ from those who did not participate at t_3 regarding their age at t_1 (Welch's $t(12.78) = -0.45, p = 0.66$), their gender (Fisher's exact test⁵: $p = 0.24$), their average Neuroticism at t_1 (Welch's $t(13.94) = 0.28, p = 0.78$) and t_2 (Welch's $t(14.13) = 0.05, p = 0.96$), or their interpersonal perceptions (all $ps > 0.05$). There were also no significant differences between those who did versus did not participate at t_2 (all $ps > 0.05$).

3.1.2 | Gender differences

Although the male sample was rather small ($n = 21$ compared to $n = 89$ women), we tested for possible gender differences in the relevant variables. Men and women did not differ from each other regarding age at t_1 , their Neuroticism, or their interpersonal perceptions at the three measurement occasions (all $ps > 0.05$). Thus, we did not include gender as covariate in our final model.

3.1.3 | Changes in Neuroticism over time

In the unpredicted LTC model (without any predictor variables), the model fit was at least good ($\chi^2(29) = 32.28, p = 0.31$; Root mean square error of approximation (RMSEA) = 0.03, 90% CI [0.00; 0.08]; comparative fit index (CFI) = 0.993; standardized root mean square residual (SRMR) = 0.04). Means of latent difference variables for Neuroticism were negative and differed significantly from zero between t_1 and t_2 ($b = -0.39, SE = 0.11, p < 0.001$) and at least marginally so between t_2 and t_3 ($b = -0.20, SE = 0.10, p = 0.061$). Thus, on average, Neuroticism decreased over time, which is consistent with respective meta-analytic findings (e.g., Roberts, Walton, & Viechtbauer, 2006). In addition, variances of the state level ($var = 1.63, SE = 0.26, p < 0.001$) as well as of the latent difference variables (difference between t_1 and t_2 : $var = 0.23, SE = 0.17, p = 0.118$; difference

between t_2 and t_3 ; $\text{var} = 0.60$, $SE = 0.20$, $p = 0.002$) were mostly significantly different from zero. In other words, intraindividual changes in Neuroticism over time as well as state1 Neuroticism differed between individuals, which is a prerequisite for testing our hypothesis that these variables correlate with interpersonal perceptions.

3.1.4 | Bivariate correlations

Bivariate correlations between all measured variables are reported in Table 1. In line with the notion of personality-congruent interpersonal perceptions, Neuroticism did indeed correlate significantly with some of the random-effect terms of the fixed intercept (i.e., perception biases). More precisely, Neuroticism correlated positively with interpersonal perceptions regarding dominance and sociability. The higher perceivers' Neuroticism, the more they tended to judge their targets as dominant and sociable. In other words, higher degrees of Neuroticism were related to more positive assessments of others. However, these effects were small in size ($r_s < 0.23$).

Interestingly, Neuroticism was not significantly related to between-perceiver parameters of TRT or ORT scores as indicators of contextual effects based on targets' self-ratings (TRT) or ratings by third-parties (ORT). This means that Neuroticism did not predict targets' self-reported as well as third-party rated dominance, sociability, etc. This might be regarded as first evidence that personality-congruent interpersonal perceptions reflect perception biases rather than selection effects—irrespective of the kind of source (self-ratings or ratings by third-parties) that is used to assess the social context of participants.

There are other noteworthy findings that can be extracted from the correlation pattern in Table 1: First, correlations between random-effect terms of the fixed intercepts and between-perceiver parameters of TRT or ORT scores of the same behavioral dimension were not significant (all $p_s > 0.05$), but correlations between the between-perceiver parameters of TRT and ORT scores were significant and positive, albeit rather weak (r_s between 0.26 and 0.33). This indicated, that perceivers' ratings of their targets did not correspond to their targets' self-ratings as well as to ratings of several perceivers about that target. Multiple raters, in turn, compared to single perceivers, make more accurate judgments of targets. Second, age at t_1 did correlate significantly only with targets' self-ratings as well as other-ratings of targets' sociability and warmth (r_s between -0.27 and -0.40). Due to these small relationships between age and interpersonal perceptions, we did not include age at t_1 as covariate in our final model.

3.1.5 | MLMs for the interpersonal perception dimensions

The results of the MLMs for the four behavioral dimensions (dominance, sociability, warmth, and arrogance), conducted

for each of the three smartphone-based assessment periods separately, are summarized in Table 2 (unstandardized coefficients). First, the Intra-Class Correlations (ICC) revealed substantial variations (R^2 between 0.21 and 0.58) in PRT scores between perceivers. This variability in PRT scores indicated that perceivers differed substantially in their interpersonal perceptions of others.

Second, fixed intercepts (β_{00}) of all models differed significantly from zero, indicating that, on average, perceivers rated their targets' dominance, sociability, and warmth as higher and their arrogance as lower than what would have been expected on the basis of target self-report (TRT) or third-party (ORT) ratings. Thus, perceivers generally make more positive judgments of their targets' dominance, sociability, and warmth, and more negative judgments of their arrogance.

Third, regarding *sensitivity effects*,⁶ perceivers' ratings of a target's dominance, sociability, warmth, and arrogance increased when third-party ratings of a target's dominance, sociability, warmth, and arrogance increased, indicating sensitivity to differences in targets' behaviors as rated by third-parties. Sensitivity effects based on targets' ratings of themselves were, by contrast, considerably weaker.

Fourth, regarding *selection effects*,⁷ perceivers who rated their targets' dominance, sociability, warmth, and arrogance as higher actually acquaint themselves with targets who have been rated (by third-parties) as more dominant, more sociable, warmer, and more arrogant. Thus, selection effects were evident when target characteristics were judged by third parties. Interestingly, however, no selection effects were found when target characteristics were judged by themselves.

Fifth, regarding interindividual differences in the focal effects as can be seen in the random effects part, there is variation in individual perception biases (r_{0i}), in other-ratings about the target (r_{2i}) and in random errors of prediction for the level-1 outcome (e_{mi}), less so in influences of targets' self-ratings (r_{1i}). Thus, perception biases and sensitivity effects can vary between perceivers (i.e., level-2 units).

3.2 | Personality-congruent perception biases

In the Total Model 1 (see Figure 4), we tested whether random intercepts of PRT scores, representing perception biases, were predicted by state1 Neuroticism to test for a personality-congruence of perceiver effects (i.e., whether neurotic individuals differ from less neurotic individuals in how dominant, sociable, warm, or arrogant they perceive others after controlling for targets' self-ratings and third-party ratings). Random intercepts were allowed to correlate across behavioral dimensions (dominance, sociability, warmth, and arrogance).

TABLE 1 Bivariate correlations between measured variables ($n = 110$)

	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	
(1) Age at t_1	-0.06	-0.09	-0.05	0.08	-0.08	-0.40***	-0.27**	-0.01	-0.05	-0.37***	-0.39***	0.01	-0.04	-0.06	-0.02	
(2) rand. int. dominant		0.38***	0.23*	-0.16	0.00	-0.02	0.07	-0.04	0.01	0.00	0.13	-0.28**	0.19	0.23*	0.18	
(3) rand. int. sociable			0.77***	-0.43***	0.06	-0.03	-0.01	-0.11	0.13	-0.01	0.10	-0.21*	0.21*	0.23*	0.19*	
(4) rand. int. warm				-0.71***	0.08	0.10	-0.02	-0.12	0.20*	-0.04	-0.02	-0.09	0.13	0.14	0.13	
(5) rand. int. arrogant					-0.01	-0.24*	-0.04	0.00	-0.16	-0.15	-0.08	0.00	-0.10	-0.11	-0.10	
(6) TRT dominant						0.16	0.14	-0.20*	0.29**	-0.12	0.02	-0.12	0.01	0.02	-0.01	
(7) TRT sociable							0.67***	-0.19	-0.03	0.33**	0.23*	0.20*	0.02	0.03	0.01	
(8) TRT warm								-0.50***	0.01	0.19*	0.26**	0.00	0.03	0.04	0.05	
(9) TRT arrogant									-0.01	0.40***	0.03	0.32***	-0.01	-0.01	0.00	
(10) ORT dominant											0.13	0.12	-0.14	-0.15	-0.13	
(11) ORT sociable												0.65***	0.08	0.07	0.08	
(12) ORT warm													-0.44***	0.15	0.17	
(13) ORT arrogant														-0.13	-0.15	
(14) Neuro-ticism at t_1															0.98***	
(15) Neuro-ticism at t_2																0.92***
(16) Neuro-ticism at t_3																0.92***

Note: rand. int. = random-effect term of the fixed intercept, TRT = contextual effects based on targets' self-ratings, ORT = contextual effects based on ratings by third-parties.
* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$.

TABLE 2 Results of MLMs for the four behavioral dimensions to investigate the amount of sensitivity and contextual effects

	Dominance			Sociability			Warmth			Arrogance		
	Period 1	Period 2	Period 3	Period 1	Period 2	Period 3	Period 1	Period 2	Period 3	Period 1	Period 2	Period 3
<i>ICC</i>	0.36	0.31	0.36	0.33	0.21	0.29	0.50	0.31	0.47	0.41	0.45	0.58
<i>Fixed effects</i>												
Average interpersonal perception (β_{ip})	0.43 ^{***} (0.05)	0.56 ^{***} (0.06)	0.53 ^{***} (0.06)	1.87 ^{***} (0.05)	1.83 ^{***} (0.05)	1.97 ^{***} (0.05)	1.99 ^{***} (0.05)	2.03 ^{***} (0.04)	2.10 ^{***} (0.05)	-1.32 ^{***} (0.07)	-1.33 ^{***} (0.07)	-1.37 ^{***} (0.07)
Sensitivity effect based on self-reports β_{i0}	0.11 ^{**} (0.03)	0.06 (0.06)	0.09 (0.05)	0.12 ^{***} (0.03)	0.15 ^{***} (0.04)	0.10 (0.05)	-0.02 (0.03)	0.06 (0.04)	0.05 (0.04)	0.01 (0.03)	-0.02 (0.04)	0.01 (0.04)
TRT (within) _{int}	0.72 ^{***} (0.07)	0.64 ^{***} (0.11)	0.59 ^{***} (0.10)	0.71 ^{***} (0.08)	0.68 ^{***} (0.10)	0.62 ^{***} (0.13)	0.44 ^{***} (0.07)	0.64 ^{***} (0.09)	0.60 ^{***} (0.12)	0.43 ^{***} (0.07)	0.63 ^{***} (0.11)	0.42 ^{***} (0.10)
Sensitivity effect based on third-party ratings β_{20} ORT (within) _{int}	-0.02 (0.12)	0.15 (0.11)	-0.02 (0.13)	0.11 (0.12)	0.12 (0.09)	0.11 (0.10)	0.08 (0.15)	0.01 (0.09)	0.17 (0.12)	0.12 (0.14)	-0.001 (0.12)	-0.02 (0.13)
Contextual effect based on self-reports β_{01}	1.52 ^{***} (0.16)	1.36 ^{***} (0.16)	1.38 ^{***} (0.17)	1.15 ^{***} (0.15)	1.25 ^{***} (0.14)	1.55 ^{***} (0.15)	1.48 ^{***} (0.20)	1.31 ^{***} (0.14)	1.35 ^{***} (0.18)	1.76 ^{***} (0.23)	1.20 ^{***} (0.16)	1.38 ^{***} (0.15)
Contextual effect based on third-party ratings β_{02} ORT (between)	0.20 (0.45)	0.19 (0.43)	0.20 (0.44)	0.20 (0.44)	0.12 (0.35)	0.11 (0.33)	0.22 (0.47)	0.10 (0.32)	0.16 (0.39)	0.39 (0.63)	0.33 (0.57)	0.38 (0.62)
<i>Random effects</i>												
Individual perception biases (r_{ic})	0.02 (0.14)	0.06 (0.25)	0.002 (0.15)	0.01 (0.10)	0.003 (0.06)	0.10 (0.31)	0.02 (0.12)	0.001 (0.01)	0.02 (0.14)	0.01 (0.07)	0.01 (0.11)	0.03 (0.19)
r_{2i}	0.16 (0.40)	0.22 (0.47)	0.16 (0.41)	0.22 (0.46)	0.16 (0.40)	0.46 (0.68)	0.09 (0.31)	0.14 (0.37)	0.32 (0.57)	0.05 (0.21)	0.42 (0.65)	0.20 (0.45)
e_{int}	0.35 (0.59)	0.43 (0.66)	0.35 (0.59)	0.40 (0.64)	0.44 (0.66)	0.27 (0.52)	0.22 (0.46)	0.22 (0.47)	0.18 (0.42)	0.56 (0.75)	0.40 (0.63)	0.28 (0.53)

Note: Number of participants (level-2 units) varied slightly: in period 1, $n = 105$; in period 2, $n = 95$ and in period 3, $n = 81$. Depicted are unstandardized coefficients. Standard errors for fixed effects and standard deviations for random effects are reported in parentheses.

* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$;

The model fit was acceptable, $\chi^2(165) = 233.63$, $p < 0.001$; RMSEA = 0.06, 90% CI [0.04; 0.08]; CFI = 0.937; SRMR = 0.09. State1 Neuroticism significantly predicted perception biases in period 1. More precisely, Neuroticism at t_1 had positive and significant effects on interpersonal perceptions of sociability ($\beta = 0.26$, $SE = 0.11$, $p = 0.02$), and warmth ($\beta = 0.23$, $SE = 0.11$, $p = 0.04$). These findings can be interpreted as empirical evidence for the notion that interpersonal perceptions depend on perceivers' Neuroticism and, thus, reflect perception biases. What is even more interesting is the sign of these effects: the higher perceivers' Neuroticism, the more they judged their targets as sociable and warm (after controlling for targets' self-ratings and third-party ratings on these dimensions). This partly mirrors the pattern of results reported in Table 1.

3.3 | Personality-congruent selection effects

In the Total Model 2 (see Figure 5), we tested whether the between-perceiver parameter of TRT scores were predicted by state1 Neuroticism (i.e., whether neurotic individuals differ from less neurotic individuals regarding whom they interact with according to their interaction partners self-reports). Significant effects would indicate that a perceiver's Neuroticism predicts the personality-congruent selection of targets. Parameters were allowed to correlate across behavioral dimensions (dominance, sociability, warmth, and arrogance).

The model fit was good, $\chi^2(165) = 189.12$, $p = 0.10$; RMSEA = 0.04, 90% CI [0.00; 0.06]; CFI = 0.972; SRMR = 0.08. State1 Neuroticism predicted targets' self-rated arrogance ($\beta = -0.22$, $SE = 0.11$, $p = 0.046$). Here, participants with higher levels of Neuroticism tended to interact more with targets who rated themselves as less arrogant. Thus, we did find empirical evidence for a very specific personality-congruent selection effect in this model, but only on one out of four behavioral dimensions.

In the Total Model 3 (see Figure 5), we tested whether the between-perceiver parameter of ORT scores—a different source of information about targets' behaviors—were predicted by state1 Neuroticism (i.e., whether neurotic individuals differ from less neurotic individuals regarding whom they interact with according to others' evaluations of their interaction partners). Again, significant effects would indicate that a perceiver's Neuroticism predicts the personality-congruent selection of targets. Parameters were allowed to correlate across behavioral dimensions (dominance, sociability, warmth, and arrogance).

The model fit was acceptable, $\chi^2(165) = 239.44$, $p < 0.001$; RMSEA = 0.06, 90% CI [0.05; 0.08]; CFI = 0.928; SRMR = 0.08. State1 Neuroticism did not predict targets' dominance, sociability, warmth, or arrogance as rated by third-parties. Thus, we did not find empirical evidence of personality-congruent selection effects in this model.

3.4 | Influence of perceiver effects on changes in Neuroticism over time

In bivariate correlations, autocorrelations for Neuroticism indicated a substantial amount of rank-order stability ($r_s > 0.90$). In the Total Models (see Figures 4 and 5), the two latent difference variables were additionally regressed on perception biases (i.e., random intercepts, see Figure 4) as well as on selection effects based on targets' self-ratings or third-party ratings (i.e., between-perceiver parameters of TRT and ORT scores, see Figure 5) to test the idea of reactive and proactive person–environment transactions. To assess the stability of interindividual differences in perceiver effects over time, we modeled autoregressive effects between the three assessment periods. Furthermore, parameters representing different behavioral dimensions at one given period were allowed to correlate to assess occasion-specific influences.

The estimated parameters (see Figure 4 for perceiver effects, and Figure 5 for selection effects) can be interpreted as follows: First, perceiver effects were quite stable over time, but not for all parameters. There was a high stability of perception biases ($\beta > 0.42$, all $p_s < 0.001$), a weak, yet significant stability of selection effects based on self-reports ($\beta_s < 0.20$ and $p < 0.05$), except for arrogance across the three measurement occasions ($\beta_{21} = 0.31$, $SE = 0.10$, $p = 0.001$ and $\beta_{32} = 0.55$, $SE = 0.10$, $p < 0.001$), and for dominance from measurement times 2 to 3 ($\beta = 0.42$, $SE = 0.11$, $p < 0.001$), and a modest stability of selection effects based on third-party ratings (β_s between 0.31 and 0.49, all $p_s < 0.05$). Second, there were significant influences of perceiver effects on personality change over time, but only for selection effects based on third-party ratings. As can be seen in Figure 5, the degree of sociability and warmth of one's targets during the smartphone-based assessment period 2 predicted latent changes in Neuroticism between t_1 and t_2 ; but characteristics of targets during period 3 did not predict latent changes in Neuroticism between t_2 and t_3 . However, sociability ($\beta = -0.83$, $SE = 0.37$, $p = 0.03$) and warmth ($\beta = 0.95$, $SE = 0.38$, $p = 0.01$) influenced the extent to which participants' Neuroticism changed between times 1 and 2. More precisely, higher degrees of sociability of targets as rated by others led to a stronger decrease in perceivers' Neuroticism over time. In contrast, higher degrees of other-rated warmth led to a weaker decrease or increase, that is, participants' Neuroticism remained more stable among participants whose interaction partners were rated as warmer. Thus, we did not find any empirical evidence for influences of a personality-congruent SIP on the development of Neuroticism over time (i.e., reactive transactions); we did, however, find evidence for influences of the selection of social environments on the development of Neuroticism (i.e., proactive transactions). The selection of social environments was not predicted by an individuals' Neuroticism, though, predicted individual development of Neuroticism over time.

4 | DISCUSSION

In this study, we investigated (a) to what extent real-life interpersonal perceptions are influenced by perceivers' Neuroticism, whether these personality-congruent interpersonal perceptions reflect perception biases and/or selection effects, and (b) to what extent these perceiver effects predict intraindividual changes in perceivers' Neuroticism over time.

4.1 | Does Neuroticism predict biased interpersonal perceptions?

As research on the (social) consequences of Neuroticism (e.g., Finn et al., 2013) has shown, we found evidence for the notion that perceivers' Neuroticism influences how they perceive their targets' behavior. Interestingly, we found that Neuroticism positively predicted perceptions of sociability and warmth: neurotic perceivers tended to more positively evaluate these social dimensions. The direction of these effects may be surprising at first glance, because other findings suggest that Neuroticism is associated with a tendency to (a) interpret social situations in a rather negative way (e.g., Finn et al., 2013), to (b) be sensitive to potential interpersonal threat (e.g., Denissen & Penke, 2008), and to (c) experience social interactions more negatively (e.g., Hampson, 2012; Watson & Clark, 1984). However, the effects we found here are not implausible: Previous research has also shown that Neuroticism is associated with a tendency to underestimate one's own self-esteem in social interactions (Feldman Barrett & Pietromonaco, 1997; Judge, Erez, & Bono, 1998; Watson, Clark, & Harkness, 1994). Based on these findings, our pattern of results may reflect a *contrast effect*: Because people scoring high on Neuroticism tend to hold less favorable views about their own social competences than people scoring low on Neuroticism, they may hold more favorable views about the sociability, and warmth of others. Thus, highly neurotic individuals may perceive others as having more positive qualities compared to themselves. Likewise, highly neurotic individuals perceive others in the light of their own qualities, thus, comparing their targets' behavior with their own less favorable behavior. Therefore, the less favorable views of own qualities of highly neurotic individuals may serve as a reference point for evaluations of others' behavior. Of course, these explanations are entirely post hoc and, thus, warrant further empirical validation.

4.2 | Is there evidence for (personality-congruent) selection effects?

Empirical evidence for selection effects was rather weak in our data. Neuroticism was only weakly related to contextual effects, that is, to targets' ratings about themselves as well as third-party ratings. Although we found that perceivers'

Neuroticism predicted targets' self-ratings of arrogance, this effect was small in size. In addition, Neuroticism did not predict ratings of targets' behaviors as rated by third parties. Thus, the results indicate that personality-congruent perceiver effects represent a perception bias rather than a selection effect.

4.3 | Did perceiver effects influence personality change versus stabilization?

Contrary to what the literature on reactive transactions would suggest (e.g., Finn et al., 2015), we found no influences of interpersonal perceptions on changes (vs. stabilization) in Neuroticism over time. Importantly, the fact that we did not find any evidence for reactive transactions regarding Neuroticism in our data does not discount the notion of reactive transactions in general. Other personality traits such as Extraversion or shyness may be influenced by interpersonal perceptions more strongly than Neuroticism. In addition, there may be other interpersonal perception dimensions for which reactive transactions could be empirically demonstrated (see Limitations).

Regarding proactive transactions, we found evidence for the influences of targets' sociability and warmth (as rated by third-parties) on changes in Neuroticism between the first two measurement occasions. More precisely, higher target sociability predicted a stronger decrease in perceivers' Neuroticism over time, whereas higher target warmth led to a weaker decrease in perceivers' Neuroticism over time. However, the effects were only evident when looking at influences of targets' ratings by third parties, not when targets' self-ratings were used. The effect of target sociability on perceivers' Neuroticism makes sense: The more perceivers acquaint themselves with sociable targets, the more this may alleviate their social anxiety, emotional lability, and submissiveness toward others. The negative effect of warmth on changes in Neuroticism over time, however, is counterintuitive at first glance. Why should interacting with warmer and more agreeable targets promote an increase in Neuroticism over time? At that point, we can only speculate: One potential mechanism underlying this relationship may be that neurotic persons feel uncomfortable in the presence of particularly warm targets: Warm interpersonal behavior is characterized by friendly, affectionate, and open behavior, behavior that aims at cooperation and at arousing closeness. Warm targets show self-disclosure, Openness, and cooperativeness, and they may expect others to behave in the same vein. Neurotic people may react anxiously to such an expectation: They tend to avoid self-disclosure (e.g., lower breadth of self-disclosure on Facebook, but not in general; Hollenbaugh & Ferris, 2014), and this avoidance may even be reinforced by an expectation to self-disclose. In the long run, this may contribute to a stabilization or even an increase

in Neuroticism over time. Again, this explanation is entirely post-hoc and, thus, warrants further empirical validation. To test this speculation, one would have to measure self-disclosing behavior (e.g., amount and depth, Wheelless, 1978) and Neuroticism in a longitudinal design. The interplay between both measures over time can then be tested with adequate longitudinal analysis methods (e.g., LTC Models or longitudinal Autoregressive Models).

4.4 | Limitations

There are a number of issues that may be regarded as limitations of our study and that need to be discussed, especially the assessment of a limited number of social dimensions, the collection of a student sample, and the type of interactions that have been assessed. In addition, our analyses were exploratory in nature, and thus, should be replicated in independent data sets.

First, we only focused on a limited number of dimensions on which social interactions can be evaluated (i.e., dominance/submissiveness, sociability/reclusiveness, warmth/coldness, and arrogance/modesty). Of course, one can think of other evaluative dimensions that (a) may be predicted by perceivers' Neuroticism, and that (b) may, in turn, influence perceivers' changes in Neuroticism over time. For instance, perceptions of threat and of competence/power might be interesting dimensions: People high in Neuroticism are more sensitive and react more strongly to cues of social and non-social threats (e.g., Denissen & Penke, 2008). Regarding competence and power, studies found meaningful associations between Neuroticism and low self-esteem, generalized self-efficacy, and locus of control (e.g., Judge et al., 1998). Thus, perceptions of interpersonal threat and interpersonal power may be candidates for investigating reactive transactions: perceiving more threat in social situations as a habitual expectation or seeing others as more competent/powerful than oneself (i.e., a contrast effect) may promote the stabilization of Neuroticism over time. Future studies may consider taking these alternative behavioral dimensions into account. However, the selection of the four dimensions in the present study was based on the Interpersonal Circumplex Model—a model that has been specifically developed to categorize and systematize social judgments (Wiggins, 2003).

Second, our sample exclusively consisted of students at the beginning of their higher education program (i.e., during the first two semesters). On the one hand, the restricted age range, a restricted variability on demographic variables (e.g., educational background), and the unequal distribution of men and women limit the generalizability of our results. Thus, replications with more heterogeneous samples are necessary to test the generalizability of the results. On the other hand, the age between 20 and 30 years and the specific situation of our participants (i.e., starting a higher education program at a

university) may be a particularly interesting time window to study person–environment transactions: during the transition to adulthood, many significant psychological developments (e.g., regarding identity development and the assumption of adult roles and responsibilities; see Arnett, 2004, 2007) occur and, as a normative life event, starting a higher education program is characterized by strong social expectations promoting personality change (Neyer, Mund, Zimmermann, & Wrzus, 2014).

Third, the specific type of interactions that have been assessed in the CONNECT study has to be mentioned. In the CONNECT study, participants were asked about any social interactions they recently had with their fellow students that lasted for at least 5 min—irrespective of the context or the specific reason for these interactions. In other words, interactions that students reported might have included personally relevant interactions between friends as well as relatively less relevant interactions between fellow students who were, for instance, exchanging course material. One might argue that only personally meaningful interactions are (a) suitable to investigate selection effects (because friends are being selected more carefully than fellow students in a learning group) and (b) relevant in the context of reactive transactions (because only meaningful interactions may have an impact on one's personality development). In addition, the type of interactions that have been assessed could have led to more disagreement between self- and other-ratings of interaction partners' behaviors. Research on self-other agreement has shown that self- and other-ratings each carry a substantial amount of unique variance, leading to imperfect agreements *per se*. Furthermore, the agreement of both rating types depends strongly on the type of trait that is assessed—most importantly, its visibility (e.g., Funder & Colvin, 1988)—as well as on the duration of acquaintanceship between perceiver and target. Therefore, the slightly lower agreement between both ratings in the present study could be the result of the type of interactions that have been assessed.

In addition, as accuracy of self-perceptions can change, the question whether targets' self-perceptions are reliable is difficult to answer. Perhaps, targets are less sensitive to changes in their own behavior. However, self-perceptions of targets provided the basis for assessing interaction-specific differences in their behavior. These data were used to model interindividual differences in perceivers' interpersonal perception regarding a target's behavior, thus, a perception bias. In the experience sampling approach, assessing data on social interactions in a naturalistic setting, it is not possible to get more reliable or “objective” assessments of a participant's behavior. Here, future research projects should try to answer the question what the behavioral rationale for our positivity biases and possible consequences of them is.

A fourth limitation of the current study is that we are not able to entirely test specific hypotheses about the

social-cognitive processes and mechanisms underlying the effects we found. The perceiver effects studied here represent interpersonal perception tendencies of individuals, but the precise mechanisms underlying these effects—selective social comparisons, anchoring effects, motivated self-deprecation, or simply contrast effects due to the higher salience of differences compared to similarities with others—are not testable with the present data. Thus, even more fine-grained insights might be gained by looking into that by explicitly measuring perceptual and attributional processes.

Fifth, due to the complex statistical models conducted to test our research questions, the computation of statistical power requires simulation studies in which the focal population effect can be determined, and certain parameters have to be restricted a priori. To date, there is no widely accepted and standardized rule for such a determination in MLM. Thus, the statistical power of the significance tests used here stands to be scrutinized in future research, and the findings obtained here should be replicated in independent studies.

A sixth and final limitation of the current study concerns the focus on Neuroticism as a personality trait that has been linked to several maladaptive consequences. Due to its maladaptive consequences, understanding the social-cognitive processes that underlie this trait's stabilization and change seem to be of particular importance. Nevertheless, other individual differences (e.g., Extraversion, Agreeableness, etc.) are also likely to influence interpersonal perceptions of targets. We assumed that the particular social-cognitive processes underlying perception biases, selection effects, and person–environment transactions are conceptually different for different traits; thus, we think the generalizability of our results to other personality traits has to be tested in further studies.

5 | CONCLUSION

The current study can be considered an important starting point for more systematic research on personality-congruent social perceptions. By repeatedly surveying a student sample over the course of their first two semesters, we collected data from real-life social interactions assessing interpersonal perceptions within social interactions. By focusing on one specific personality disposition, Neuroticism, we investigated (a) whether personality-congruent interpersonal perceptions reflect perception biases, which occur when perceivers' dispositions systematically predict deviations between perceivers' and other people's perceptions of the same interaction, or rather selection effects, which occur when perceivers' dispositions predict their selection of interaction partners and, (b) whether these perception biases and/or selection effects feed back into perceivers' personality dispositions. Our

findings show that Neuroticism meaningfully predicts interpersonal perceptions, and that these personality-congruent interpersonal perceptions reflect a perception bias, but not a selection effect. More precisely, Neuroticism at t_1 predicted participants' ratings of their interaction partners' sociability, and warmth indicating a positive, but not a negative bias in interpersonal perceptions. More positive judgments may be the result of a personality-congruent contrast effect (i.e., neurotic people see themselves as less sociable, warm, and modest than others).

In addition, we found that selection effects, but not perception biases influence personality development over time. For the concept of reactive transaction, this means that a personality-congruent SIP does not seem to influence personality trait continuity. For the concept of proactive transactions, sociability, and warmth of participants' interaction partners had influences on the development of Neuroticism over time. More precisely, higher degrees of sociability as rated by third-parties lead to a stronger decrease, whereas higher degrees of warmth lead to a stabilization of Neuroticism.

Taken together, we found evidence for the notion that Neuroticism predicts interpersonal perceptions, that these effects reflect perception biases rather than selection effects, and that there are no personality-congruent selection effects, but that the social context of people is associated with intra-individual changes in perceivers' Neuroticism over time (i.e., proactive transactions). These findings help illuminate the interpersonal perception dynamics of Neuroticism in a real-life context and add to our understanding of the psychological mechanisms underlying the interplay of personality and social perceptions more generally.

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CONFLICT OF INTERESTS

The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

ENDNOTES

¹ A detailed description of the CONNECT study is available at <https://osf.io/2pmct/>.

- ² 110 participants (89 females and 21 males) provided complete data at t_1 ; 99 participants (79 females and 20 males) provided complete data at t_2 ; and 98 participants (81 females and 17 males) provided complete data at t_3 .
- ³ Data version as from April 2017.
- ⁴ In total, participants evaluated themselves and their interaction partners behavior on seven items with the end points: (1) dominant versus submissive, (2) sociable versus reclusive, (3) friendly versus unfriendly, (4) arrogant versus modest, (5) exploitive versus cooperative, (6) self-revealing versus reserved, and (7) reliable versus unreliable.
- ⁵ Fisher's exact test was used instead of Pearson's Chi-Square test because sample size was rather small and some expected frequencies were less than 5.
- ⁶ Based on self-reports as represented by the fixed slopes of the within-perceiver parameters of TRT scores (β_{10}) or based on third-party ratings as represented by the fixed slopes of the within-perceiver parameters of ORT scores (β_{20}).
- ⁷ Based on self-reports as represented by the fixed slope of between-perceiver parameter of TRT scores (β_{01}) or based on third-party ratings as represented by the fixed slope of between-perceiver parameter of ORT scores (β_{02}).

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10. Manuskript #3

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Neuroticism and satisfaction in romantic relationships: A systematic investigation of intra- and interpersonal processes with a longitudinal approach

Marianne Kreuzer¹ and Mario Gollwitzer²

Abstract

Relationship satisfaction—the degree to which a close relationship is perceived as rewarding and satisfying by both partners—is reliably predicted by both partners' neuroticism, but the psychological mechanisms underlying this effect are not sufficiently well understood. By analyzing several cognitive, emotional, and behavioral processes simultaneously, the current longitudinal study looked at how both partners' neuroticism affects their respective (and mutual) relationship satisfaction both on an intra- and on an interpersonal level. Dyadic data from 2090 heterosexual couples from the "Pairfam" study were analyzed with Actor-Partner Interdependence Mediation Models (APIMeM). Results support the assumption that neuroticism reliably predicts cognitive, emotional, and behavioral variables, which, in turn, predict both partners' relationship satisfaction. Importantly, cognitive processes play a particularly important role both on an interpersonal as well as on an intrapersonal level. These findings help to shed light on the maladaptive cognitive, emotional, and behavioral processes underlying the effect of neuroticism on relationship satisfaction.

Keywords

Cognitive processes, neuroticism, relationship satisfaction, Actor-Partner Interdependence Mediation Models, dyadic longitudinal data

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One of the most important facets of people's general life satisfaction is the extent to which they feel that their social relationships—especially with their romantic partners—are stable, rewarding, and mutually beneficial (e.g., Diamond et al., 2010). The quality and stability of a romantic partnership, in turn, are influenced by personality characteristics of both partners (e.g., Dyrenforth et al., 2010). Among the Big Five personality traits (e.g., McCrae & Costa, 2008), neuroticism is particularly important in that regard: Higher levels of neuroticism are associated with less marital satisfaction and higher divorce rates. In an attempt to understand the psychological processes¹ underlying this negative relation between neuroticism and relationship satisfaction, studies showed that individuals with higher levels in neuroticism tend to interpret ambiguous interpersonal behavior more negatively (Finn et al., 2013), are less forgiving (Braithwaite et al., 2016), and act more negatively in marital interactions (Donnellan et al., 2007) than individuals with lower levels in neuroticism.

Although these findings are informative, a more comprehensive picture that takes multiple processes simultaneously into account and, more importantly, looks at how personality traits of both partners affect their respective (and mutual) relationship satisfaction is currently missing. The present study will contribute to the existing literature by examining cognitive, emotional, and behavioral consequences of an individual's neuroticism in social relationships, simultaneously—both on an intrapersonal as well as on an interpersonal level. Intrapersonal effects indicate how an individual's personality disposition influences his

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or her own relationship satisfaction. Interpersonal effects, in turn, indicate how an individual's personality disposition influences the relationship satisfaction of his or her partner. In order to fully understand the relation between personality and relationship satisfaction in a dyad, it is necessary to take into account both levels, simultaneously (Kenny et al., 2006).

Transactions between personality traits and relationship satisfaction

The transactional dynamic theory of personality development (e.g., Asendorpf & Wilpers, 1998; Caspi & Roberts, 1999; Neyer & Asendorpf, 2001; Neyer et al., 2014) explains personality trait development by a dynamic, continuous, and reciprocal interaction between individuals and their (social) environment. The dynamic transactionism paradigm assumes that individuals play an active role in shaping their environment according to their personality dispositions and that the environment, in turn, influences an individual's personality dispositions. An important part of an individual's environment are close relationships. To conceptualize the dynamic interplay between partners in a romantic relationship, the *Vulnerability Stress Adaptation* (VSA; Karney & Bradbury, 1995) model is a particularly useful theoretical framework. The VSA model proposes three different parts that influence the way individuals adapt and contribute to stressful events within a relationship (Braithwaite et al., 2016).

First, *enduring vulnerabilities* encompass traits, temperaments, or experiences that (negatively) affect interpersonal functioning. Personality dispositions, poor communication skills, and problematic cognitive tendencies as long-term consequences of traumatic (childhood) events affect the quality of a romantic relationship. Second, *adaptive processes* involve interactive processes that occur within the relationship. These are influenced by both partners' enduring vulnerabilities and manifest themselves in interpersonal behaviors like communication patterns or conflict management strategies. Interpersonal behaviors, in turn, affect the quality of a romantic relationship as well. Finally, *stress*—induced by critical life events or daily hassles—plays a role by hampering adaptive processes. If one spouse, for instance, is overworked due to a stressful work situation, he or she may be short-tempered and react more defensively than usually in a conversation with his or her partner when planning the joint weekly purchasing. The three factors identified by the VSA model both influence each other *and* amplify their respective effects: For instance, the stress effect described above is amplified by both partners' level of neuroticism, while neuroticism also increases both partners' stress levels, etc.

Neuroticism as an “enduring vulnerability”

Neuroticism, as one of the “Big Five” personality traits, is a particularly strong predictor of relationship satisfaction (e.g., Dyrenforth et al., 2010; Malouff et al., 2010; Roberts et al., 2007; Solomon & Jackson, 2014). It is marked by a tendency to experience high, enduring levels of negative emotions, especially in response to stress (Fisher & McNulty, 2008). Neuroticism involves a general insecurity, such as the tendency to experience irritability, and increased fearfulness (McCrae & Costa, 1987; Steel et al., 2008). Individuals with higher levels in neuroticism are more likely to perceive offense or to experience distress after negative events (e.g., Braithwaite et al., 2016).

Referring to the VSA model, neuroticism is of particular interest to examine cognitive, emotional, and behavioral processes that underlie the negative effect of neuroticism on relationship satisfaction. More specifically, neuroticism as an “enduring vulnerability” according to the VSA terminology influences (mal-)adaptive processes like interpersonal perceptions and attributional processes, emotional states, and communication behaviors, which further affect the dyadic coping of stressful events. Thus, if an individual with higher levels in neuroticism is confronted with a stressful event (e.g., a disagreement regarding the holiday planning), he or she may get particularly angry because he or she feels ignored, resulting in more aggressive reactions such as criticizing the partner or making complaints. As a consequence, both partners' relationship satisfaction probably decreases.

(Mal-)adaptive processes explaining the neuroticism-satisfaction link

In line with the VSA model, several studies suggest that especially neuroticism and trait anxiety (e.g., Karney & Bradbury, 1995, 1997; McNulty, 2008), negative affectivity (e.g., Watson & Clark, 1984), low self-esteem (e.g., Erol & Orth, 2016; Bellavia & Murray, 2003), and insecure attachment (e.g., Mikulincer & Shaver, 2003) are associated with lower relationship satisfaction and can thus be considered as enduring vulnerabilities. In addition, recent studies investigated cognitive, emotional, and behavioral relationship components that can explain the maladaptive consequences of these vulnerabilities. We will review these (mal-)adaptive processes in the following. Here, feelings of anxiety (e.g. Gerstorff et al., 2009), emotional expressiveness (e.g., Lavee & Ben-Ari, 2004), self-disclosure and intimacy (e.g., Bühler et al., 2020; Laurenceau et al., 2005), negative communication styles (e.g., Caughlin et al., 2000), and attributional as well as appraisal processes (e.g., Schoebi et al., 2012) can explain the negative consequences of individual vulnerabilities on relationship satisfaction.

Cognitive processes. Cognitive processes play a central role in explaining why an individual's neuroticism affects his or her relationship satisfaction. Neuroticism is related to depression and anxiety (Kendler et al., 1993; Khan et al., 2005) which, in turn, are associated with rumination (Nolan et al., 1998) and catastrophizing (Goubert et al., 2004). In addition, individuals with higher levels in neuroticism tend to harbor negative attributions about their partner's behavior and their relationship in general (Karney & Bradbury, 2000; Karney et al., 1994), interpret ambiguous situations and partner behaviors in a pessimistic and negative fashion, and anticipate that an upcoming interaction with their partner will be negative (Finn et al., 2013; McNulty, 2008). More precisely, individuals with higher levels in neuroticism are less satisfied with their intimate partner relationship because they tend to interpret their partners' behaviors in a rather negative way; in addition, their own behavior is negatively interpreted by their partners as well (Finn et al., 2013).

Furthermore, spouses with higher levels of negative affectivity—a central facet of neuroticism—are more likely to attribute negative marital events and negative partner behavior to stable characteristics of their partner and to an intentionally blameworthy and selfish motivation, resulting in lower levels of satisfaction with their romantic relationships (Karney et al., 1994). Such results suggest that individuals with higher levels in neuroticism harbor misanthropic expectations regarding their partners' intentions and behaviors—a "hostile attribution bias" (e.g., Milich & Dodge, 1984).

Emotional processes. Neuroticism as a personality trait is conceptualized as emotional instability with anxiety as one of its major aspects. Individuals with higher levels in neuroticism are characterized as more anxious and vulnerable, they are more easily intimidated, and they get angry more easily (e.g., Costa & McCrae, 1992; Ormel & Wohlfahrt, 1991). They experience negative emotions more often (Wilson & Gullone, 1999) and emote them more easily (Keltner, 1996; Larsen & Kjetelaar, 1991; Watson & Clark, 1992). Here, emotional responsiveness refers to individual differences in the extent to which individuals monitor and outwardly display their emotions (e.g., Kring et al., 1994). Emotional expressiveness, in turn, is relevant for explaining the effect of neuroticism on relationship satisfaction (e.g., Lavee & Ben-Ari, 2004). Researchers found that individuals with higher levels in neuroticism tend to express their negative emotions more intensely than those with lower levels in neuroticism. In addition, emotional expressiveness of both partners is positively related to women's relationship satisfaction but is not relevant to men's satisfaction. The authors argue that women may emphasize emotional expression in the romantic relationship and tend to express their emotions more

strongly than men (Gottman et al., 1996; King & Emmons, 1990; Shields, 1987).

Moreover, emotion regulation seems to be relevant in explaining the negative consequences of neuroticism on relationship satisfaction (Kokkonen & Pulkkinen, 2001; Vater & Schröder-Abé, 2015). For instance, the mediating role of emotion regulation was examined in a discussion about a current relationship conflict during a laboratory session (Vater & Schröder-Abé, 2015). As expected, individuals with higher levels in neuroticism used more negative emotion regulation strategies (especially aggressive externalization), which was negatively related to positive interpersonal behavior during the conflict discussion and mediated the relation between personality and relationship satisfaction even in a six-month follow-up.

Behavioral processes. An important predictor for relationship satisfaction is how both partners behave in a conflict situation, that is, whether they are genuinely interested in resolving the conflict and whether their conflict management styles are effective (Gottman & Driver, 2005). Dysfunctional conflict styles include aggression and disinhibition, withdrawal/avoidance, and socially incompetent behaviors (e.g., not listening to one's partner). By contrast, understanding a conflict as an opportunity to cope with a stressor, and collaborating with each other on such coping (i.e., dyadic coping), predicts relationship satisfaction positively (e.g., Falconier et al., 2015). Conflict styles, in turn, are influenced by an individual's neuroticism (e.g., Antonioni, 1998; Bouchard, 2003). Individuals with higher levels in neuroticism tend to show more obliging, more avoiding, more distancing, and less dominant behaviors.

In addition, individuals with higher levels in neuroticism are less likely to intimately disclose their thoughts and feelings to their partner, regardless of how self-disclosing the partner is (Cunningham & Strassberg, 1981). Intimacy represents a greater emotional involvement in a romantic relationship and the engagement in self-disclosure, trust, and interdependence (e.g., see Hazan & Shaver, 1987; McAdams, 1984). It is positively related to own and partner relationship satisfaction (e.g., Anderson & Emmer-Sommer, 2006; Sanderson & Evans, 2001; Starks et al., 2017). More precisely, higher levels in intimacy positively predicted social support provided to the partner as well as self-disclosive interactions, which, in turn, mediated the positive influences of intimacy on relationship satisfaction.

Intrapersonal and interpersonal processes

The majority of previous research regarding consequences of personality traits as enduring vulnerabilities on relationship satisfaction has looked at the individual as the central unit of analysis, not at the

dyad (for an exception, see Bühler et al., 2020; Finn et al., 2013). While it is undoubtedly important to investigate how a person's neuroticism affects their cognitions, emotions, and behaviors in close relationships and, thus, his or her relationship satisfaction, a more complex (yet also more informative) approach would be to look at the effect of a person's neuroticism on their partner's cognitions, emotions, and behaviors, and the effect of these processes on the person's and their partner's relationship satisfaction.

As mentioned above, there are two kinds of effects explaining the influences of personality traits on relationship satisfaction. *Intrapersonal effects* refer to processes operating within the individual. For instance, individuals with higher levels in neuroticism think in ways that lead to more negative perceptions of their partners' actual behaviors. Regardless of the objective quality of those reactions (e.g., Caughlin et al., 2000; Donnellan et al., 2004), they tend to attribute their partner's behavior to malevolent intentions (e.g., Finn et al., 2013) and are less likely to forgive (e.g., Braithwaite et al., 2016), which, in turn, reduces their relationship satisfaction. *Interpersonal effects*, by contrast, refer to interaction processes between the two partners. Individuals with higher levels in neuroticism, for instance, may be less satisfied with their relationships because they tend to create negative life events through negative interpersonal behavior that gets reciprocated by their partners (e.g., Fisher & McNulty, 2008). More precisely, individuals with higher levels in neuroticism tend to act more negatively toward their partner (Donnellan et al., 2007) and are less forgiving (Braithwaite et al., 2016). Partners of individuals with higher levels in neuroticism, in turn, display more negative behavior in joint interactions than partners of individuals with lower levels in neuroticism (Donnellan et al., 2007).

Some researchers have convincingly argued that intrapersonal and interpersonal effects should not be treated as independent of each other, and that they are often intertwined and contingent on each other (e.g., Côté & Moskowitz, 1998). More precisely, two processes are discussed through which intrapersonal effects can elicit reactions on the partner's side, that is, create an interpersonal effect (Caughlin et al., 2000). First, *communication processes* (e.g., Fitzpatrick & Badzinski, 1994) encompass negative interactions like criticism, complaints, or expressions of anger as well as supporting behavior of an individual, which evoke particular communication behaviors from their partner. In the sense of a *self-fulfilling prophecy* (Jones, 1977; Miller & Turnbull, 1986), studies found that an individual's personality dispositions such as rejection sensitivity, a cognitive schema which is associated with neuroticism (e.g., Brookings et al., 2003), trait anxiety, or emotional instability lead to particular expectations such as anxiously expecting their partners to reject or abandon them and

respective interpersonal behaviors, for instance, during conflict situations. This, in turn, elicits negative reactions from their partners such as complaints or rejecting behavior which, in turn, on the one side, confirms prior expectations, and, on the other side, reduces the partner's relationship satisfaction (e.g., Buss, 1991; Caughlin et al., 2000; Downey et al., 1998; Romero-Canyas et al., 2010; see also Brookings et al., 2003). In the sense of self-fulfilling prophecies, interpersonal expectancies (e.g., Jones, 1986) may elicit behavior from the other person confirming prior expectations.

Second, *emotional contagion processes* (e.g., Hatfield et al., 1994; Schachter & Singer, 1962) describe how the emotional state of one partner directly affects the other partner's emotional state. For instance, being married to a highly anxious individual can increase one's own anxiety and, thus, decrease one's relationship satisfaction (e.g., Caughlin et al., 2000). Furthermore, spouses with higher levels of negative affectivity—a central facet of neuroticism—are more likely to attribute negative marital events and negative partner behavior to stable characteristics of the partner and to an intentionally blameworthy and selfish motivation, resulting in lower levels of satisfaction with their romantic relationships (Karney et al., 1994). These negative attributions may negatively affect the partners' relationship satisfaction in two different ways. First, in the sense of an intrapersonal effect, own perceptions, attributions, and evaluations of the partner's behavior may reduce one's own relationship satisfaction. Second, in the sense of an interpersonal effect, an individual who is consistently negative and pessimistic may elicit critical attributions on the partner's side as well. This example suggests that both intrapersonal and interpersonal processes are relevant to understand why and how neuroticism influences both partners' relationship satisfaction.

The role of cognitive processes

Some researchers pointed to the particular important role of cognitive processes in explaining the satisfaction in romantic relationships (e.g., Braithwaite et al., 2016; Finn et al., 2013; Karney et al., 1994; McNulty, 2008; Schoebi et al., 2012). More precisely, cognitive tendencies like the habitual tendency to perceive and interpret ambiguous partner behaviors in negative ways work like a lens through which neurotic people negatively see the world around them and influence their behavioral as well as emotional reactions (see also cognitive approaches to emotions, e.g., Mathews & MacLeod, 1994). More precisely, perceptions and attributions of the partner's behavior can be seen as an adaptive process affecting the coping of a stressful event. For instance, interpreting (ambiguous) partner behavior such as inattention in a conversation as either a proof of missing interest or as an

indicator of exhaustion after a strenuous day meaningfully influences the individual's reactions to the partner's behavior.

Referring to the contextual model of marital interaction (Bradbury & Fincham, 1988, 1991), researchers assumed that an individual's expectations and appraisals about his or her partner's behavior triggers (defensive) reactions toward the expected behavior (e.g., Schoebi et al., 2012). If an individual, for instance, expects to be blamed by their partner, the individual would square off preparing to defend oneself against the accusations. On the contrary, the expectation of a friendly interaction with the partner would prepare a rather positive conversation. Thus, when an individual expects their partner to be less understanding and more critical in a problem-solving conversation, they themselves are more negative in the actual conversation, as compared to when they expect their partner to be more understanding and less critical (McNulty & Karney, 2002, 2004; Sanford, 2006). Regarding the relevant cognitive processes underlying these effects, Schoebi et al. (2012) discuss selective attention, maladaptive beliefs, and attributional biases (see also Baucom et al., 1989; Fletcher & Kininmonth, 1991).

Thus, behavioral reactions to an event are influenced by an individual's cognitive processes, which, in turn, are influenced by his or her dispositional neuroticism. In a similar vein, researchers found that appraisal processes also influenced emotional responses, for instance, after a relationship breakup (McCarthy et al., 1997). In addition, results from a longitudinal study over 13 years showed that an individual's trait anxiety—a central facet of neuroticism—is positively related to own negativity (Caughlin & Vangelisti, 2000). Here, negativity encompasses the feeling and expression of anger or impatience by yelling, snapping, or raising the own voice, showing more relational withdrawal behavior, and criticizing or complaining about something the partner did. However, objective observations of partner behavior showed that they indeed behaved more negatively (McNulty, 2008). Even when controlling for the objective quality of partners' behavior, individuals with higher levels in neuroticism reported more negative perceptions of their partners' behavior. Thus, neuroticism shapes general interpersonal perceptions and expectations and influences the way individuals generally behave towards others, which, in turn, influences social relationships (Back et al., 2011; Christensen & Kashy, 1998).

Modeling of dynamic transactions between both partners

Several studies show the complex interplay between both partners of a romantic relationship and suggest that the interdependent nature of these processes needs to be taken into account empirically by

analyzing data from both partners, simultaneously, and by looking at how partners influence each other over and above any influences within the individual (Kenny & Cook, 1999; Kenny et al., 2006). That said, such designs are still rare (Mund et al., 2016). Kenny and coworkers (e.g., Kenny & Cook, 1999; Kenny & Ledermann, 2010) describe four different patterns resulting from the combination of intrapersonal (also called actor effects) and interpersonal effects (also called partner effects) (see Ledermann et al., 2017). First, the existence of both intrapersonal and interpersonal effects is called a *mixed* pattern. Second, the existence of an intrapersonal effect in the absence of a corresponding interpersonal effect is referred to as *independence*. Third, the existence of an interpersonal effect in the absence of a corresponding intrapersonal effect is called *dependence*. Fourth, and finally, the absence of both intrapersonal and interpersonal effects is called a pattern of *unrelatedness*.

In a review of nine studies based on dyadic data, 14 intrapersonal and interpersonal effects of Big Five personality traits on relationship satisfaction were analyzed (Weidmann et al., 2016). The majority of these studies showed a mixed pattern suggesting that both partners' neuroticism is related to relationship satisfaction of both partners (Barelds, 2005; Dyrenforth et al., 2010; Furler et al., 2013; Orth, 2013; Solomon & Jackson, 2014). In addition, the authors found that intrapersonal and interpersonal effects do not vary by gender (Barelds, 2005; Furler et al., 2013, 2014; Malouff et al., 2010; Schaffhuser et al., 2014; Slatcher & Vazire, 2009).

To test for specific dyadic patterns in dyadic mediation models, researchers defined the parameter k by calculating the ratio between partner and actor effects (e.g., Ledermann et al., 2011). Here, $k = 0$ indicates an "actor-only" or independence pattern, meaning that intrapersonal effects are stronger than interpersonal effects—in other words, actor variables only correlate among themselves, but are unrelated or only weakly related to partner variables. A value of $k = 1$ indicates a "couple" or mixed pattern, meaning that intra- and interpersonal effects are equal in size. Values of $k > 1$ indicate a "dependence" pattern, meaning that interpersonal effects are stronger than intrapersonal effects. Finally, a negative value of k indicates a "contrast" pattern meaning that intra- and interpersonal effects are equal in size but have different signs. In a mediation model (like the one we specify here), parameter k can be calculated for each effect, that is, for a paths (IV to mediator), b paths (mediator to DV), and c' paths (i.e., IV to DV), separately.

The present study

In the present study, we will systematically and simultaneously analyze the predictive influences of different (mal-)adaptive processes (according to the VSA model) that have been discussed in the literature to

explain the negative effects of neuroticism on relationship satisfaction. More specifically, we analyze cognitive (hostile attributions), emotional (fear of love withdrawal, perceived insecurity), and behavioral factors (dyadic coping, self-disclosure, negative interaction behaviors including withdrawal and passive-aggressive behavior), simultaneously. By using a longitudinal dyadic design, we will investigate both the intrapersonal (i.e., actor effects) as well as the interpersonal effects (i.e., partner effects) of these factors on relationship satisfaction. Based on our review of the literature and the VSA model, we will test the following hypotheses:

Hypothesis 1: Neuroticism predicts cognitive (hostile attributions, perceived insecurity), emotional (fear of love withdrawal), and behavioral (dyadic coping, self-disclosure, negative interaction behaviors) relationship-related factors, respectively, both in the sense of an intrapersonal (H1a) as well as an interpersonal (H1b) process.

Hypothesis 2: These cognitive, emotional, and behavioral factors, respectively, mediate the effect of neuroticism on relationship satisfaction, both in the sense of an intrapersonal process (i.e., an individual's level of neuroticism predicts one's own [mal-]adaptive processes, which, in turn, predict one's own relationship satisfaction; H2a) as well as an interpersonal process (i.e., an individual's level of neuroticism predicts [mal-]adaptive processes on the side of the partner, which, in turn, predict relationship satisfaction of the partner; H2b).

Methods

Participants

To comprehensively explore intrapersonal and interpersonal processes, we used data from the nationally representative Panel Analysis of Intimate Relationships and Family Dynamics ("Pairfam", release 8.0; see Brüderl et al., 2017) study, which provides data from couples of three cohorts (1991–1993, 1981–1983, and 1971–1973). This longitudinal study started in 2008 and assessed over 12,000 participants in yearly home-based interviews. Concept and design of the German Family Panel are described in detail in Huinink et al. (2011).²

In the current study, we used data from a selected subsample of $n = 2090$ heterosexual couples which were in the same relationship between Wave 2 and Wave 6 (average duration of relationship in months in Wave 2: $M = 113.14$, $SD = 74.68$ with a range between 0 and 403 months). The mean age of the male sample at W2 was 34.43 years ($SD = 7.32$ years) with an age range between 16 and 70 years. The mean age of the female sample at W2 was

31.56 years ($SD = 6.43$ years) with an age range between 14 and 53 years.

Measures

In our study, we selected a subsample of variables from different measurement times (an overview of measurement occasions of the variables of interest is depicted in Table S2 in the supplemental material) to examine (1) the influence of neuroticism as enduring vulnerability on the satisfaction in romantic relationships as well as (2) the influence of (mal-)adaptive processes explaining this neuroticism-satisfaction link reflecting (a) *cognitive processes* (i.e., hostile attributions), (b) *emotional processes* (fear of love withdrawal, perceived insecurity), and (c) *behavioral processes* (self-disclosure, dyadic coping, withdrawal, and passive-aggressive behavior). To adequately model the hypothesized central role of cognitive processes above and beyond the other (mal-)adaptive processes, a greater time lag between their assessment (i.e., about two years) has to be accepted due to the present data structure.

Enduring vulnerability: Neuroticism. Neuroticism was assessed inter alia in Wave 2 with the German short version of the Big Five Inventory (BFI-K; Rammstedt & John, 2005). The original neuroticism scale consisted of four items (e.g., "I easily become depressed or discouraged." and "I worry a lot.") which were presented with a five-point Likert-scale, ranging from 1 (*absolutely incorrect*) to 5 (*absolutely correct*). The reliability and construct validity of the original short version was satisfactory (e.g., Rammstedt & John, 2005). In our study, the reliability of the four-item scale was insufficient (Cronbach's alpha ranging between .53 for men and .59 for women). Confirmatory factor analyses showed that one item (item 9 "I am relaxed and don't let myself be worried by stress.", recoded) had lower values than any of the other items (3 to 5 vs. 1 to 5 for other three items). Excluding this item (three-item solution) enhanced the internal consistency (Cronbach's alpha = .68 to .69) and validity. The measurement model showed a good fit ($\chi^2(10) = 8.11$, $p = .618$; RMSEA = .00, 90% C.I. of RMSEA [.00; .020]; CFI = 1.00; SRMR = .013) to the data ($n = 2086$).³

Dependent variable 1: Relationship satisfaction. The satisfaction in intimate partner relationships was assessed in each Wave with one item from the German version of the Relationship Assessment Scale (RAS; Sander & Böcker, 1993: "All in all, how satisfied are you with your relationship?") with a 11-point Likert-scale ranging from 0 (*very dissatisfied*) to 10 (*very satisfied*). The reliability and construct validity of the RAS scale was satisfactory (e.g., Sander & Böcker, 1993). In our study, reliability and validity cannot be assessed due to one-item-measurement.

Dependent variable 2: Instability of partnership. In addition to relationship satisfaction, instability of partnership was assessed in the Pairfam study, similarly in every Wave. On the basis of the Marital Instability Index (Booth et al., 1983), three items were used to gather information on subjectively perceived instability of the relationship. The participants answered with a two-stage response format (recoded in the data preparation; 0 = *No*, 1 = *Yes*) whether they had thought “[...] that your relationship/marriage was in trouble?”, whether they had “considered a separation/divorce?”, and whether they had “seriously suggested [their partner] a separation/divorce or has [their partner] suggested it to you?”. Participants were asked to base their responses on events and experiences during the previous year. In our study, the reliability of the scale at Wave 4 was sufficient (Cronbach’s alpha between .75 and .81): Confirmatory factor analyses showed that between 42% and 75% of the variance in observed variables could be explained by a common factor. The measurement model showed a sufficient fit ($\chi^2(10) = 85.303$, $p < .001$; RMSEA = .060, 90% C.I. of RMSEA [.049; .072]; CFI = .946; SRMR = .054) to the data ($n = 2101$).³ However, instead of computing a weighted sum of item scores, the Pairfam codebook recommends computing the absolute number of “yes” responses, which is what we did here. The higher the value is, the higher is the instability. Thus, in all subsequent statistical analyses, instability of partnership was included as manifest variable.

Cognitive processes: Hostile attributions. Hostile attributions were assessed inter alia in Wave 3 with an abbreviated scale in order to access negative interpretations of the partner’s behavior more directly. The hostile attributions scale consisted of three items (e.g., “When we have a problem, [name of partner] only thinks about his/her own needs.”, “If I address a problem, it annoys him/her and he/she is angry.”, and “If I wanted to change something in our relationship, I already know that [name of partner] would not take my concerns seriously.”) which were presented with a five-point Likert-scale, ranging from 1 (*not at all*) to 5 (*absolutely*). In our study, the reliability of the self-developed scale at Wave 3 was sufficient (Cronbach’s alpha between .67 and .71): Confirmatory factor analyses showed that between 38% and 53% of the variance in observed variables could be explained by the underlying common factor. The measurement model showed a good fit ($\chi^2(10) = 19.615$, $p = .033$; RMSEA = .021, 90% C.I. of RMSEA [.006; .035]; CFI = .991; SRMR = .025) to the data ($n = 2085$).³

Emotional processes: Fear of love withdrawal. Fear of love withdrawal was assessed inter alia in Waves 3 and 5 with three items selected from the Munich Individuation Test of Adolescence (MITA; Walper

et al., 1996: “I’m often afraid [name of partner] thinks I’m silly or stupid if I make a mistake.”, “Sometimes I’m afraid that [name of partner] would rather spend time with other than with me.”, and “When I disappoint or annoy [name of partner], I am afraid that he/she won’t like me anymore.”) which were presented with a five-point Likert-scale ranging from 1 (*not at all*) to 5 (*absolutely*). The reliability and construct validity of the original version was sufficient (e.g., Walper et al., 1996). In our study, the reliability of the three-item scale was sufficient (Cronbach’s alpha ranging between .66 and .71 for men and women): Confirmatory factor analyses showed that between 28% and 49% of the variance in observed variables could be explained by the underlying common factor. The measurement model showed a good fit ($\chi^2(10) = 8.173$, $p = .612$; RMSEA = .00, 90% C.I. of RMSEA [.00; .020]; CFI = 1.00; SRMR = .014) to the data ($n = 2086$).³

Emotional processes: Perceived insecurity in the partnership.

Perceived insecurity was assessed inter alia in Wave 3 and 5 with two items selected from the Munich Individuation Test of Adolescence (MITA; Walper et al., 1996: “I have the feeling that I like [name of partner] more than he/she likes me.” and “Sometimes I’m not sure if [name of partner] enjoys being with me as much as I enjoy being with him/her.”) which were presented with a five-point Likert-scale ranging from 1 (*not at all*) to 5 (*absolutely*). The reliability and construct validity of the original version were good (e.g., Walper et al., 1996). In our study, the reliability of the two-item scale was sufficient (Cronbach’s alpha ranging between .61 and .63 for men and women): Confirmatory factor analyses showed that between 35% and 57% of the variance in observed variables could be explained by the underlying common factor. The measurement model showed a good fit ($\chi^2(2) = 0.472$, $p = .79$; RMSEA = .00, 90% C.I. of RMSEA [.00; .028]; CFI = 1.00; SRMR = .005) to the data ($n = 2083$).³

Behavioral processes: Dyadic coping. Dyadic coping within the partnership was assessed inter alia in Wave 3 and 5. On the basis of the Dyadic Coping Questionnaire (FDCT-N, Bodenmann, 2000a), three items were used: “I let [name of partner] know that I understand him/her.”, “I listen to [name of partner] and give him/her the chance to express himself/herself.”, and “I support [name of partner] in concrete ways when he/she has a problem.”. The items were presented together with a five-point Likert-scale, ranging from 1 (*never*) to 5 (*always*). The reliability and construct validity of the original version was satisfactory (Bodenmann, 2000a). In our study, the reliability of the three-item scale was sufficient (Cronbach’s alpha ranging between .77 and .74 for men and women). Confirmatory factor analyses showed that between 43% and 65% of the variance

in observed variables could be explained by the underlying common factor. The measurement model showed a good fit ($\chi^2(10)=12.885$, $p=.230$; RMSEA = .012, 90% C.I. of RMSEA [.00; .028]; CFI = .999; SRMR = .017) to the data ($n=2083$).³

Behavioral processes: Self-disclosure. In the Pairfam study, intimacy was assessed inter alia in Wave 7 with two items taken from the adapted version from the Network of Relationships Inventory (NRI; Furman & Buhrmester, 1985: "How often do you tell [name of partner] what you're thinking?" and "How often do you share your secrets and private feelings with [name of partner]?") which were presented with a five-point Likert-scale, ranging from 1 (*never*) to 5 (*always*). The reliability and construct validity of the original version was satisfactory (e.g., Furman, 1996; Furman & Buhrmester, 2009). In our study, the reliability of the two-item scale was sufficient (Cronbach's alpha ranging between .72 and .75 for men and women): Confirmatory factor analyses showed that between 39% and 84% of the variance in observed variables could be explained by the underlying common factor. The measurement model showed a good fit ($\chi^2(2)=3.873$, $p=.144$; RMSEA = .021, 90% C.I. of RMSEA [.00; .053]; CFI = .999; SRMR = .013) to the data ($n=2085$).³

Behavioral processes: Passive-aggressive behavior. In the Pairfam study, three different conflict resolution styles, that is, verbal aggression, constructive behavior, and manipulation, were assessed inter alia in Wave 3 and 5 with three scales developed on the basis of the KOMQUAL Questionnaire (Questionnaire for the measurement of communication quality; Bodenmann, 2000b). Participants were asked to describe what happens when they have a disagreement with their partner and to indicate how often both their partner and they themselves have (1) insulted/verbally abused and yelled at their partner (verbal aggression), (2) listened to their partner/asked them questions and clarified their own position towards their partner (constructive behavior), and (3) felt insulted and tried to shift blame/guilt to their partner (passive-aggressive or manipulative). Items were presented with a five-point Likert-scale, ranging from 1 (*almost never or never*) to 5 (*very frequently*). The reliability and construct validity of the original version was sufficient (e.g., Bodenmann, 2000b). In the present study, we used the two-item scale manipulation representing a passive-aggressive reaction in conflict situations, that is, causing guilt or blaming others. In our study, the reliability of the two-item scale was sufficient (Cronbach's alpha was .64 for men and women). Confirmatory factor analyses showed that a substantial amount of variance in the observed variables could be explained by the underlying common factors (explained variances ranging between 37% and 60%). The measurement model

showed a sufficient fit to the data ($n=2080$)² ($\chi^2(2)=7.579$, $p=.023$; RMSEA = .037, 90% C.I. of RMSEA [.012; .066]; CFI = .993; SRMR = .014).³

Behavioral processes: Withdrawal. Withdrawal as a maladaptive, behavioral conflict resolution style was measured inter alia in Wave 3 and 5 with a two-item scale from the "Conflict Resolution Inventory" (Kurdek, 1994). Participants were asked to describe what happens when they have a disagreement with their partner and to indicate how often both their partner and they themselves have (1) given their partner the "silent treatment" and (2) refused to talk about the subject with their partner on a five-point Likert-scale, ranging from 1 (*almost never or never*) to 5 (*very frequently*). The reliability and construct validity of the original version was sufficient (Kurdek, 1994). In the present study, we used only the first item representing withdrawal or avoidance from further communication. Due to one-item-measurement, reliability and validity cannot be assessed.

Data preparation and data analysis

All syntaxes to replicate the statistical analyses are available on the OSF platform (<https://osf.io/gjd2x/>). First of all, the 10 relevant data sets containing data of participants (i.e., anchor data sets) and their partners (i.e., partner data sets) for each of the five measurement occasions (Waves 2 to 6) (for details, see Brüderl et al., 2017) were matched and rearranged by using the statistical program IBM SPSS Statistics (Version 20). In a next step, measurement models for all interesting variables were computed by using the statistical program Mplus Version 7.1 (Muthén & Muthén, 1998–2013). To account for non-normal distributions of variables, we used the robust estimator MLR (Maximum Likelihood Robust). We then calculated correlations for all interesting variables for women and men separately and then within dyad members (see Table 1).

The multi-cohort study design and the multi-actor approach of the Pairfam study (i.e., the individual's partner was additionally included in the survey) enable mediational analyses where both perspectives of partners can be considered (i.e., a dyadic design; Mund et al., 2016). To adequately model the dynamic interplay between both partners, we used Actor-Partner Interdependence Mediation Models (APIMeM; Ledermann & Bodenmann, 2006; Ledermann et al., 2010; Ledermann et al., 2011) to test for intrapersonal (i.e., actor) and interpersonal (i.e., partner) effects. These hypotheses testing APIMeMs were computed using Mplus (Version 7.1; Muthén & Muthén, 1998–2013). Here, indirect effects were estimated and tested by using bootstrapping procedure because indirect effects have non-normal distributions (e.g., MacKinnon et al., 2004; Preacher & Hayes, 2008; 95% confidence intervals, $n=5000$ resamples).

Table 1. Bivariate correlations between variables reported by men (above the diagonal) and women (under the diagonal).

													Men		d
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	M	SD	
(1) Relationship duration at W2		.567***	-.030	.033	-.013	.123***	-.084**	-.116***	.031	-.009	-.008	-.077**			
(2) Age at W2	.653***		-.024	-.009	-.034	.084**	-.108***	-.094***	-.019	.011	-.013	-.006	31.56	6.43	
(3) Neuroticism at W2	-.088***	-.098***		.185***	.264***	.168***	-.084***	-.085***	.276***	.174***	-.141***	.153***	2.78	0.88	
(4) Hostile attributions at W3	.033	-.003	.214***		.558***	.523***	-.282***	-.331***	.361***	.243***	-.249***	.268***	1.78	0.78	
(5) Fear of love withdrawal at W3	-.147***	-.169***	.289***	.482***		.174***	-.191***	-.294***	.388***	.318***	-.183***	.250***	1.67	0.76	
(6) Perceived insecurity at W3	-.013	-.022	.160***	.489***	.503***		-.192***	-.242***	.296***	.168***	-.215***	.224***	1.63	0.86	
(7) Self-disclosure at W3	-.163***	-.175***	-.100***	-.374***	-.209***	-.226***		.464***	-.236***	-.305***	.244***	-.195***	3.87	0.75	
(8) Dyadic coping at W3	-.110***	-.091***	-.111***	-.293***	-.187***	-.191***	.401***		.162***	-.288***	.169***	-.173***	4.20	0.56	
(9) Passive-aggressive behavior at W3	-.061**	-.128***	.269***	.354***	.330***	.239***	-.191***	-.279***	.280***	.465***	-.161***	.261***	2.40	0.97	
(10) Withdrawal at W3	-.042	-.056*	.237***	.202***	.256**	.151***	-.254***	-.225***	.338***	.071*	-.158***	.216***	2.25	1.18	
(11) Relationship satisfaction at W4	-.120***	-.138***	-.114***	-.305***	-.152***	-.181***	.305***	.185***	-.193***	-.139***	.152***	-.328***	7.82	2.11	
(12) Instability of partnership at W4	-.105***	-.086***	.167***	.312***	.224***	.161***	-.224***	-.185***	.249***	.173***	-.390***	.495***	0.41	0.85	

Bivariate correlations between male and female variables are depicted in the diagonal (printed in bold). Means and standard deviations for variables are displayed separately for women and men. *** $p < .001$; ** $p < .01$; * $p < .05$; "W" = "Wave". Cohen's d denotes the standardized mean-level difference between both partners' measures (for paired samples). Significant mean differences ($p < .05$) are displayed in bold in the column "d". N differed for each variable. For neuroticism, $n = 1305$ couples, who both partners reported data on Wave 2; for mediating variables (Wave 3), n s between 1318 and 1329; for relationship satisfaction and instability in partnership (Wave 4), n s between 1265 and 1309. Scale from 1 to 5, except for relationship satisfaction (here, from 0 to 10) and instability in partnership (here, from 0 to 3).

Actor-partner interdependence models. Actor-Partner Interdependence Models (APIMeM, Ledermann et al., 2011) are the adequate statistical approach to study the effects of personality traits on social outcomes in a dyadic context (Nestler et al., 2015). This type of model accounts for the non-independence of data points within a dyad as proposed by Kenny (1996) and allows for modeling cross-partner influences (Nestler et al., 2015). The APIMeM simultaneously estimates the impact of an individual's personality on his or her own relationship satisfaction (intrapersonal effect) as well as on the relationship satisfaction of his or her partner (interpersonal effect). In the present study, we are further interested in factors that may mediate the relation between neuroticism and relationship satisfaction (e.g., cognitive biases).

In the supplemental material, Figure S1 depicts an exemplary APIMeM. It consists of three pairs of variables, each variable once reported by the female partner and the other reported by the male partner in a dyad (represented by rectangles for manifest variables and ovals for latent variables). Here, neuroticism is the independent variable which is assumed to predict relationship satisfaction as outcome variable. Furthermore, this effect is assumed to be mediated by several intervening variables (mediators). The three types of variables (independent, mediator, and outcome variable) were assessed at different measurement occasions (e.g., t1, t2, and t3). In addition, there are two pairs of error terms (represented by circles), which are allowed to correlate, indicating that residuals covary between dyad members due to unmeasured common causes (Ledermann et al., 2011). A model with only one mediator variable consists of six intrapersonal effects indexed by A and six interpersonal effects indexed by P. Furthermore, paths from the independent to the mediator variable are indexed by *a*, paths from the mediator to the outcome variable are indexed by *b*, and paths from independent to outcome variable are indexed by *c*.

In the APIMeM, there are four different types of effects between independent and outcome variable that can be mediated: (1) Actor-actor-actor effects (AAA), (2) actor-partner-actor effects (APA), (3) actor-actor-partner effects (AAP), and (4) actor-partner-partner effects (APP). In the supplemental material in Table S1, these different effect types as well as their calculation are summarized. To estimate and test the indirect effects, we used bootstrapping procedure because indirect effects have non-normal distributions (e.g., MacKinnon et al., 2004; Preacher & Hayes, 2008). Statistical programs such as Mplus (Muthén & Muthén, 1998–2013) have built-in routines to estimate the specific effects of interest.

Omnibus test for empirical distinguishability. The distinguishability of dyad members is an important precondition in dyadic data analysis (Kenny et al., 2006).

Distinguishability means that members of a dyad can be clearly identified, for instance, on the basis of their gender in the case of heterosexual couples (male partner/husband vs. female partner/wife; Nestler et al., 2015). The omnibus test is used to empirically test the equality of variances and covariances between dyad members even if the assumption of a differentiating variable (here: men and women) is applied (Kenny et al., 2006). If distinguishability does not matter empirically, the model can be simplified, and therefore, a more parsimonious model can be tested, which also increases statistical power. Kenny et al. (2006) differentiate between three types of distinguishability: *Complete indistinguishability*, where all parameters are set equal; *Y indistinguishability*, where mean and variances of independent variables are not constrained for dyad members; and *effect indistinguishability*, where only actor and partner effects are set equal. In order to test for empirically distinguishability, three models were estimated. In Model 1 (complete indistinguishability), all parameters (means, variances, covariances, actor and partner effects) were constrained to be equal for men and women. In Model 2 (Y indistinguishability), means and variances of neuroticism were allowed to differ between men and women, but the other parameters (means, variances, covariances, actor and partner effects) were again constrained to be equal. In Model 3 (effect indistinguishability), only actor and partner effects as well as covariances were constrained to be equal (covariances, actor and partner effects); all other parameters were allowed to differ between men and women.

The model fits for the three respective models are listed in Table S4 in the supplemental material. Model 3 (effect indistinguishability) had the best fit. However, the omnibus test reveals significant differences between men and women in effects of interest ($\chi^2(695) = 1372.948, p < .001$). In addition, differences in model fit when constraining further parameters lead to significant ($ps < .001$) reductions in model fit. Thus, path coefficients were not constrained to be equal for men and women in the APIMeM because distinguishability empirically matters.

Prediction model. For hypothesis testing, we applied APIMeM (Ledermann & Bodenmann, 2006; Ledermann et al., 2010) to account for the non-independence of dyadic data (Kenny, 1996). To test our hypothesis, we used Big Five personality traits assessed at Wave 2 to predict (mal-)adaptive processes assessed at Wave 3 (hostile attributions, self-disclosure, etc.) which, in turn, predict relationship satisfaction assessed at Wave 4.

Specification of APIMeM. In the measurement models, the factor loadings for men's and women's latent factors (except for manifest variables, i.e., relationship

satisfaction, instability of partnership, and withdrawal; single-item measurements) were constrained to be equal to establish partial measurement invariance. Measurement invariance means that the measurement properties of a psychometric test are equivalent across different groups (see Meredith, 1993; Millsap, 2011). If latent factor means should be meaningfully compared, the measurement structures of the latent factors and their respective items should be stable, that is “invariant” (see Van De Schoot et al., 2015). In Table S3 in the supplemental material, results of comparisons in model fits of different phases of measurement invariance (i.e., metric vs. scalar) for each latent variable are presented. Metric invariance establishes an equivalent factor structure and factor loadings for both genders. For each latent variable, Satorra-Bentler’s scaled chi-square difference test for robust estimators (Satorra & Bentler, 2001) revealed significant differences ($ps < .001$) in model fit when also constraining intercepts of measured items for men and women. However, models with constrained factor structure and factor loadings for both genders showed a good fit to the data (e.g., RMSEAs $< .037$, CFIs $> .991$, and SRMRs $< .025$). Therefore, we decided to only constrain factor loadings for men’s and women’s latent factors to be equal to establish partial measurement invariance. In addition, intercepts of the first indicator variables were fixed to zero to identify (and estimate) latent means.

In the structural model, male and female parameters were estimated freely because they are empirically distinguishable (see Omnibus Test for Empirical Distinguishability in the Results). However, variables were allowed to correlate between members of a dyad (e.g., male, and female scores in neuroticism at Wave 2). In addition, the variables representing the (mal-)adaptive processes of male versus female partners were allowed to correlate (e.g., frequency of hostile attributions and dyadic coping of the male partner), indicating that residuals covary within a dyad member due to unmeasured common causes (Ledermann et al., 2011). Direct effects between predictors and outcome variables were not fixed to zero and estimated freely. Indirect effects for the effects from neuroticism at Wave 2 on relationship satisfaction at Wave 4 were estimated and tested by using bootstrapping procedure because indirect effects have non-normal distributions (Preacher & Hayes, 2008; 95% confidence intervals, $n = 5000$ resamples).

Results

Descriptive statistics and bivariate correlations

Descriptive statistics and bivariate correlations were conducted separately for men and women for reasons of clarity and comprehensibility. Means and standard

deviations are reported in Table 1 (right-hand columns). We tested for possible gender differences in the relevant variables by conducting *t*-tests for dependent samples. As expected due to the large sample size, most of these gender differences were significant, but effect sizes were mostly small in size (Cohen’s $d < .30$). The highest effect sizes were found for neuroticism, self-disclosure, and passive-aggressive behavior.

Bivariate correlations between variables are displayed in Table 1. Inspecting these bivariate correlations reveals the following results: First, age at Wave 2 was negatively correlated with fear of love withdrawal (only for women, see numbers below the diagonal), perceived insecurity (only for men, see numbers above the diagonal), self-disclosure, dyadic coping, and passive-aggressive behavior (only for women) at Wave 3. A similar correlational pattern applied to relationship duration at Wave 2, except for an additional negative correlation with withdrawal at Wave 3. However, these correlations were small in size (r s between $-.06$ and $-.18$). Second, intercorrelations between the measured mediator variables (assessed at Wave 3) were significant, yet mostly small in size. Hostile attributions correlated positively and moderately with fear of love withdrawal and perceived insecurity (r s between $.48$ and $.56$) as well as positively with passive-aggressive behavior and withdrawal (r s between $.20$ and $.36$). In addition, hostile attributions correlated negatively with self-disclosure and dyadic coping (r s between $-.28$ and $-.37$), suggesting maladaptive consequences of negative attributions regarding the partner’s intentions. Fear of love withdrawal as well as perceived insecurity showed similar correlational patterns like hostile attributions. That is, there were positive and moderate correlations between them (r s = $.50$ and $.55$ for women and men, respectively) and with passive-aggressive behavior as well as withdrawal (r s between $.15$ and $.39$), and negative correlations with self-disclosure and dyadic coping (r s between $-.19$ and $-.29$). However, the majority of these correlations were small in size. Self-disclosure and dyadic coping were positively correlated as well (r s = $.40$ and $.46$ for women and men, respectively) and correlated negatively with passive-aggressive behavior and withdrawal (r s between $-.19$ and $-.36$). These negative communication styles, in turn, were positively correlated (r s = $.34$ and $.47$ for women and men, respectively). Third, there were positive, but rather small correlations between female and male values in the respective variables (r s between $.07$ for withdrawal and $.28$ for passive-aggressive behavior, see numbers in the diagonal). Taken together, this pattern of correlations provides first evidence for the overall dysfunctional effects of maladaptive cognitive processes, which we assume to be relevant for predicting both partners’ relationship satisfaction.

APIMeM to simultaneously test for mediating effects of cognitive, emotional, and behavioral processes

To test our two hypotheses, we used neuroticism assessed at Wave 2 to predict (mal-)adaptive processes assessed at Wave 3 (hostile attributions, self-disclosure, etc.) which, in turn, predict relationship satisfaction assessed at Wave 4. To account for confounding effects of age of participants as well as of duration of the partnership, effects are controlled for age and relationship duration at Wave 2. The results are depicted in Table 2. The model showed a sufficient fit to the data ($n = 2075$) ($\chi^2(732) = 1629.55$, $p < .001$; RMSEA = .024, 90% C.I. of RMSEA [.023; .026]; CFI = .949; SRMR = .047).⁴ Direct effects of neuroticism at Wave 2 on relationship satisfaction at Wave 4 were mostly not significant (male effects: $B_{actor} = -0.52$, S.E. = 0.41, 95% C.I. [-1.49; -0.07]; $B_{partner} = -0.29$, S.E. = 0.32, 95% C.I. [-1.38; 0.10]; female effects: $B_{actor} = -0.06$, S.E. = 0.18, 95% C.I. [-0.31; 0.50]; $B_{partner} = 0.01$, S.E. = 0.22, 95% C.I. [-0.34; 0.48]), except for the direct male actor effect as indicated by a 95% bootstrapping confidence interval which did not contain zero. As bivariate correlations showed, the total effects of neuroticism at Wave 2 and relationship satisfaction at Wave 4 were significant and negative (for men: $r = -.141$, $p < .001$; for women: $r = -.114$, $p < .001$). Thus, (mal-)adaptive processes fully mediated the effects of neuroticism on relationship satisfaction among women, whereas they partly mediated these effects among men.

(Mal-)Adaptive effects of neuroticism. As expected and in line with previous findings, neuroticism at Wave 2 significantly predicted (mal-)adaptive processes, both on an intrapersonal and interpersonal level. As displayed in the column headed "Predictor \rightarrow Mediator" in Table 2, the higher the individual's level in neuroticism, the higher were this individual's scores on hostile attributions, fear of love withdrawal, perceived insecurity, passive-aggressive behaviors, and withdrawal, and the lower were this individual's scores on self-disclosure and dyadic coping. In addition, neuroticism had the expected interpersonal effects (see column headed "Predictor \rightarrow Mediator" in the rows starting with "Partner" in Table 2); only two female partner effects were not significant. The higher an individual's levels of neuroticism, the higher the partner's scores on hostile attributions, fear of love withdrawal (only male partner effect), perceived insecurity, passive-aggressive behavior (only male partner effect), and withdrawal. In addition, the higher an individual's level of neuroticism, the lower their partner's scores on self-disclosure and dyadic coping.

Effects of (mal-)adaptive processes on relationship satisfaction. Regarding potential maladaptive effects of the cognitive, emotional, and behavioral processes on relationship satisfaction, there were six significant effects (see Table 2, column headed "Mediator \rightarrow Outcome"): three intrapersonal and three interpersonal effects. Regarding dyadic coping, engaging more frequently in dyadic coping positively predicted the partner's relationship satisfaction (interpersonal effect), for men and women. In addition, men's self-disclosure behavior positively predicted women's relationship satisfaction (interpersonal effect). However, if women showed more self-disclosure behavior, this positively predicted their own relationship satisfaction (intrapersonal effect). In addition, own perceived insecurity negatively predicted relationship satisfaction for men (intrapersonal effect). For women, in turn, own hostile attributions negatively affected their relationship satisfaction (intrapersonal effect). As expected, hostile attributions, perceived insecurity, self-disclosure, and dyadic coping mediated the relation between neuroticism and relationship satisfaction in the sense of an indirect effect.⁵

Female indirect effects. On the intrapersonal level, women's levels of neuroticism positively predicted their hostile attributions, which, in turn, negatively predicted their own relationship satisfaction (female AAA effect, see right-hand column "Indirect effects" in Table 2). Likewise, women's levels of neuroticism negatively predicted their self-disclosure behavior, which, in turn, positively predicted their own relationship satisfaction (female AAA effect). On the interpersonal level, women's levels of neuroticism negatively predicted their dyadic coping and the lower the values in dyadic coping, in turn, the lower the men's values in relationship satisfaction (female AAP effect). Similarly, women's levels of neuroticism negatively predicted the men's dyadic coping and the lower the men's values in dyadic coping the lower the women's values in relationship satisfaction (female APA effect). Furthermore, the higher the women's levels of neuroticism, the lower the men's values in self-disclosure and the lower the men's values in self-disclosure, the lower the women's relationship satisfaction (female APA effect). Finally, women's levels of neuroticism positively predicted the men's perceived insecurity and the higher the men's values in perceived insecurity, the lower the men's values in relationship satisfaction (female APP effect).

Male indirect effects. Male effects appeared on the interpersonal level (see right-hand column "Indirect effects" in Table 2). Men's levels of neuroticism negatively predicted their self-disclosure behavior and the lower their values in self-disclosure, in turn, the lower the women's values in relationship satisfaction (male AAP effect). Likewise, men's levels of neuroticism negatively predicted their own dyadic coping and

Table 2. Overview of direct and indirect actor and partner effects for the Actor-Partner Interdependence Mediation Models with neuroticism² at Wave 2 as predictor and relationship satisfaction^b at Wave 4 as criterion.

Effects	Predictor → Mediator				Mediator → Outcome				Indirect effects			
	B (S.E.)	<i>f</i> ^c	95% C.I. of bootstrapping	Effects	B (S.E.)	<i>f</i> ^c	95% C.I. of bootstrapping	B (S.E.)	<i>f</i> ^c	95% C.I. of bootstrapping		
				Female								
Hostile attributions^a												
Actor												
Female	0.21 (0.03)	0.27	[0.14;0.28]	Female	-1.00 (0.50)	-0.30	[-2.39;-0.27]	AAA	AAA	AAA	AAA	
Male	0.26 (0.04)	0.32	[0.19;0.34]	Male	-0.50 (0.54)	-0.15	[-1.69;0.45]	APA	APP	APA	APP	
Partner								AAA	APP	AAA	APP	
Female	0.09 (0.03)	0.12	[0.03;0.15]	Male	-0.27 (0.59)	-0.08	[-1.40;0.81]	AAA	APP	AAA	APP	
Male	0.18 (0.04)	0.21	[0.10;0.26]	Female	-0.42 (0.53)	-0.12	[-1.47;0.71]	APA	APP	APA	APP	
Fear of love withdrawal^a												
Actor												
Female	0.29 (0.03)	0.37	[0.23;0.36]	Female	0.18 (0.65)	0.06	[-2.28;0.95]	AAA	APP	AAA	APP	
Male	0.37 (0.04)	0.47	[0.29;0.46]	Male	1.83 (2.19)	0.51	[-0.14;6.50]	APA	APP	APA	APP	
Partner								AAA	APP	AAA	APP	
Female	0.05 (0.03)	0.07	[-0.01;0.12]	Male	0.01 (0.75)	0.01	[-1.50;1.03]	AAA	APP	AAA	APP	
Male	0.09 (0.04)	0.10	[0.01;0.16]	Female	1.16 (1.30)	0.32	[-0.76;5.86]	APA	APP	APA	APP	
Perceived insecurity^a												
Actor												
Female	0.23 (0.04)	0.25	[0.15;0.30]	Female	0.33 (0.72)	0.12	[-0.41;3.92]	AAA	APP	AAA	APP	
Male	0.25 (0.05)	0.25	[0.17;0.35]	Male	-1.40 (1.63)	-0.50	[-4.90;-0.10]	APA	APP	APA	APP	
Partner								AAA	APP	AAA	APP	
Female	0.13 (0.04)	0.14	[0.05;0.21]	Male	0.08 (0.87)	0.03	[-0.98;1.59]	AAA	APP	AAA	APP	
Male	0.16 (0.05)	0.16	[0.06;0.25]	Female	-0.78 (1.14)	-0.27	[-4.93;0.48]	APA	APP	APA	APP	
Self-disclosure^a												
Actor												
Female	-0.11 (0.03)	-0.13	[-0.18;-0.05]	Female	0.68 (0.18)	0.23	[0.25;0.99]	AAA	APP	AAA	APP	
Male	-0.16 (0.05)	-0.16	[-0.24;-0.07]	Male	0.44 (0.28)	0.15	[-0.34;0.83]	APA	APP	APA	APP	
Partner								AAA	APP	AAA	APP	
Female	-0.07 (0.04)	-0.08	[-0.14;-0.01]	Male	0.03 (0.21)	0.01	[-0.39;0.44]	AAA	APP	AAA	APP	
Male	-0.12 (0.04)	-0.13	[-0.20;-0.04]	Female	-0.47 (0.27)	-0.16	[-1.14;-0.03]	APA	APP	APA	APP	
Dyadic coping^a												
Actor												
Female	-0.08 (0.03)	-0.12	[-0.13;-0.04]	Female	-0.26 (0.16)	-0.07	[-0.59;0.07]	AAA	APP	AAA	APP	
Male	-0.13 (0.03)	-0.17	[-0.19;-0.06]	Male	0.04 (0.37)	0.01	[-0.43;0.98]	APA	APP	APA	APP	
Partner								AAA	APP	AAA	APP	
Female	-0.06 (0.03)	-0.09	[-0.13;-0.01]	Male	0.48 (0.19)	0.12	[0.10;0.84]	AAA	APP	AAA	APP	
Male	-0.09 (0.03)	-0.13	[-0.15;-0.03]	Female	0.76 (0.33)	0.21	[0.26;1.62]	APA	APP	APA	APP	
Passive-aggressive behavior^a												
Actor												
Female	0.37 (0.04)	0.41	[0.30;0.44]	Female	-0.26 (0.22)	-0.09	[-0.65;0.21]	AAA	APP	AAA	APP	
Male	0.39 (0.04)	0.44	[0.31;0.49]	Male	0.03 (0.31)	0.01	[-0.57;0.67]	APA	APP	APA	APP	
Partner								AAA	APP	AAA	APP	
Female	0.06 (0.04)	0.07	[-0.01;0.14]	Male	0.21 (0.25)	0.07	[-0.26;0.68]	AAA	APP	AAA	APP	
Male	0.10 (0.04)	0.10	[0.02;0.18]	Female	0.16 (0.30)	0.05	[-0.47;0.73]	APA	APP	APA	APP	
Withdrawal^a												
Actor												
Female	0.27 (0.05)	0.18	[0.18;0.35]	Female	0.01 (0.06)	0.01	[-0.11;0.14]	AAA	APP	AAA	APP	
Male	0.47 (0.06)	0.30	[0.35;0.58]	Male	-0.17 (0.20)	-0.09	[-0.59;0.07]	APA	APP	APA	APP	
Partner								AAA	APP	AAA	APP	
Female	0.12 (0.05)	0.08	[0.02;0.22]	Male	-0.03 (0.07)	-0.02	[-0.18;0.11]	AAA	APP	AAA	APP	
Male	0.18 (0.06)	0.11	[0.08;0.30]	Female	-0.18 (0.15)	-0.10	[-0.65;0.01]	APA	APP	APA	APP	

Mediators are assessed at Wave 3. Effects are controlled for age and relationship duration at Wave 2. AAA: Actor-actor effects; APA: actor-partner-actor effects; AAP: actor-partner effects; APP: actor-partner effects.

^aLatent variable.

^bManifest single-item variable.

^cStandardized parameter estimates (StdYX), where parameter estimates are standardized using the variances of the continuous latent variables as well as the variances of the outcome and/or background variables.

the lower the men's values in dyadic coping, the lower the women's values in relationship satisfaction (male AAP effect). Furthermore, the higher the men's levels of neuroticism, the lower the women's values in dyadic coping and the lower the women's values in dyadic coping the lower the men's relationship satisfaction (male APA effect). Finally, men's levels of neuroticism positively predicted the women's hostile attributions and the higher the women's values in hostile attributions, the lower the women's values in relationship satisfaction (male APP effect). Likewise, men's levels of neuroticism negatively predicted the women's self-disclosure behavior and the lower the women's values in self-disclosure, the lower the women's values in relationship satisfaction (male APP effect).

Patterns of intra- and interpersonal effects. To test for specific dyadic patterns in dyadic mediation models, we computed the parameter k by calculating the ratio of the partner and actor effects (see Table 3). In the current study, values of k for a paths ranged between 0.16 and 0.75, suggesting a relative importance of both intrapersonal and interpersonal effects. For b paths, the parameter k varied depending on the mediator variable. For hostile attributions and perceived insecurity, ks varied between 0.24 and 0.84, suggesting a relative importance of both intrapersonal and interpersonal effects. In addition, parameter k indicated an actor-only pattern (i.e., independence) for female effects of fear of love withdrawal and self-disclosure (ks close to zero). However, contrasting patterns (indicated by negative values of k) turned out for female effects of dyadic coping, passive-aggressive behavior, and withdrawal as well as for male effects of self-disclosure. Thus, intrapersonal and interpersonal effects seem to be relevant (i.e., mixed pattern), but they have different signs. For instance, the more women showed passive-aggressive behaviors, the lower their own relationship

satisfaction (female intrapersonal effect: $b = -0.26$) on the one side, but the higher their men's relationship satisfaction (female interpersonal effect: $b = 0.21$) on the other side. Finally, parameter k indicated a couple pattern for male effects of withdrawal (ks about 1) and a dependence pattern for male effects of dyadic coping and passive-aggressive behavior ($ks > 1$). As expected, intrapersonal and interpersonal effects seem to be important in explaining relationship satisfaction over time. Thus, an individual's neuroticism predicted their own as well as their partner's (mal-) adaptive processes, which affected their own as well as their partner's relationship satisfaction.

Effects of cognitive processes compared to emotional and behavioral processes. Results of APIMeMs (see Table 2) revealed that effects of hostile attributions remained significant even after controlling for the other potential mediator variables. More precisely, two indirect effects (female AAA and male APP) were significant as indicated by bootstrapping confidence intervals not containing zero, even if the other mediator variables were included in the prediction model. Thus, both partners' levels of neuroticism uniquely predicted women's levels of hostile attributions, which, in turn, negatively predicted women's relationship satisfaction.

In addition, standardized parameter estimates of path coefficients for a paths (see column "Predictor → Mediator") and b paths (see column "Mediator → Outcome") as well as for indirect effects (see column "Indirect Effects") are displayed in Table 2 (see columns " β ") enabling a direct comparison of indirect effects. Here, hostile attributions and perceived insecurity seemed to be of particular importance for the negative effects of neuroticism on relationship satisfaction. Generally, standardized parameter estimates of significant effects (as indicated by bootstrapping confidence intervals not containing zero) were rather small ($|\beta_s|$ between 0.01 and 0.08). However,

Table 3. Overview of parameter k for different paths in the APIMeMs with neuroticism^a at Wave 2 as predictor and relationship satisfaction^b versus instability of partnership^b (in separate columns) at Wave 4 as criterion.

Effect	Path					
	a paths/ Predictor → Mediator		b paths/ Mediator → Outcome			
	Female	Male	Relationship satisfaction		Instability of partnership	
			Female	Male	Female	Male
Hostile attributions ^a	0.43	0.69	0.27	0.84	0.42	-41
Fear of love withdrawal ^a	0.17	0.24	0.06	0.63	-0.05	25.5
Perceived insecurity ^a	0.57	0.64	0.24	0.56	0.18	4.16
Self-disclosure ^a	0.64	0.75	0.04	-1.07	-1.6	0.2
Dyadic coping ^a	0.75	0.69	-1.85	19	1.5	-0.63
Passive-aggressive behavior ^a	0.16	0.26	-0.81	5.33	-6	0.68
Withdrawal ^b	0.44	0.38	-3	1.06	3	2

Mediators are assessed at Wave 3.

^aLatent variable.

^bManifest single-item variable.

indirect effects of hostile attributions (female AAA and male APP effects) were stronger ($\beta_{AAA} = -0.08$ and $\beta_{APP} = -0.06$) than any other indirect effect, except for perceived insecurity (female APP effect: $\beta = -0.07$).

Relationship satisfaction versus instability of partnership

In addition to looking at relationship satisfaction, we wanted to examine the effects of neuroticism and (mal-)adaptive processes on (in)stability of partnership. As Table 1 shows, relationship satisfaction and instability of partnership were negatively correlated (r_s between $-.328$ and $-.468$, $ps < .001$) indicating that both variables represent somewhat different aspects of relationship quality. To examine possible effects of (mal-)adaptive processes on this indicator of relationship quality, we used neuroticism assessed at Wave 2 to predict (mal-)adaptive processes assessed at Wave 3 (hostile attributions, self-disclosure, etc.) which, in turn, predict instability of partnership assessed at Wave 4. To account for confounding effects of age of participants as well as of duration of the partnership, effects were controlled for age and relationship duration at Wave 2.

The results are reported in Table 4. The model fit the data reasonably well ($n = 2075$) ($\chi^2(732) = 1660.79$, $p < .001$; RMSEA = .025, 90% C.I. of RMSEA [.023; .026]; CFI = .948; SRMR = .047). Direct effects of neuroticism at Wave 2 on instability of partnership at Wave 4 were not significant ($ps > .05$; bootstrapping confidence intervals contained zero; male effects: $B_{actor} = 0.10$, S.E. = 0.11, 95% C.I. [-0.22; 0.23]; $B_{partner} = 0.05$, S.E. = 0.13, 95% C.I. [-0.16; 0.35]; female effects: $B_{actor} = 0.04$, S.E. = 0.08, 95% C.I. [-0.14; 0.17]; $B_{partner} = -0.01$, S.E. = 0.06, 95% C.I. [-0.13; 0.11]). As bivariate correlations showed, the total effects of neuroticism at Wave 2 and instability of partnership at Wave 4 were significant and positive (for men: $r = .153$, $p < .001$; for women: $r = .167$, $p < .001$). That is, (mal-)adaptive processes fully mediated the effect of neuroticism on instability of partnership.

Effects of (mal-)adaptive processes on instability of partnership. Regarding potential maladaptive effects of the cognitive, emotional, and behavioral processes on instability of partnership, there were five significant effects on the intrapersonal as well as on the interpersonal level. Regarding intrapersonal effects, women's harboring of hostile attributions and perceived insecurity predicted their own instability of partnership. As displayed in the column headed "Mediator -> Outcome" in Table 4, the higher women's levels of hostile attributions, the higher their reported instability of partnership, but the higher women's perceived insecurity, the lower their reported instability of partnership. For men, the

higher their values of passive-aggressive behaviors, the higher their reported instability of partnership. In addition, an individual's reported instability of partnership was predicted by their partner's perceived insecurity and withdrawal (see column headed "Mediator -> Outcome" in the rows starting with "Partner" in Table 4). That is, the higher women's levels of withdrawal, the higher their men's reported instability of partnership. Likewise, the higher men's values in perceived insecurity, the higher their women's reported instability of partnership.

Female indirect effects. On the intrapersonal level, women's levels of neuroticism positively predicted their hostile attributions, which, in turn, positively predicted their own instability of partnership (female AAA effect, see right-hand column "Indirect effects" in Table 4). Likewise, women's levels of neuroticism negatively predicted their perceived insecurity, which, in turn, negatively predicted their own instability of partnership (female AAA effect). On the interpersonal level, women's levels of neuroticism positively predicted their men's perceived insecurity as well as withdrawal. The higher men's values in perceived insecurity and withdrawal, the higher women's values in instability of partnership (female APA effect).

Comparing these indirect effects with the indirect effects found for relationship satisfaction as outcome variable, there are some similarities and differences. First, there were fewer significant indirect effects (six vs. four). Second, in both models, hostile attributions and perceived insecurity at least partly mediated the relation between neuroticism and indicators of relationship quality, both on an intrapersonal and on an interpersonal level. Third, self-disclosure behavior and dyadic coping were relevant for the effect of neuroticism on relationship satisfaction, but not for the effect of neuroticism on instability of partnership. Fourth, vice versa, withdrawal at least partly mediated the relation between neuroticism on instability of partnership, but not relationship satisfaction.

Male indirect effects. Male effects appeared mostly on the interpersonal level except for a male AAA effect for passive-aggressive behavior (see right-hand column "Indirect effects" in Table 4). Here, the higher men's levels of neuroticism, the higher their values in passive-aggressive behavior, which, in turn, positively predicted instability of partnership. On the interpersonal level, men's levels of neuroticism positively predicted their perceived insecurity and the higher their values in perceived insecurity, in turn, the higher their women's values in instability of partnership (male AAP effect). Furthermore, the higher men's levels of neuroticism, the higher their women's values in withdrawal, with higher levels in withdrawal positively predicting men's instability of partnership (male APA effect). Finally, men's levels

Table 4. Overview of direct and indirect actor and partner effects for the Actor-Partner Interdependence Mediation Models with neuroticism^a at Wave 2 as predictor and Instability of Partnership^b at Wave 4 as criterion.

Effects	Predictor → Mediator		Mediator → Outcome		Indirect effects		95% C.I. of bootstrapping
	B (S.E.)	95% C.I. of bootstrapping	B (S.E.)	95% C.I. of bootstrapping	Effects	B (S.E.)	
Hostile attributions ^a							
	Actor	Female	0.21 (0.03)	[0.14;0.28]	0.71 (0.24)	[0.34;1.19]	Female
Partner	Male	0.26 (0.04)	[0.19;0.34]	0.01 (0.19)	[-0.38;0.37]		AAA 0.06 (0.04) [-0.01;0.15]
	Female	0.09 (0.03)	[0.03;0.15]	0.30 (0.18)	[-0.05;0.66]	Male	APA 0.01 (0.02) [-0.04;0.04]
Fear of love withdrawal ^b							
	Actor	Male	0.18 (0.04)	[0.11;0.26]	-0.41 (0.25)	[-0.88;0.11]	AAA 0.01 (0.05) [-0.10;0.10]
Partner	Female	0.30 (0.03)	[0.23;0.36]	0.21 (0.26)	[-0.20;0.79]	Female	AAA 0.06 (0.08) [-0.06;0.24]
	Male	0.37 (0.04)	[0.30;0.46]	-0.02 (0.61)	[-1.21;1.33]	Male	AAA -0.01 (0.06) [-0.13;0.12]
Perceived insecurity ^a							
	Actor	Female	0.05 (0.03)	[-0.01;0.11]	-0.01 (0.21)	[-0.42;0.41]	Female
Partner	Male	0.09 (0.04)	[0.01;0.16]	-0.51 (0.66)	[-2.06;0.52]	Male	APP -0.01 (0.03) [-0.08;0.07]
	Female	0.23 (0.04)	[0.16;0.30]	-0.51 (0.29)	[-1.11;-0.08]	Female	AAA -0.12 (0.07) [-0.27;-0.02]
Self-disclosure ^a							
	Actor	Female	0.13 (0.04)	[0.05;0.21]	0.19 (0.42)	[-0.85;0.97]	Female
Partner	Male	0.16 (0.05)	[0.07;0.25]	-0.09 (0.22)	[-0.54;0.40]	Male	APA 0.10 (0.07) [0.01;0.29]
	Female	-0.12 (0.03)	[-0.18;-0.06]	0.79 (0.46)	[0.06;1.81]	Female	APP 0.02 (0.06) [-0.08;0.15]
Partner	Male	-0.16 (0.05)	[-0.25;-0.07]	-0.05 (0.09)	[-0.21;0.12]	Male	AAA 0.05 (0.11) [-0.20;0.25]
	Female	-0.07 (0.04)	[-0.14;-0.01]	-0.15 (0.09)	[-0.35;0.03]	Male	AAA 0.20 (0.13) [0.02;0.49]
Partner	Male	-0.12 (0.04)	[-0.20;-0.04]	0.08 (0.08)	[-0.07;0.23]	Male	APA -0.02 (0.04) [-0.10;0.06]
	Female	-0.12 (0.04)	[-0.20;-0.04]	-0.03 (0.11)	[-0.22;0.24]	Female	APP -0.08 (0.06) [-0.22;-0.02]

(continued)

Table 4. Continued.

Effects	Predictor → Mediator		Mediator → Outcome		Indirect effects				
	B (S.E.)	95% C.I. of bootstrapping	B (S.E.)	95% C.I. of bootstrapping	Effects	95% C.I. of bootstrapping			
Dyadic coping ^a Actor	Female	-0.08 (0.03)	[-0.13;-0.04]	-0.02 (0.08)	[-0.17;0.14]	Female	AAA APP	0.01 (0.01) -0.01 (0.02)	[-0.04;0.01] [-0.01;0.02]
	Male	-0.13 (0.03)	[-0.19;-0.06]	0.08 (0.11)	[-0.15;0.30]		Female	AAA AAP APA APP	0.01 (0.01) 0.01 (0.01) 0.01 (0.01) -0.01 (0.01)
Partner	Female	-0.06 (0.03)	[-0.13;-0.01]	-0.03 (0.07)	[-0.17;0.12]	Male	AAA AAP	-0.01 (0.02) 0.01 (0.02)	[-0.04;0.02] [-0.02;0.05]
	Male	-0.09 (0.03)	[-0.16;-0.03]	-0.05 (0.13)	[-0.36;0.17]		Female	AAA AAP APA APP	0.01 (0.01) 0.01 (0.01) 0.01 (0.01) 0.01 (0.01)
Passive-aggressive behavior ^a Actor	Female	0.37 (0.04)	[0.30;0.45]	0.02 (0.10)	[-0.18;0.20]	Female	AAA AAP	0.01 (0.04) -0.04 (0.03)	[-0.07;0.08] [-0.10;0.01]
	Male	0.40 (0.04)	[0.31;0.49]	0.25 (0.11)	[0.06;0.46]		Female	AAA AAP APP	0.01 (0.01) 0.02 (0.01) 0.10 (0.05)
Partner	Female	0.06 (0.04)	[-0.01;0.14]	-0.12 (0.08)	[-0.27;0.04]	Male	AAA AAP	0.07 (0.05) -0.01 (0.01)	[-0.03;0.18] [-0.04;0.01]
	Male	0.10 (0.04)	[0.02;0.19]	0.17 (0.13)	[-0.09;0.43]		Female	AAA AAP APP	0.01 (0.01) 0.01 (0.01) 0.01 (0.01)
Withdrawal ^b Actor	Female	0.27 (0.05)	[0.18;0.36]	0.02 (0.03)	[-0.05;0.08]	Female	AAA AAP	0.01 (0.01) 0.02 (0.01)	[-0.01;0.02] [0.01;0.03]
	Male	0.47 (0.06)	[0.36;0.58]	0.01 (0.06)	[-0.12;0.11]		Female	AAA AAP APP	0.01 (0.01) 0.01 (0.01) 0.01 (0.01)
Partner	Female	0.12 (0.05)	[0.02;0.22]	0.06 (0.03)	[0.01;0.11]	Male	AAA AAP	0.01 (0.03) 0.01 (0.03)	[-0.04;0.08] [0.01;0.03]
	Male	0.19 (0.06)	[0.08;0.30]	0.02 (0.06)	[-0.09;0.17]		Female	AAA AAP APP	0.01 (0.01) 0.01 (0.01) 0.01 (0.01)

Mediators are assessed at Wave 3. Effects are controlled for age and relationship duration at Wave 2. AAA- Actor-actor-actor effects; AAP- actor-partner-actor effects; APP- actor-partner-partner effects.
^aLatent variable.
^bManifest single-item variable.

of neuroticism positively predicted the women's hostile attributions and perceived insecurity. The higher women's values in hostile attributions, the higher their men's values in instability of partnership. Likewise, the higher women's levels in perceived insecurity, the lower their men's levels in instability of partnership (male APP effects).

Comparing these indirect effects with the indirect effects found with relationship satisfaction as outcome variable, first, as for female indirect effects, in both models, hostile attributions at least partly mediated the relation between neuroticism and indicators of relationship quality, both on an intrapersonal and on an interpersonal level. Second, perceived insecurity was relevant for the relation between neuroticism and indicators of relationship quality as it applies to women. Third, as for female indirect effects, self-disclosure behavior and dyadic coping were relevant for the effect of neuroticism on relationship satisfaction, but not for the effect of neuroticism on instability of partnership. Fourth, vice versa, passive-aggressive behavior and withdrawal at least partly mediated the relation between neuroticism on instability of partnership, but not relationship satisfaction.

Patterns of intra- and interpersonal effects. To test for specific dyadic patterns in dyadic mediation models, we again computed the parameter k by calculating the ratio of the partner and actor effects (see Table 3). For instability of partnership, values of k for a paths indicated something in between an actor-only and a couple pattern (k s between 0.17 and 0.75) suggesting a relative importance of both intrapersonal and interpersonal effects. For b paths, the parameter k varied depending on the mediator variable. Again, something in between an actor-only and a couple pattern occurred for female effects of hostile attributions and perceived insecurity as well as for male effects of self-disclosure and passive-aggressive behavior (k s between 0.18 and 0.68). In addition, parameter k indicated an actor-only pattern (i.e., independence) for female effects of fear of love withdrawal (k close to zero). However, contrast patterns (indicated by negative values of k) turned out for female effects of self-disclosure and passive-aggressive behavior as well as for male effects of hostile attributions and dyadic coping. Thus, intrapersonal and interpersonal effects seem to be relevant (i.e., mixed pattern), but they have different signs. For instance, the higher the female values in self-disclosure, on the one side, the lower their own instability of partnership (female intrapersonal effect: $b = -0.05$), but, on the other side, the higher their men's instability of partnership (female interpersonal effect: $b = 0.08$). Finally, these mostly high values of k indicated a dependence pattern, that is, the relative importance of interpersonal effects. More precisely, this applied to female effects of dyadic coping, withdrawal, self-disclosure, and passive-aggressive behavior as well as for male effects

of hostile attributions, fear of love withdrawal, perceived insecurity, and withdrawal. Again, intrapersonal and interpersonal effects seem to be important in explaining stability of partnership. Thus, an individual's neuroticism predicted their own as well as their partner's (mal-)adaptive processes, which, in turn, affected the (in)stability of their partnership.

Control analyses

In addition to studying (mal-)adaptive effects of neuroticism, we wanted to look more closely at the question how specific our results are for neuroticism. Therefore, we re-ran our APIMeM with each Big Five personality trait assessed at Wave 2 as predictor variable, respectively. The results are reported in separate tables in the supplementary material (for extraversion in Table S5, for conscientiousness in Table S6, for agreeableness in Table S7, and for openness to experience in Table S8). We do not report the results of the APIMeMs here in detail because that would go beyond the scope of this paper which aimed at focusing on neuroticism and its maladaptive effects on cognitive, emotional, and behavioral variables. Instead, we briefly summarize the results here. All models showed a sufficient fit to the data (RMSEAs $\leq .028$; CFI $\geq .921$; SRMR $\leq .064$). Direct effects of the Big Five personality traits assessed at Wave 2 on relationship satisfaction at Wave 4 were not significant (p s $> .05$; bootstrapping confidence intervals contained zero). However, bivariate correlations were mostly significant (p s $< .05$), but rather small in size (r s $\leq .36$). The highest total effect was associated with extraversion. Thus, (mal-)adaptive processes fully mediated the effects of Big Five personality traits at Wave 2 on relationship satisfaction at Wave 4. Indirect effects of the (mal-)adaptive processes are displayed in the right-hand column "Indirect effects" in the respective tables in the supplemental material (for extraversion see Table S5, for conscientiousness see Table S6, for agreeableness see Table S7, and for openness to experience see Table S8). Generally, there were several meaningful indirect effects which occurred on the intrapersonal as well as on the interpersonal level.

Extraversion. On the intrapersonal level, women's levels of extraversion negatively predicted their hostile attributions, which, in turn, negatively predicted their own relationship satisfaction (female AAA effect, see in Table S5). Likewise, both partners' levels of extraversion positively predicted their own self-disclosure behavior, which, in turn, positively predicted their own relationship satisfaction (female and male AAA effect). On the interpersonal level, women's levels of extraversion negatively predicted the men's fear of love withdrawal and perceived insecurity. The lower the men's values in perceived insecurity and the higher the men's values in fear of love withdrawal,

in turn, the higher the women's values in relationship satisfaction (female and male APA effects). Similarly, women's levels of extraversion positively predicted the men's self-disclosive behavior and the lower the men's values in self-disclosure, the higher the women's values in relationship satisfaction (female APA effect). Furthermore, the higher both partners' levels of extraversion, the higher the partner's values in dyadic coping, and the higher the partner's values in dyadic coping, the higher both partners' relationship satisfaction (female and male APA effect). Regarding AAP effects, both partners' levels of extraversion positively predicted their own dyadic coping, which, in turn, positively predicted their partner's relationship satisfaction (female and male effects). In addition, men's levels of extraversion positively predicted their own values in self-disclosure and negatively predicted their levels in withdrawal. The higher self-disclosure and withdrawal, in turn, the lower their women's levels of relationship satisfaction (female and male AAP effects). Finally, both partners' levels of extraversion positively predicted their partner's self-disclosure, which, in turn, positively predicted their partner's values in relationship satisfaction (female and male APP effects). Similarly, the higher the men's levels in extraversion, the lower the women's values in hostile attributions, with lower values in hostile attributions predicting higher levels in women's relationship satisfaction.

Conscientiousness. On the intrapersonal level, women's levels of conscientiousness negatively predicted their hostile attributions, which, in turn, negatively predicted their own relationship satisfaction (female AAA effect, see in Table S6). Likewise, both partners' levels of conscientiousness positively predicted their own self-disclosive behavior, which, in turn, positively predicted their own relationship satisfaction (female and male AAA effect). On the interpersonal level, women's levels of conscientiousness positively predicted the men's self-disclosure and negatively predicted the men's withdrawal. The higher the men's values in self-disclosure and in withdrawal, in turn, the lower the women's values in relationship satisfaction (female and male APA effects). Similarly, both partners' levels of conscientiousness positively predicted their partner's dyadic coping and the higher their partner's values in dyadic coping, the higher their own values in relationship satisfaction (female and male APA effect). Regarding AAP effects, both partners' levels of conscientiousness positively predicted their own dyadic coping, which, in turn, positively predicted their partner's relationship satisfaction (female and male effects). In addition, men's levels of conscientiousness negatively predicted their own values in withdrawal. The higher the men's values in withdrawal, in turn, the lower the women's levels of relationship satisfaction (male AAP effects). Finally, men's levels of conscientiousness negatively

predicted their partner's hostile attributions, which, in turn, negatively predicted their partner's values in relationship satisfaction (male APP effects). Similarly, the higher the women's levels in conscientiousness, the higher the men's values in self-disclosure with higher values in self-disclosure predicting higher levels in men's relationship satisfaction (female APP effect).

Agreeableness. On the intrapersonal level, both partners' levels of agreeableness positively predicted their own self-disclosive behavior and dyadic coping with higher values in women's self-disclosure positively predicting the women's relationship satisfaction (female AAA effect, see in Table S7). Similarly, the higher the women's levels in dyadic coping, the lower their relationship satisfaction (female AAA effect). On the interpersonal level, both partners' levels of agreeableness positively predicted their own dyadic coping, which, in turn, positively predicted their partner's relationship satisfaction (female and male AAP effects).

Openness to experience. On the intrapersonal level, both partners' levels of openness positively predicted their own self-disclosive behavior, which, in turn, positively predicted their own relationship satisfaction (female and male AAA effect, see in Table S8). On the interpersonal level, women's levels of openness positively predicted the men's self-disclosure and dyadic coping. The lower the men's values in self-disclosure and the higher the men's levels in dyadic coping, the higher the women's values in relationship satisfaction (female and male APA effects). Regarding AAP effects, both partners' levels of openness positively predicted their own dyadic coping, which, in turn, positively predicted their partner's relationship satisfaction (female and male effects). In addition, men's levels of openness negatively predicted their own values in withdrawal. The higher the men's values in withdrawal, in turn, the lower the women's levels of relationship satisfaction (male AAP effects). Finally, men's levels of openness negatively predicted the women's hostile attributions, which, in turn, negatively predicted the women's values in relationship satisfaction (male APP effects). Similarly, the higher both partners' levels in openness the higher their partner's values in self-disclosure, with higher values in self-disclosure predicting higher levels in both partners' relationship satisfaction (female and male APP effects).

Discussion

In this study, we investigated the psychological processes underlying the well-studied effect of neuroticism on relationship satisfaction in romantic relationships (e.g., Dyrenforth et al., 2010; Malouff et al., 2010). More precisely, we assumed that both

partners' neuroticism affects cognitive, emotional, and behavioral processes, which, in turn, affect their respective relationship satisfaction, both on an intra- and on an interpersonal level. In addition, we took a closer look at the question, whether cognitive processes such as biased interpretations of others' behavior, were especially relevant to understand the maladaptive implications of an individual's neuroticism (Finn et al., 2013; Karney et al., 1994; McNulty, 2008; Schoebi et al., 2012). To adequately model the complex interplay between partners in a romantic relationship (e.g., Ledermann et al., 2011; Mund et al., 2016), we used dyadic data from a longitudinal data set provided by the Panel Analysis of Intimate Relationships and Family Dynamics ("Pairfam") collecting data from thousands of couples of three cohorts (1991–1993, 1981–1983, and 1971–1973). In addition, we used APIMeM to test for intrapersonal (i.e., actor) and interpersonal (i.e., partner) effects.

Cognitive, emotional, and behavioral effects of neuroticism

In line with previous studies, individuals with higher levels in neuroticism tended to interpret their partner's behaviors in a rather negative way (i.e., hostile attributions) (e.g., Finn et al., 2013; Karney et al., 1994). Thus, individuals with higher levels in neuroticism harbored negative expectations regarding their partners' intentions and behaviors (i.e., intrapersonal effect). However, an individual's attributions, and evaluations of their partner's behavior were also predicted by the partner's levels of neuroticism (i.e., interpersonal effect). In line with prior results, an individual's disposition to be emotionally unstable may elicit negative attributions among their partners, too (e.g., Karney et al., 1994).

With regard to emotional consequences of neuroticism, our results supported prior evidence as well (e.g., Gottman et al., 1996; Lavee & Ben-Ari, 2004). Individuals with higher levels of neuroticism reported higher levels of fear of love withdrawal and questioned the partner's commitment to the relationship to a higher degree (i.e., perceived insecurity). In addition to this intrapersonal effect, women's levels of neuroticism also predicted their men's experience of fear of love withdrawal within the relationship (i.e., interpersonal effect). Some researchers argued that women and men differ in their emotional expressiveness such that women may express their emotional states in a romantic relationship more strongly than men (e.g., Gottman et al., 1996; King & Emmons, 1990). In a similar vein, researchers argued that individuals with higher levels in neuroticism not only experience negative emotions more often but also tend to express their negative emotions more intensely, which was associated with their interpersonal behaviors and, thus, both partners' relationship satisfaction (e.g., Lavee & Ben-Ari, 2004; Wilson &

Gullone, 1999). On the behavioral level, the regulation of these negative emotional states plays an important role (e.g., Kokkonen & Pulkkinen, 2001; Vater & Schröder-Abé, 2015).

In line with prior results, individuals with higher levels in neuroticism tended to show more passive-aggressive (i.e., try to shift blame and cause guilt) and avoidant behaviors (e.g., remain silent, refuse to talk) (e.g., Vater & Schröder-Abé, 2015). In addition, individuals with higher levels in neuroticism were less willing to understand the partner's position, nor did they give him/her the chance to express him- or herself (i.e., dyadic coping). Furthermore, individuals with higher levels in neuroticism tended to intimately disclose their thoughts and feelings to their partners to a lesser extent (i.e., self-disclosure). As prior studies found, individuals with higher levels in neuroticism tended to act more negatively toward their partners (i.e., intrapersonal effect), but their partners displayed more negative behaviors than partners from individuals with lower levels in neuroticism as well (i.e., interpersonal effect) (e.g., Caughlin & Vangelisti, 2000; Cunningham & Strassberg, 1981; Donnellan et al., 2007).

Our results supported prior evidence showing maladaptive effects of neuroticism on cognitive, emotional, as well as behavioral variables. But to what extent are they relevant for the negative effects of neuroticism on relationship satisfaction?

Psychological processes that explain the negative effects of neuroticism on relationship satisfaction

According to the Vulnerability Stress Adaption model (VSA; Karney & Bradbury, 1995) and dynamic interactionism (e.g., Caspi & Roberts, 1999; Neyer et al., 2014), both partners' cognitions, emotions, and behavioral responses in social interactions affect the satisfaction in the romantic relationship of both partners. In the terminology of the VSA, we aimed to simultaneously investigate several (mal-)adaptive processes to explain the psychological mechanisms underlying the effect of neuroticism as an "enduring vulnerability" on relationship satisfaction (e.g., Karney & Bradbury, 1995, 1997; McNulty, 2008). Furthermore, we assumed that these (mal-)adaptive processes operate (1) on an intrapersonal level, that is, operating within the individual, as well as (2) on an interpersonal level referring to interaction processes between both partners.

In line with prior studies, cognitive processes such as the tendency to attribute negative intentions to others' behavior showed to be relevant to understand the maladaptive implications of an individual's neuroticism, especially for women (e.g., Caughlin et al., 2000; Donnellan et al., 2004; Finn et al., 2013). On an intrapersonal as well as on an interpersonal level, women's and men's levels in neuroticism predicted the women's tendency to interpret their men's

behaviors to malevolent intentions lowering the women's satisfaction with the romantic relationship. Thus, both partner's individual dispositions predicted negative attributional and appraisal processes on the side of the individual (e.g., Karney et al., 1994; Schoebi et al., 2012), which fully mediated the effects of neuroticism on relationship satisfaction among women.

Furthermore, in line with our assumptions, neuroticism predicted higher levels of perceived insecurity regarding the partner's commitment to the relationship lowering the satisfaction with the romantic relationship (e.g., Lavee & Ben-Ari, 2004; Steel et al., 2008). On the interpersonal level, the emotional state of one partner predicted the other partner's emotional state showing the dynamic interaction between both partners (i.e., emotional contagion process; e.g., Caughlin et al., 2000; Hatfield et al., 1994). That is, being in a relationship with an anxious and insecure partner may impinge one's own feelings of security, reassurance, and satisfaction with the romantic relationship.

However, behavioral variables were significant mediators for the influence of neuroticism on relationship satisfaction as well. In line with prior studies, dyadic coping as well as self-disclosure were predicted by both partner's levels of neuroticism, which, in turn, predicted both partner's relationship satisfaction (e.g., Bühler et al., 2020; Caughlin et al., 2000; Falconier et al., 2015; Laurenceau et al., 2005). In our study, there were considerably more interpersonal effects (nine vs. two intrapersonal effects) showing the dynamic interplay between both partners, especially regarding these behavioral variables. Thus, an individual's behavioral reactions or communication styles due to individual vulnerabilities of both partners can evoke particular reactions on the side of the partner, for instance, supportive reactions in problem-solving situations or self-disclosive reactions, affecting both partners' satisfaction with the relationship (i.e., communication processes; e.g., Caughlin et al., 2000; Fitzpatrick & Badzinski, 1994). More precisely, it could be plausible to assume that interpersonal behaviors mainly had impacts on the interpersonal level because an individual's behavioral reactions like communication patterns or problem-solving behaviors directly affect both partners' feelings and reactions.

However, one result was somehow counterintuitive: Women's relationship satisfaction was lower if their men reported more self-disclosive behaviors. Actually, prior studies found positive effects of self-disclosive behaviors on the satisfaction with romantic relationships (e.g., Anderson & Emmer-Sommer, 2006; Sanderson & Evans, 2001; Starks et al., 2017). One possible explanation for this effect is that self-disclosure of men functions as a negative suppressor variable (e.g., Lancaster, 1999). Here, men's self-disclosure itself seemed to suppress a meaningful

amount of variance in men's dyadic coping.⁶ That is, both behavioral variables represented positive interpersonal behaviors such as listening to each other, expressing one's own thoughts and feelings to the partner, and giving comfort to each other. Such positive interpersonal behavior, in turn, seemed to be relevant for women's relationship satisfaction.

Contrary to our assumptions, fear of love withdrawal, passive-aggressive behaviors, and withdrawal did not mediate the relation between neuroticism and relationship satisfaction. One possible explanation is that these effects are redundant with the effect(s) of one or more of the other variables included in the model, such as hostile attributions.⁷ As a consequence, our results concerning these (mal-)adaptive processes can only be interpreted to a limited extent. Altogether, cognitive, emotional as well as behavioral variables were relevant for the negative effect of neuroticism on relationship satisfaction.

Thus, the results confirmed our hypotheses that the relation between neuroticism and relationship satisfaction is at least partly mediated by (mal-)adaptive processes, especially by hostile attributions, perceived insecurity, self-disclosive behavior and the engagement in dyadic coping. Furthermore, intrapersonal (i.e., actor effects) as well as interpersonal effects (i.e., partner effects) seemed to be important in this regard. However, interpersonal effects seemed to be of particular importance when studying the influences of interpersonal behaviors (e.g., self-disclosure, dyadic coping) on relationship satisfaction showing the reciprocal relation between both partners' behaviors.

Similarities and differences in predicting relationship satisfaction versus instability of partnership

Generally, there were similarities and differences regarding the role of (mal-)adaptive processes in explaining the effects of neuroticism on the two indicators of relationship quality (relationship satisfaction and instability of partnership). Similar to the results for relationship satisfaction, hostile attributions significantly mediated the negative effect of neuroticism on instability of partnership. More precisely, in line with prior studies, an individual's neuroticism significantly predicted the tendency to attribute negative intentions to others' behavior, especially among women (e.g., Caughlin et al., 2000; Donnellan et al., 2004; Finn et al., 2013; Karney et al., 1994; Schoebi et al., 2012). On an intrapersonal as well as on an interpersonal level, women's and men's levels in neuroticism predicted women's tendency to attribute their men's behaviors to malevolent intentions, which made women's partnership less stable. Thus, both partners' individual dispositions predicted negative attributional and appraisal processes on the side of the individual (e.g., Karney et al., 1994; Schoebi

et al., 2012). In addition, fear of love withdrawal neither had an indirect effect on relationship satisfaction nor on instability of partnership.

However, there were also differences when comparing the results for the two indicators of relationship quality. In contrast to relationship satisfaction, self-disclosure and dyadic coping did not significantly predict instability of partnership. Perceived insecurity, in turn, was a significant mediator for the relation between neuroticism and instability of partnership, but indirect effects differed from those for relationship satisfaction. In line with our assumptions, intrapersonal as well as interpersonal effects emerged, but interpersonal effects occurred more often than intrapersonal ones (e.g., Lavee & Ben-Ari, 2004; Steel et al., 2008). That is, both partners' levels of neuroticism positively predicted both partners' feelings of insecurity, affecting women's instability of partnership. In the sense of an emotional contagion process, the emotional state of one partner affected the other partner's emotional state (e.g., Caughlin et al., 2000; Hatfield et al., 1994).

In contrast to results for relationship satisfaction, passive-aggressive behaviors and withdrawal significantly predicted instability of partnership. More precisely, in line with prior studies, both partners' behaviors, for instance in conflict situations, are, on the one side, influenced by an individual's neuroticism (e.g., Antonioni, 1998; Bouchard, 2003). On the other side, they are important predictors for relationship quality, especially for men (e.g., Gottman & Driver, 2005). More precisely, men's instability of partnership was higher if they reported more passive-aggressive reactions and/or if their women tended to show more withdrawal, both predicted by either partner's levels of neuroticism.

Similar to the results for relationship satisfaction, behavioral variables (passive-aggressive behaviors and withdrawal for instability of partnership vs. self-disclosure and dyadic coping for relationship satisfaction) operated mostly on interpersonal levels. In our study, there were more interpersonal effects than intrapersonal effects (six vs. three intrapersonal effects). Thus, an individual's behavioral reactions or communication styles due to individual vulnerabilities of both partners can evoke particular reactions on the side of the partner, for instance, withdrawal or passive-aggressive reactions, affecting both partners' instability of partnership (i.e., communication processes; e.g., Caughlin et al., 2000; Fitzpatrick & Badzinski, 1994).

However, there was again one counterintuitive result: Women's partnership instability was lower if they reported higher levels of perceived insecurity. One possible explanation is that perceived insecurity also functions as a negative suppressor variable (e.g., Lancaster, 1999). Here, women's perceived insecurity itself seems to suppress a meaningful amount of variance in women's fear of love withdrawal.⁸ That is,

both emotional variables represented feelings of insecurity regarding the relationship. Such feelings of fear and insecurity, in turn, seemed to be relevant for women's relationship quality.

When comparing the results for the two indicators of relationship quality, the different patterns of results are striking and require an explanation. After all, both relationship satisfaction and partnership (in)stability are plausible and conceptually related indicators of relationship quality (Karney & Bradbury, 1995). In a review of longitudinal studies on marital outcomes, marital satisfaction was more strongly related to marital stability (aggregate *rs* ranged from .14 to .42) than most other predictor variables (Karney & Bradbury, 1995). In a similar vein, the effects of earlier marital satisfaction on later marital instability were stronger than vice versa (e.g., Yeh et al., 2006). The researchers argued that perceived instability of partnership may arise from relationship dissatisfaction, whereby experienced dissatisfaction did not strongly predict instability of partnership. In line with this, in our study, relationship satisfaction and instability of partnership were only moderately correlated, indicating that both variables represent somewhat different aspects of relationship quality. Previous research has shown that the association between relationship satisfaction and partnership (in)stability depends on relationship duration, with stronger associations in the early stages of a relationship and weaker correlations over time (e.g., Karney & Bradbury, 1995). Thus, the fact that our subsample consisted of couples which were in a relationship for at least four years may account for the diverging patterns between our two dependent variables.

The role of cognitive processes

Another research question of our study was to examine the relative importance of cognitive processes vis-à-vis other variables underlying the effect of neuroticism on relationship satisfaction (e.g., Finn et al., 2013; Karney et al., 1994; McNulty, 2008; Schoebi et al., 2012). In line with dynamic transactionism models (e.g., Mund et al., 2016; Mund et al., 2018) and the Vulnerability Stress Adaptation model (Karney & Bradbury, 1995), our results suggest that cognitive factors, such as interpersonal perceptions and interpretations, indeed play an important role in predicting (mal-)adaptive processes occurring within a relationship. More precisely, both partners' levels of neuroticism predicted both partners' hostile attributions, which mediated the negative effects of neuroticism on relationship satisfaction and instability of partnership, even after controlling for the effects of the other mediator variables. In addition, when comparing significant indirect effects directly with each other, hostile attributions showed the strongest effects, except for female APP effect of perceived insecurity. Thus, although indirect effects were

generally rather small in size, cognitive processes such as hostile attributions seem to play a particularly important role regarding the effect of neuroticism on relationship satisfaction.

Going one step further, when an individual expects their partner to be less understanding and more critical in a problem-solving situation, they may themselves behave more socially maladaptive as compared to when they expect their partner to be more understanding and less critical (McNulty & Karney, 2002, 2004; Sanford, 2006). In this regard, researchers argued that individuals with higher levels in neuroticism may be less satisfied with their relationships because they tend to create situations in which their negative interpersonal behavior gets reciprocated by their partners (Fisher & McNulty, 2008). In the sense of a self-fulfilling prophecy (e.g., Jones, 1977; Miller & Turnbull, 1986; see below), cognitive processes such as hostile attributions may negatively affect interpersonal behaviors such as communication patterns or problem-solving behaviors, which, in turn, may elicit rather negative interpersonal reactions from their partner. In line with this idea, some researchers suggested that interpersonal expectations may elicit particular interpersonal behavior from the other partner confirming prior expectations (e.g., Brookings et al., 2003; Buss, 1991; Caughlin et al., 2000; Downey et al., 1998). For instance, individuals with higher levels in neuroticism may anxiously expect their partners to be less strongly committed to the relationship and show less positive interpersonal behaviors. This, in turn, may elicit fewer positive reactions from their partners which, in turn, may confirm prior negative interpersonal perceptions and expectations (e.g., regarding the partner's commitment to the relationship), and reduces the partner's relationship satisfaction (e.g., Fisher & McNulty, 2008).

Understanding the central role of maladaptive cognitive processes seems to be of particular relevance for counseling or therapeutic interventions. As cognitive therapy (e.g., Beck, 1964, 2010) posits, the way individuals perceive, interpret, and evaluate their experiences influences their emotional, behavioral, and physiological reactions to these experiences. Correcting misperceptions or misinterpretations and modifying unhelpful thinking enables the individual to experience enduring improvement in their feelings, behavioral reactions, and social relationships (Beck et al., 1979). Thus, interventions based on a cognitive challenging of respective maladaptive interpretations and appraisals, for instance, negative beliefs about the self and others, should positively influence an individual's social relationships as one of the most important facets of people's general life satisfaction.

How specific are the results for neuroticism?

In addition to studying (mal-)adaptive effects of neuroticism, we also examined the question how specific

our results are for neuroticism. Therefore, we conducted several control analyses for each of the Big Five personality traits. The results are depicted in separate tables in the supplementary material (for extraversion in Table S5, for conscientiousness in Table S6, for agreeableness in Table S7, and for openness to experience in Table S8). We do not report the results of the APIMeMs here in detail because that would go beyond the scope of this paper.

However, four points should be mentioned. First, several meaningful indirect effects of the (mal-)adaptive processes can also be found for extraversion (see Table S5), conscientiousness (see Table S6), agreeableness (see Table S7), and openness to experience (see Table S8). Second, as for neuroticism, hostile attributions at least partly mediated the effects of extraversion, conscientiousness, and openness to experiences on relationship satisfaction, both on an intrapersonal and on an interpersonal level. Third, behavioral variables (i.e., self-disclosure, dyadic coping, and withdrawal) again mediated the effects of individual dispositions on relationship satisfaction, on the one side, for the most part and, on the other side, for all personality traits. Fourth, as for neuroticism, interpersonal effects seemed to be important when studying the effects of interpersonal behaviors on relationship satisfaction showing the reciprocal relation between both partners' behaviors (31 interpersonal effects vs. 10 intrapersonal effects). Thus, it seems to be necessary to replicate our findings with other individual dispositions because the studied effects of cognitive, emotional, and behavioral variables seem to be relevant for other personality traits as well.

Limitations

There are some issues that may be regarded as limitations of our study and that need to be discussed. First, due to the longitudinal dyadic data, we were able to examine the underlying psychological mechanisms of the neuroticism-satisfaction link as well as the dynamic interplay between both partners' variables over time disregarding daily fluctuations. Thus, in our study, day-to-day fluctuations of interesting variables cannot be examined. In addition, in longitudinal studies one specific set of participants is analyzed. Therefore, the generalizability of our results to other populations can be seen as critical due to cohort effects or selection effects (see below). Furthermore, participants' age and relationship duration can function as confounding variables because they are linked to the measurement occasions. Therefore, we controlled all effects for these variables. Nevertheless, in our study, time distances between measurement occasions varied, about one year between neuroticism and hostile attributions, but about two years between hostile attributions and other mediator variables in the serial mediation. The higher the time interval between two measurement times, the lower the predictive

influences of earlier assessed variables. This has to be considered when comparing path coefficients. For instance, time lags for *c* paths were greater than time lags for *a* paths what maybe lead to lower estimated path coefficients.

Second, although the Pairfam study provides a rich and comparably dataset, self-selection biases cannot be ruled out. Therefore, to test the generalizability of our results, future research may want to test our hypotheses in other populations (e.g., from other countries and cultures) and under different societal conditions. Third, in our study, we analyzed a particular subsample of the Pairfam data set. Specifically, we used data from couples which were in a relationship for quite a long time (i.e., at least from Wave 2 in 2009/10 to Wave 6 in 2013/14). In addition, relationships were already long-established at Wave 2, on average 9 years, ranging between 0 and 33 years. It would be plausible to assume that relationship satisfaction differs between long-established relationships and newly made ones. For instance, dyadic coping with problems inside and outside the partnership is better geared to the needs of both partners when the partners have gained more experiences in solving problems together. Furthermore, partners may feel more secure and satisfied in the relationship when they have solved (several) problems together, resulting in more trust and confidence promoting, for instance, more self-disclosive behaviors. Thus, it has to be tested whether our results can be found for newly made couples as well where both partners can draw on fewer shared experiences.

Fourth, connected with the collection procedure of the Pairfam study, social desirability biases cannot be ruled out due to usage of self-reports. Participants may have underreported rather negative variables like the harboring of hostile attributions and overreported positive variables like dyadic coping or self-disclosure. To reduce the problem of social desirability, indirect measures should be chosen. For instance, cognitive biases can be accessed via scenarios with the Relationship-Specific Interpretation Bias (RIB; Finn et al., 2013) and behavioral variables can be evaluated with behavioral measures (e.g., the partners should solve a problem together and observers rate their behaviors). Anyhow, nationwide representative surveys like the Pairfam study have to meet the challenge to assess a great set of variables in the most economical way possible. Here, self-reports are less time-consuming and easier to administer than behavioral measures.

A fifth limitation is that relationship satisfaction was only assessed with a single-indicator variable. Thus, the reliability cannot be assessed and the validity of one item is probably lower than when using a multiple-items approach. In the Pairfam study, the aim was to survey as much information as possible from a representative, nationwide sample to reduce dropouts and increase data quality. However, in

future studies, it seems to be relevant to replicate our findings with a more detailed assessment of the satisfaction in the relationship (e.g., the Relationship Assessment Scale (RAS); Hendrick, 1988).

Sixth, on the one hand, we were able to include several mediator variables simultaneously (e.g., dyadic coping, cognitive biases, and feelings of anxiety in the context of the romantic relationship) to investigate their unique influences on the relation between neuroticism and relationship satisfaction. Indirect effects were rather small, but comparably as large as in prior studies (e.g., Dyrenforth et al., 2010). On the other hand, the list of mediator variables we used here is far from exhaustive: Other potential mediator variables include the regulation of (negative) emotional states (e.g., English et al., 2012; Hagemeyer et al., 2013; Hagemeyer et al., 2015) and attachment styles (e.g., Wijngaards-de Meij et al., 2007) to explain the influences of neuroticism on relationship satisfaction. Emotion regulation means how individuals cope with their rather negative emotional states. As the Vulnerability Stress Adaption Model (Karney & Bradbury, 1995) assumes, neurotic individuals are more vulnerable to stressors and more likely to experience negative emotional states in general. Thus, future studies could include emotion regulation strategies as another relevant variable to understand the maladaptive (interpersonal) consequences of neuroticism.

In addition, it has to be discussed how specific our results regarding negative cognitive, emotional, and behavioral variables for neuroticism as enduring vulnerability are. One could expect similar results for neuroticism-related constructs like trait anxiety (e.g., Karney & Bradbury, 1995, 1997; McNulty, 2008), negative affectivity (e.g., Watson & Clark, 1984), low self-esteem (e.g., Erol & Orth, 2016; Bellavia & Murray, 2003), emotional instability (e.g., Caughlin et al., 2000), rejection sensitivity (e.g., Downey et al., 1998), and insecure attachment styles (e.g., Mikulincer & Shaver, 2003). Attachment refers to the mental working models individuals hold in the context of romantic relationships guiding their social interactions and experiences (e.g., Hazan & Shaver, 1987). Neurotic individuals tend to report rather insecure attachment styles (e.g., Nofle & Shaver, 2006; Shaver & Brennan, 1992), which are characterized by avoidance, anxiety, and insecurity (e.g., Fraley et al., 2015). Avoidance is defined by the degree to which individuals feel uncomfortable with closeness and emotional intimacy in an intimate relationship and engage in respective closeness-generating behaviors. People who score high on the avoidance dimension prefer to remain psychologically and emotionally independent of their partners, for instance, by investing less in their relationships and by keeping personal things to themselves (Hazan & Shaver, 1994). Anxiety is marked by negative self-views and a fear of being rejected by the partner

(e.g., Vollmann et al., 2019). Highly anxious people tend to worry and ruminate about being rejected or abandoned by their partners. Insecurity can be seen as an attachment-related emotion leading to partner-related distrust, a desire to maintain behavioral independence, and a tendency to emotionally distance from them. All of these facets—avoidance, anxiety, and insecurity—are negatively related to relationship satisfaction (e.g., Candel & Turliuc, 2019). Thus, it seems to be plausible that other traits such as attachment styles can be relevant for an individual's quality and stability of a romantic partnership as well. However, future studies are necessary to replicate our findings with other enduring vulnerabilities to test whether the influences of cognitive, emotional, and behavioral variables can be clearly ascribed to neuroticism.

Conclusion

The current study can be considered an important starting point for more systematic research on the maladaptive consequences of neuroticism. By analyzing longitudinal dyadic data of more than 2000 heterosexual couples, we investigated the cognitive, emotional, and behavioral processes underlying the effect of neuroticism on relationship satisfaction. In addition, we investigated intrapersonal (i.e., actor effects) and interpersonal effects (i.e., partner effects) of these variables. In line with dynamic transactionism models (Endler & Magnusson, 1976; Mund et al., 2016; Mund et al., 2018), we hypothesized that cognitive, emotional, and behavioral processes predict not only an individual's relationship satisfaction but also their partners' relationship satisfaction. Taken together, we found evidence for our hypotheses that the relation between neuroticism and relationship satisfaction is at least partly mediated by (mal-)adaptive processes, especially by hostile attributions, perceived insecurity, self-disclosive behavior, and the engagement in dyadic coping. Furthermore, intrapersonal (i.e., actor effects) as well as interpersonal effects (i.e., partner effects) seemed to be important in this regard. However, interpersonal effects seemed to be of particular importance when studying the influences of interpersonal behaviors (e.g., self-disclosure, dyadic coping) on relationship satisfaction showing the reciprocal relation between both partners' behaviors. In addition, we found first evidence for the relative importance of cognitive processes regarding how people perceive, interpret, and react to their social environment. Even when controlling for emotional (e.g., fear of love withdrawal and perceived insecurity) and behavioral variables (e.g., self-disclosure, conflict styles, dyadic coping), cognitive processes were relevant for the maladaptive effects of neuroticism. These findings help illuminate the interpersonal dynamics of neuroticism in social relationships and add to our understanding of the

psychological mechanisms underlying the interplay of personality and the satisfaction in intimate partner relationships.

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Data Accessibility Statement

In the current study, we used data from a longitudinal data set provided by the Panel Analysis of Intimate Relationships and Family Dynamics ("Pairfam", release 8.0; see Brüderl et al., 2017). Concept and design of the German Family Panel are described in detail in Huinink et al. (2011). In addition, a detailed description of the surveyed sample, study design, and used instruments is available at <http://www.pairfam.de/en/>. The study data and materials are not openly accessible, but data can be requested as scientific use file via the Pairfam User Support Office (see <https://www.pairfam.de/en/data/data-access/>). Furthermore, used materials and questionnaires are documented in the annual codebooks (see <https://www.pairfam.de/en/documentation/questionnaire/>).

However, in the current study, we selected a particular set of variables, measurement occasions and participants from the whole Pairfam data set to test our interesting hypotheses. In addition, data sets were matched and rearranged to prepare them for our statistical analytic procedure. All scripts to transform raw data and to replicate the statistical analyses used for this article can be accessed at the OSF platform (<https://osf.io/gjd2x/>).

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Supplemental material

Supplemental material for this article is available online.

Notes

1. Different research areas in psychology use and define the term "process" differently. In this study, we used the term "process" because the Vulnerability Stress Adaptation model (Kamey & Bradbury, 1995) on which our reasoning is based uses the term "adaptive processes" when referring to psychological mechanisms

- which occur within the relationship. Specifically, adaptive processes encompass interactive processes representing the dynamic interplay between both partners.
- A detailed description of the surveyed sample, study design, and used instruments is available at <http://www.pairfam.de/en/>.
 - Male and female paths to the first-order factor were set equal. Intercepts were allowed to vary between male and female variables.
 - Model fit of a fully constrained model, that is, when all parameters are constrained to be equal between men and women (complete indistinguishability, $n = 2075$): $\chi^2(817) = 1943.46$, $p < .001$; RMSEA = .026, 90% C.I. of RMSEA [.024; .027]; CFI = .936; SRMR = .052. Model fit significantly differed compared to an unconstrained model, where all parameters are allowed to vary between partners, that is, the prediction model: $\Delta\chi^2(85) = 313.91$, $p < .01$. However, test of small differences in fit (MacCallum et al., 2006) revealed a non-significant reduction in model fit ($p = .885$).
 - In the APIMeM, there are four different types of indirect effects mediating the relation between neuroticism and relationship satisfaction: (1) actor-actor-actor effects (AAA), (2) actor-partner-actor effects (APA), (3) actor-actor-partner effects (AAP), and (4) actor-partner-partner effects (APP).
 - An originally positive relation between men's self-disclosure and women's relationship satisfaction ($r = .122$, $p < .001$) became negative when other mediator variables were included in the prediction model. Furthermore, there was a positive and moderate relation between self-disclosure and dyadic coping ($r = .464$, $p < .001$).
 - There were significant and at least moderate bivariate correlations with hostile attributions ($r_s > .35$) and between passive-aggressive behavior and withdrawal ($r_s > .34$).
 - An originally positive relation between women's perceived insecurity and women's instability of partnership ($r = .161$, $p < .001$) became negative when other mediator variables were included in the prediction model. Furthermore, there was a positive relation between fear of love withdrawal and perceived insecurity ($r = .503$, $p < .001$).
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13. Angaben zur Person

Die Seiten 181 bis 183 enthalten persönliche Daten und sind deshalb nicht Teil der elektronischen Publikation.

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14. Eigenständigkeitserklärung

Hiermit erkläre ich, dass ich meine Dissertation mit dem Titel

„Persönlichkeit und deren Auswirkungen auf interpersonale Wahrnehmung und soziales
Verhalten“

selbstständig, ohne unerlaubte Hilfe angefertigt und mich dabei keiner anderen als der von mir ausdrücklich bezeichneten Quellen und Hilfen bedient habe.

Die Dissertation wurde in der jetzigen oder einer ähnlichen Form noch bei keiner anderen Hochschule eingereicht und hat noch keinen sonstigen Prüfungszwecken gedient.

Weimar (Lahn), Juni 2022

Marianne M. Kreuzer (geb. Hannuschke)