Digitalization and Flexibilization

Investigating the moderating role of two organizational trends regarding leadership processes and well-being

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DEUTSCHE ZUSAMMENFASSUNG

Wie sieht die Arbeitswelt der Zukunft aus? Und wer profitiert von den aktuellen Entwicklungen im organisationalen Kontext? Nicht erst seit die Covid19-Pandemie die Welt in Atem hält und den Alltag in fast allen Unternehmen auf den Kopf gestellt hat, werden die Digitalisierung und die dadurch mögliche Flexibilisierung der Arbeitswelt und deren Implikationen diskutiert. Durch die kurzfristig erforderliche Verlagerung der Arbeit ins „Home-Office“ hat digitales und flexibles Arbeiten nun auch in traditionell von Präsenzarbeit geprägten Unternehmen Einzug gehalten. Es stellt sich die Frage, wie Arbeit aussieht, wenn die Rahmenbedingungen wieder gestaltbar sind und nicht von der Pandemie vorgegeben werden. In der vorliegenden Arbeit soll beleuchtet werden, welche Personen von digitalem und räumlich flexiblem Arbeiten profitieren können. Hierzu wurden zwei Studien durchgeführt, die in den zwei Teilen der Dissertation nachfolgend dargestellt werden.

Im ersten Teil der Dissertation wird herausgearbeitet, ob transformationale Führung einen Effekt auf die Selbstwirksamkeit der Geführten hat und wie sich die Digitalisierung auf Führungsprozesse auswirkt. Es wird untersucht, ob sich im digitalen Kontext Chancen für introvertierte Personen ergeben können, transformationales Führungsverhalten zu zeigen. Konkret stellt sich die Frage: Kann bei einem hohen Anteil digitaler Kommunikation die, in traditionellen Führungskontexten bestehende, Lücke zwischen extravertierten und introvertierten Führungskräften geschlossen werden?

Im zweiten Teil der Dissertation wird beleuchtet, wie flexible Arbeitsmodelle für intrinsisch motivierte Mitarbeiter als Schutzfaktor wirken können. Intrinsische Motivation wird üblicherweise als unerschöpfliche Ressource mit rein positiven Auswirkungen angesehen. Die vorliegende Studie zeigt zunächst auf, dass es, neben den direkten Effekten intrinsischer Motivation auf das Wohlbefinden der Mitarbeiter*innen, auch negative indirekte Effekte geben kann. Als vermittelnder Mechanismus für den negativen indirekten Effekt von intrinsischer Motivation auf das Wohlbefinden wird ein verringertes „Abschalten“ nach der Arbeit untersucht. Es wird weiterhin betrachtet, ob dieser

negative indirekte Effekt der intrinsischen Motivation durch die Nutzung eines flexibleren Arbeitsmodells abgeschwächt werden kann.

Teil 1: Digitale Revolution? Der Einfluss von Extraversion auf transformationales Führungsverhalten und Selbstwirksamkeit bei unterschiedlicher Nutzung mediierter Kommunikation

[Engl. Titel: Digital revolution? The effect of leader extraversion on transformational leadership behavior and followers' self-efficacy at different levels of mediated communication]

Die Digitalisierung der Kommunikation ist weiter auf dem Vormarsch: Ende des Jahres 2019 erreichte die Zahl der monatlich aktiven WhatsApp Nutzer 1,6 Milliarden (Statista, 2019, 20. Oktober). Kommunikation, die über digitale Medien vermittelt wird, also keine „face-to-face" Kommunikation darstellt, nennt man mediierte Kommunikation (Walther, 1996). Mediierte Kommunikation hat nicht nur Einzug in unser Privatleben gehalten, sondern beeinflusst auch die Prozesse im Unternehmensumfeld, so auch die Führungsprozesse (Avolio et al., 2014). Bislang galt die Persönlichkeitseigenschaft Extraversion – assoziiert mit kontaktfreudigem und aufgeschlossenem Verhalten (Costa Jr. & McCrae, 2008) – als ein starker Prädiktor für transformationales Führungsverhalten (Judge & Piccolo, 2004).

Es gibt erste Anzeichen dafür, dass sich dies im Zuge der digitalen Revolution ändern könnte (Balthazard et al., 2009). Konkret wird diskutiert, ob mediierte Kommunikation weniger aversiv für introvertierte oder schüchterne Personen sein könnte (vgl. Tian, 2011). Als Konsequenz könnte mediierte Kommunikation für introvertierte Führungskräfte die „Hemmschwelle" zum Zeigen bestimmter mit Führung assoziierter Verhaltensweisen senken.

In der vorliegenden Studie wird das Führungsverhalten sogenannter „Digital Natives" - also der Generation, die im digitalen Zeitalter aufgewachsen ist (Prensky, 2001) und zukünftig Führungsrollen übernehmen wird, betrachtet. Untersucht wird das Führungsverhalten dieser „Digital Natives" in Mentoring-Beziehungen. Es wird beleuchtet, welchen Effekt das Zusammenspiel von Persönlichkeit und mediierte Kommunikation auf das Führungsverhalten hat. Ich stütze mich dabei auf Ansätze, die effektives Führungsverhalten mit Persönlichkeitseigenschaften in Beziehung setzten

(Colbert et al., 2012). Im Fokus der vorliegenden Studie steht das Zusammenspiel zwischen der Persönlichkeitseigenschaft „Extraversion“ und mediierter Kommunikation. Extraversion wurde bereits mit effektivem Führungsverhalten, insbesondere transformationaler Führung, in Verbindung gebracht (Balthazard et al., 2009; Bono & Judge, 2004; Deinert et al., 2015; Serban et al., 2015). Um den Effekt des gezeigten Führungsverhaltens zu evaluieren, wird zudem der Zusammenhang des Führungsverhaltens auf Veränderungen der Selbstwirksamkeit der Geführten untersucht. Selbstwirksamkeit ist der Glaube an die eigenen Fähigkeiten, Hindernisse überwinden und mit Stress umgehen zu können (Bandura, 1995). Selbstwirksamkeit im akademischen Bereich sagt dabei nicht nur die Studienleistung, sondern auch die Retention der Studierenden vorher (Robbins et al., 2004).

Transformationale Führung manifestiert sich in vier Dimensionen (Bass & Avolio, 1994): „Intellektuell anregendes Verhalten“ (Intellectual Stimulation) fördert neue Denkweisen und die Entwicklung von Lösungen. „Inspirierende Motivation“ (Inspirational Motivation) besteht darin, eine Vision zu schaffen und hohe Leistungserwartungen zu kommunizieren. „Individuelle Unterstützung“ (Individual Consideration) zeigt die Führungskraft dadurch, dass sie auf die Bedürfnisse der Geführten eingeht. Schließlich erfüllt die Führungskraft auch eine „Vorbildfunktion“ (Idealized Influence). Die Dimensionen „Inspirierende Motivation“ und „Vorbildfunktion“ können dabei zu einem gemeinsamen Maß für das „Charisma“ der Führungskraft kombiniert werden (Bono & Judge, 2004). Frühere Studien zeigen, dass es sinnvoll ist, nicht nur den Zusammenhang zwischen Extraversion und transformationaler Führung als Gesamtkonstrukt zu betrachten, sondern auch jeweils auf die einzelnen Dimensionen transformationaler Führung einzugehen (Deinert et al., 2015).

Mediierte Kommunikation wurde bereits als Moderator der Beziehung zwischen Extraversion und transformationaler Führung im experimentellen Kontext untersucht (Balthazard et al., 2009). Aufbauend auf diesen ersten experimentellen Befunden, wird in der vorliegenden Feldstudie analysiert, inwieweit die Nutzung mediierter Kommunikation den Zusammenhang zwischen Extraversion und transformationaler Führung beeinflusst. Nach der Eigenschaftsaktivierungstheorie (Tett & Burnett, 2003) wirken sich Persönlichkeitseigenschaften je nach Kontext unterschiedlich auf

das Verhalten aus. Diese theoretische Annahme deckt sich mit der Hypothese, dass schüchterne Personen vom Kontext mediierter Kommunikation profitieren können (Tian, 2011). Daher wird angenommen, dass Introvertierte ebenso als transformationale Führungskräfte gesehen werden wie Extrovertierte, wenn der Anteil mediierter Kommunikation hoch ist.

In Übereinstimmung mit den theoretischen Annahmen der Forschung im Bereich transformationaler Führung (Bass, 1985) und Forschung zu deren positiven Ergebnissen wie z. B. Leistung (Braun et al., 2013), wird zusätzlich auch der Effekt transformationaler Führung auf die Geführten untersucht. Genauer wird betrachtet, welche Rolle transformationale Führung im Zusammenhang zwischen Extraversion der führenden Person und Veränderungen in der (akademische) Selbstwirksamkeit der Geführten hat.

Methoden und Ergebnisse

Insgesamt wurden Daten von 166 Mentoring-Teams (N = 166 Mentor*innen; N = 204 Protegés/Geführte) des studentischen Peer-Mentoring Programms einer großen deutschen Universität zu drei Messzeitpunkten erhoben (T1: Vor Beginn des zehnmonatigen Programms, T2: fünf Monate nach Programmstart, T3: am Ende des Programms). Zu T1 wurde die Extraversion der Mentor*innen sowie die akademische Selbstwirksamkeit der Protegés, je im Selbstbericht, erfragt. Der Anteil der mediierten Kommunikation sowie das Führungsverhalten der Mentor*innen wurde zu T2 durch die Protegés bewertet. Zu T3 wurde die akademische Selbstwirksamkeit der Protegés erhoben. Aus der Veränderung von T1 zu T3 wurde schließlich ein residualer Veränderungswert (Schaufeli et al., 2009) für die akademische Selbstwirksamkeit der Protegés errechnet. Die Daten wurden unter Berücksichtigung der Teamstruktur in hierarchischen Modellen analysiert. Es zeigte sich, dass Extraversion der Mentor*innen transformationales Führungsverhalten (insgesamt und für die Dimensionen „Intellektuelle Anregung“ sowie „Charisma“) zu T2 vorhersagte. Im Einklang mit den Hypothesen vermittelte sowohl transformationale Führung insgesamt als auch „Intellektuelle Stimulation“ und „Charisma“ den Zusammenhang zwischen Extraversion der Mentor*innen und einer Veränderung der Selbstwirksamkeit der Protegés.

Mediierte Kommunikation moderierte den Effekt der Extraversion der Mentor*innen auf transformationales Führungsverhalten nur für „Intellektuelle Stimulation“: Extraversion sagt bei hoher Nutzung mediierter Kommunikation die von den Protegés wahrgenommene „Intellektuelle Stimulation“ nicht mehr vorher. Dieser moderierende Effekt mediierter Kommunikation konnte auch für den indirekten Effekt von Extraversion der Führungskraft auf Veränderungen der Selbstwirksamkeit der Geführten über „Intellektuelle Stimulation“ gezeigt werden (moderierte Mediation).

Zusammenfassung und Schlussfolgerung

Die Ergebnisse der vorliegenden Studie geben Aufschluss darüber, wie sich mediierte Kommunikation auf Führungswahrnehmung und die Wirksamkeit von transformationaler Führung im Feld auswirkt. Diese Ergebnisse decken sich mit der Annahme der Eigenschaftsaktivierungstheorie (Tett & Burnett, 2003) und zeigen, dass die Assoziation von Extraversion und „Intellektueller Stimulation“ im digitalen Kontext abgeschwächt sein kann. Ein besonderer theoretischer Nutzen der Studie ergibt sich daraus, dass nicht, wie bei vorherigen Studien (Balthazard et al., 2009; Serban et al., 2015), ein rein virtueller Kontext, sondern mediierte Kommunikation graduell untersucht wurde. Die Ergebnisse weisen darauf hin, dass Introvertierte die Kluft zu Extravertieren im Zeigen „Intellektueller Stimulation“ im Kontext mediierter Kommunikation schließen können. Die Wahl des geeigneten Kommunikationsmediums kann wahrgenommene Defizite in speziellen Führungsverhaltensweisen für Introvertierte ausgleichen.

Die vorliegenden Ergebnisse unterstützen die Annahme, dass transformationales Führungsverhalten die (akademische) Selbstwirksamkeit der Geführten über die Zeit stärken kann. Im Hinblick auf die Beziehung zwischen transformationaler Führung und Selbstwirksamkeit ergänzt die Studie die Literatur, indem sie einen positiven Effekt von transformationaler Führung auf Veränderungen der Selbstwirksamkeit im Verlauf von zehn Monaten in einem spezifischen - d.h. akademischen - Kontext feststellt. Die Ergebnisse legen nahe, dass Extraversion einen indirekten Effekt auf Veränderungen der akademischen Selbstwirksamkeit durch transformationale Führung

hat. Die Ergebnisse der moderierten Mediation deuten jedoch darauf hin, dass der indirekte Effekt von Extraversion auf Veränderungen der akademischen Selbstwirksamkeit bei einer hohen Nutzung mediierter Kommunikation nicht wirksam ist. Die Studie gehört zu den ersten, die reale Veränderungen in der akademischen Selbstwirksamkeit darstellen, indem sie einen residualen Veränderungswert in das Modell einbezieht.

Zudem fördert die Studie das Verständnis dafür, dass Führung ein Schlüsselfaktor für die Steigerung der akademischen Selbstwirksamkeit ist: durch transformationale Führung insgesamt und deren Dimensionen „Charisma“ und „Intellektuelle Stimulation“.

Teil 2: Intrinsische Motivation als zweischneidiges Schwert: Eine Untersuchung der Effekte auf das Wohlbefinden und wie flexible Arbeitsmodelle schädliche Einflüsse abschwächen

[Engl. Titel: Intrinsic motivation as a double-edged sword: Investigating effects on well-being and the role of flex work practices as moderator buffering adverse effects]

Wachsende Anforderungen im Arbeitsumfeld bedrohen zunehmend die Gesundheit von Arbeitnehmer*innen (Halbesleben & Buckley, 2016). Als wichtige Voraussetzung des Wohlbefindens von Arbeitnehmer*innen wird intrinsische Motivation diskutiert (Sheldon et al., 2004). Langfristige längsschnittliche Untersuchungen der Auswirkungen von intrinsischer Motivation sind allerdings rar gesät (Fernet et al., 2010 bilden eine Ausnahme). Zudem ist fraglich, ob der einseitig-positive Blick auf intrinsische Motivation wirklich ein vollständiges Bild zeichnet: Kann ein hohes Engagement und Investment von Ressourcen am Arbeitsplatz nicht auch zu einer verminderten Fähigkeit führen, nach der Arbeit abzuschalten?

Die vorliegende Studie zeichnet sich durch den Versuch aus, ein umfassenderes Bild der Auswirkungen intrinsischer Motivation zu zeichnen. Untersucht werden direkte positive Auswirkungen auf Veränderungen des Wohlbefindens (operationalisiert durch das Vorhandensein von Arbeitszufriedenheit sowie die Abwesenheit der Burnout-Dimension „Emotionale Erschöpfung"; Hülsheger & Schewe, 2011) sowie der indirekte negative Effekt über das Abschalten von der Arbeit

(Etzion et al., 1998; Sonnentag & Fritz, 2007). Zudem wird beleuchtet, ob der indirekte negative Effekt von intrinsischer Motivation auf das Abschalten von der Arbeit durch flexibles Arbeiten abgefedert werden kann.

Den theoretischen Rahmen der Studie bildet die Conservation of Resources (COR)-Theorie (Hobfoll, 2001). Grundannahme der COR-Theorie ist, dass Personen ihre Ressourcen (wie Zeit oder Motivation) reinvestieren, um ihre Ressourcen schließlich zu mehren (Halbesleben et al., 2014). Dadurch entwickeln sich sogenannte „Gain-Spirals“ (Hobfoll, 2001). Auf dieser Annahme fußen die Hypothesen bezüglich des wünschenswerten Effekts intrinsischer Motivation auf das Wohlbefinden. Auf der anderen Seite wird in der Literatur argumentiert, dass das Reinvestieren von intrinsischer Motivation in einer Domäne (z. B. Arbeit) die Regeneration von Ressourcen in einer anderen Domäne (z. B. Privatleben) einschränken könnte (Halbesleben et al., 2014). Dabei ist festzuhalten, dass Ressourcen per se nicht unerschöpflich sind (Macey & Schneider, 2015) und selbst positive Erfahrungen Energie kosten können, da sie Aufmerksamkeit binden (Beal et al., 2005). Intrinsische Motivation kann zu exzessivem Arbeiten führen (Van den Broeck et al., 2011), was wiederum das Abschalten nach der Arbeit erschweren kann (Huyghebaert et al., 2018). Dieses Abschalten ist wiederum mit Wohlbefinden assoziiert (Wendsche & Lohmann-Haislah, 2016). Frühere Studien weisen darauf hin, dass hohes Engagement am Arbeitsplatz in der Tat negative Auswirkungen auf Familienleben und Erholung haben kann (Halbesleben et al., 2009; Kühnel et al., 2009). Daher wird in der vorliegenden Studie neben dem positiven direkten Effekt intrinsischer Motivation auf Wohlbefinden ein indirekter negativer Prozess über vermindertes Abschalten von der Arbeit untersucht.

Eine weitere wichtige Säule der COR-Theorie ist das Bestreben des Individuums Kontrolle über die eigenen Ressourcen zu erlangen (Hobfoll, 2001). Diese Kontrolle über die Investition von Ressourcen kann durch zeitliche oder andere Arbeitsbeschränkungen beeinträchtigt sein. Flexible Arbeitsmodelle können die Kontrolle der Arbeitnehmer*innen über das „wann“, „wo“ und „wie“ der zu investierenden Ressourcen erhöhen (Kelly & Moen, 2007). Durch das geschickte Wählen des

passenden Arbeitsplatzes für spezielle Aufgaben (z. B. das Home Office für Aufgaben, die Konzentration erfordern und daher weniger effizient im Großraumbüro mit entsprechender Geräuschkulisse erledigt werden können) wird das Abschalten von der Arbeit erleichtert, weil Tagesziele besser erreicht werden können (Smit, 2016). Folglich wird untersucht, ob freiwillige Nutzung flexiblen Arbeitens den indirekten Effekt, den intrinsische Motivation auf das Wohlbefinden über das Abschalten von der Arbeit hat, moderiert.

Methoden und Ergebnisse

Erhoben wurden Daten von 408 Arbeitnehmer*innen (117 Teams) eines europäischen Fahrzeug- und Maschinenbaukonzerns in einer Feldstudie mit quasiexperimentellem Charakter vor (T1) und sechs Monate nach (T2) der Einführung der Möglichkeit flexiblen Arbeitens im Unternehmen. Intrinsische Motivation wurde zu T1 und die freiwillige Nutzung des Angebots flexibles zu Arbeiten wurde zu T2 erhoben. Abschalten von der Arbeit, emotionale Erschöpfung und Arbeitszufriedenheit wurden zu beiden Messzeitpunkten erhoben, um eine Veränderung (resiudaler Veränderungswert; Schaufeli et al., 2009) abbilden zu können. Es wurden hierarchische lineare Modelle als Analyseverfahren gewählt, um die Teamstruktur der Daten zu berücksichtigen.

Es konnte gezeigt werden, dass intrinsische Motivation einen direkten positiven Effekt auf Arbeitszufriedenheit hat. Entgegen der Annahmen, konnte jedoch kein Haupteffekt von intrinsischer Motivation auf emotionale Erschöpfung gezeigt werden. Intrinsische Motivation sagte beide Facetten des Wohlbefindens indirekt über Veränderungen des Abschaltens von der Arbeit vorher. Dieser über das Abschalten vermittelte nachteilige Effekt intrinsischer Motivation auf das Wohlbefinden konnte durch die freiwillige Nutzung flexiblen Arbeitens abgeschwächt werden: Wurde flexibles Arbeiten genutzt, konnte kein Zusammenhang zwischen intrinsischer Motivation und vermindertem Abschalten von der Arbeit und in Folge vermindertem Wohlbefinden (geringere Arbeitszufriedenheit und stärkere emotionale Erschöpfung) gefunden werden.

Zusammenfassung und Schlussfolgerung

Der Befund, dass intrinsische Motivation Arbeitszufriedenheit positiv voraussagt, steht in Einklang mit der Annahme, dass Ressourcen langfristig zu positiven Effekten führen können (Hobfoll, 2001) und erweitert bestehende querschnittliche Untersuchungen (Cho & Perry, 2011). Das Fehlen eines signifikanten Haupteffekts intrinsischer Motivation auf emotionale Erschöpfung in der vorliegenden Studie steht im Gegensatz zu Annahmen der COR-Theorie und früherer Forschung (Fernet et al., 2010; Fernet et al., 2004; Gagné et al., 2014; Grant & Sonnentag, 2010; Hobfoll, 2001; Van den Broeck et al., 2011). Allerdings wurde bereits die die Wirkung intrinsischer Motivation als Ressource in Bezug auf emotionale Erschöpfung in Frage gestellt (Kammeyer-Mueller et al., 2013). Die Ergebnisse bezüglich des negativen indirekten Effekts intrinsischer Motivation auf das Wohlbefinden durch vermindertes Abschalten von der Arbeit deuten darauf hin, dass die „Gain-Spirals“ bezüglich der Ressourcen für intrinsisch Motivierte begrenzt sein können. Der Einsatz von Ressourcen kann offenbar den Erholungsprozess nach der Arbeit beeinträchtigen, was wiederum zu vermindertem Wohlbefinden führt. Dieses Ergebnis deckt sich mit früheren Ergebnissen zu „Job Involvement“ (Kühnel et al., 2009) und erweitert diese um eine langfristigere zeitliche Perspektive. Die Ergebnisse bekräftigen die Bedeutung des Abschaltens von der Arbeit für das Wohlbefinden und die langfristige Aufrechterhaltung von Ressourcen. Der moderierende Effekt der freiwilligen Nutzung flexiblen Arbeitens konnte den nachteiligen indirekten Effekt intrinsischer Motivation aufheben. Dieses Ergebnis stützt die Annahme, dass flexibles Arbeiten den Mitarbeitern dabei helfen kann, die negativen Auswirkungen intrinsischer Motivation auf das Abschalten nach der Arbeit zu kompensieren.

Die vorliegende Studie trägt zur Diskussion über den Beitrag freiwillig genutzter flexibler Arbeitsmodelle bei. Die Ergebnisse deuten darauf hin, dass die Präferenz (und freiwillige Nutzung) flexiblen Arbeitens einen Vorteil für Intrinsisch Motivierte Mitarbeiter birgt, die so möglicherweise eine stärkere Kontrolle über ihre Zielerreichung erlangen. Die Ergebnisse zeigen, dass flexibles Arbeiten, negative Effekte intrinsischer Motivation abmildern zu können scheint. Somit wird das

Wissen über Langzeiteffekte intrinsischer Motivation erweitert und das Bild der Wirkungsweise intrinsischer Motivation differenziert.

Allgemeines Fazit

Eingangs wurde die Frage gestellt, wer von digitalem und räumlich flexiblem Arbeiten profitieren kann. Beim Nutzen mediierter Kommunikation zeigt sich kein Unterscheid im intellektuell stimulierenden Führungsverhalten zwischen extravertierten und introvertierten Führungspersonen. Das bedeutet, dass die Wahrnehmung als „effektive Führungskraft“ im digitalen Kontext zumindest bzgl. mancher Aspekte von anderen Qualitäten als der Persönlichkeit der Führungsperson, wie schriftlicher Ausdrucksstärke (Balthazard et al., 2009), abhängen kann. Transformationales Führungsverhalten vermittelt wiederrum den Zusammenhang zwischen Extraversion der Führungsperson und Veränderung in der Selbstwirksamkeit der Geführten. Introvertierte Führungspersonen profitieren also bei der Vermittlung intellektueller Stimulation und somit der Erhöhung der Selbstwirksamkeit der Geführten von digital mediierter Kommunikation.

Die zweite Studie liefert Hinweise darauf, dass intrinsische Motivation nicht nur direkte positive, sondern auch indirekte negative Auswirkungen auf das Wohlbefinden haben kann. Der vermittelnde Mechanismus dieses indirekten Effekts ist ein verringertes Abschalten von der Arbeit. Der Zusammenhang zwischen intrinsischer Motivation und dem verminderten Abschalten von der Arbeit wird aufgehoben, wenn eine Präferenz für flexibles Arbeiten besteht, bzw. flexibles Arbeiten genutzt wird. Hier scheinen also intrinsisch motivierte Mitarbeiter von neuen Arbeitsmodellen profitieren zu können. Insgesamt weisen die Ergebnisse also darauf hin, dass digitales und flexibles Arbeiten durchaus Chancen bietet – die Persönlichkeit und Einstellungen der Person und der Arbeitskontext müssen allerdings beachtet werden.

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PART I: DIGITAL REVOLUTION?

The effect of leader extraversion on transformational leadership behavior and followers' self-efficacy at different levels of mediated communication

Abstract

In the present study, we investigated the role of leader personality in conveying transformational leadership behavior in the digital context. We examined the indirect effect of leader personality on followers' changes in academic self-efficacy via transformational leadership using different levels of mediated communication (MC). We collected data from 166 mentoring teams of a student peer-mentoring program of a German university at three points of measurement to obtain field data from future leaders. Results showed in line with our hypotheses that leader extraversion predicts changes in academic self-efficacy via display of transformational leadership behavior in general, and intellectual stimulation and charisma in particular. As predicted, we found this relationship to be moderated by MC for the transformational leadership dimension of intellectual stimulation. By applying transformational leadership theory to the context of mentoring via MC, this research gives a first glance at how digitalization is affecting leadership and self-efficacy outcomes for followers/protégés. For the component of intellectual stimulation, MC is bridging the gap between extraverts and introverts in providing transformational leadership.

Keywords: transformational leadership, extraversion, e-leadership, mentoring

Introduction

Digitalization is changing human interaction. By the end of 2019, the number of people who used WhatsApp actively on a monthly basis reached 1.6 billion (Statista, 2019, October 20). These user numbers demonstrate that a vast portion of human interaction is performed through digital channels such as chat, or video chat. This form of digital communication is also called mediated communication (MC; Walther, 1996).

Not only private life is affected by the digitalization of communication. Organizational behavior also changes due to the continuous advancement of MC (Larson & DeChurch, 2020). For example, by bringing MC into workplaces, digitalization also changes leadership dynamics (Avolio et al., 2014), such as the emergence and perception of leadership (Balthazard et al., 2009). Leadership applied through MC most likely will need skills other than those applied in traditional settings to lead followers successfully. Thus, in our study, we investigate how leadership is affected by the interplay of leader traits and MC.

To draw conclusions for the future workforce, in the present study we investigate the leadership behavior and leadership perception of so-called *digital natives* (Prensky, 2001) – a generation which has grown up in the digital age. We focus on digital natives because MC is an integral part of communication for this cohort, and their displays and perceptions of leadership conveyed through MC may differ compared to previous generations (Anderson et al., 2017). Furthermore, focusing on this target group offers human resource departments the opportunity to react (e.g., by encouraging use of MC) before this generation enters management positions.

We therefore investigate leadership in mentoring relationships at the university as a context in which young adults can show leadership behavior before entering the professional world. The mentoring context seems appropriate for this investigation, since leadership behavior has already been found to be present in mentoring relationships (Sosik & Godshalk, 2000).

We draw from trait approaches of leadership which suggest that leadership effectiveness is associated with certain personality traits (Colbert et al., 2012). Specifically, we investigate the

personality trait of extraversion, which is associated with outgoing, stimulation-seeking behavior, as an antecedent of beneficial leadership behavior (e.g., transformational leadership; Bass, 1985; Judge et al., 2002). In a second step, we investigate how the degree of MC used interacts with extraversion in predicting perceptions of transformational leadership. Following the social compensation hypothesis (Kraut et al., 2002; Tian, 2011), we predict that for shy or introverted people, MC can be a facilitator of interpersonal interactions. Similar patterns have been found in an experimental team study for leadership emergence in virtual teams without face-to-face interaction (Balthazard et al., 2009; Serban et al., 2015). In order to gain a comprehensive view of leadership perceptions, we focus on both overall transformational leadership as well as on its specific subdimensions (i.e., intellectual stimulation, idealized influence and inspirational motivation, as well as individual consideration) as proposed by Deinert et al. (2015). In a final step, we analyze leadership-efficacy by examining the impact of mentors' transformational leadership behavior on changes in protégés' academic self-efficacy over the course of two semesters. Academic self-efficacy is an important variable for students as it predicts not only retention but also academic performance (Robbins et al., 2004). Our research model of antecedents and outcomes of transformational leadership is depicted in Figure 1.

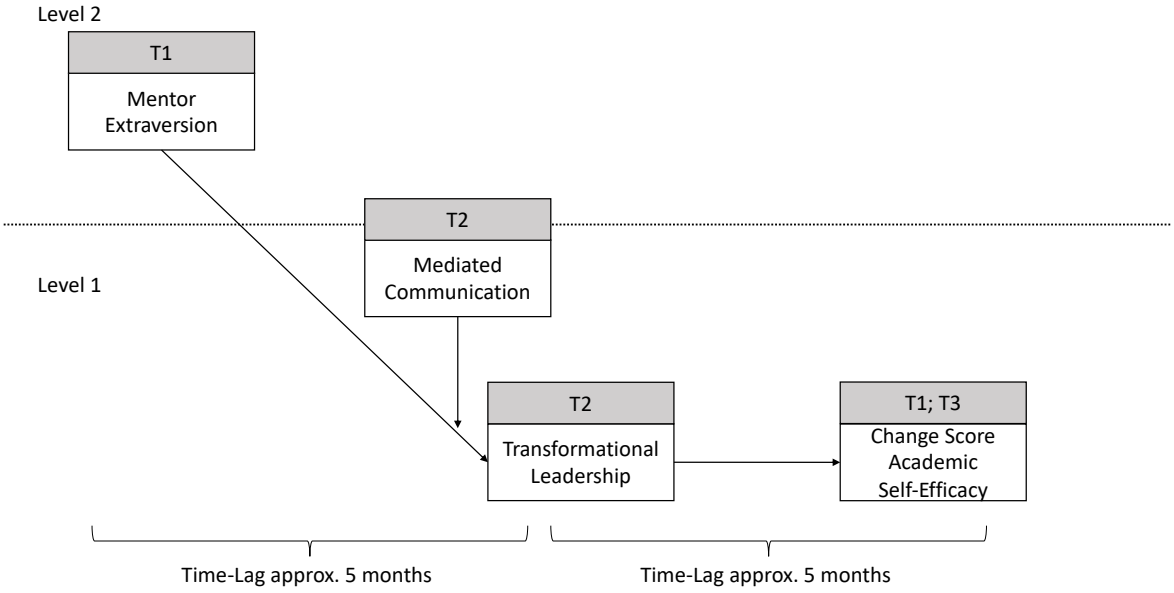
The contribution of our study is fourfold. First, we follow the call from Judge et al. (2002) to illustrate dispositional antecedents of leadership. Our study contributes to leadership research by illuminating how MC is facilitating future leadership relationships, especially for introverted leaders. Recent studies show mixed results concerning the relation of extraversion and leadership in the virtual environment (e.g., Balthazard et al., 2009; Serban et al., 2015). A study concentrating on transformational leadership behavior hints, that previous stable findings supported by a meta-analysis (Bono & Judge, 2004) are not necessarily valid in virtual environments (Balthazard et al., 2009). More precisely, in the experimental context in teams with no formal leader, extraversion has been shown to no longer predict transformational leadership behavior (Balthazard et al., 2009). We investigate if those new findings also apply to leadership behavior in the field and for dyads consisting of leader/mentor and follower/protégé.

Second, most previous studies have investigated e-leadership in purely virtual teams. However, it remains unclear how MC affects leadership executed via a mix of face-to-face and MC. Therefore, we have elected to examine a group that uses MC for only a proportion of its communications in the present study (Goodcase et al., 2018).

Third, besides the overall view on transformational leadership, we take a fine-grained look at the different subdimensions of transformational leadership to draw conclusions for future workplace design. As Deinert et al. (2015) noted, it is important to investigate the sub-dimensions of transformational leadership separately to gain a holistic view of leadership behavior.

Figure 1

Overview of theoretical model and points of measurement



Lastly, we investigate how peer leadership in the form of mentoring relationships can foster academic self-efficacy among first-year students. Over half of US students and one-third of Germany's students quit their studies without a degree (Statista, 2010, September). Since an important antecedent for not only grade point averages but also retention is academic self-efficacy (Robbins et al., 2004; Talsma et al., 2018), it is important to find ways to foster freshmen academic

self-efficacy. By investigating effects on academic self-efficacy, we also seek to draw conclusions on other domain specific self-efficacy beliefs (e.g., job-related self-efficacy). We therefore use a residual change score of academic self-efficacy (Schaufeli et al., 2009) to control for initial levels of academic self-efficacy.

Theory

In the following we review existing literature and derive our hypotheses.

Personality and Transformational Leadership

We focus on transformational leadership theory (Bass, 1985), since transformational leadership has been associated with numerous positive outcomes, such as job satisfaction and performance (Braun et al., 2013). We seek to investigate how positive leadership behavior can be displayed in the digital context. Transformational leadership is part of the Full Range Model of Leadership and is associated with four different behaviors (Bass, 1985; Bass & Avolio, 1994). *Intellectual stimulation* summarizes leadership behavior such as challenging the status quo and norms, thinking unconventionally, and encouraging followers to develop innovations. Intellectual stimulating behavior fosters new ways of thinking and developing solutions. The second transformational leadership behavior is *inspirational motivation*. Inspirational motivation consists of creating and communicating high performance expectations. Inspirational motivation also refers to behaviors associated with communicating a vision. This communicated vision is often based on the leader's personal values. The leader conveys enthusiasm for the vision and thereby inspires his or her followers. *Idealized influence*, the third dimension of transformational leadership, refers to behaviors associated with the leader's role modeling behavior. Leaders high in idealized influence are perceived to have high moral and ethical standards. Idealized influence and inspirational motivation show a high correlation and can be combined for a measure of charisma (Bass, 1998; Bono & Judge, 2004). Lastly, *individual consideration*, the fourth behavioral dimension of transformational leadership, is shown by paying attention to the unique needs of individual followers. It describes behaviors linked to coaching and development of followers. Previous research has shown that it is important to also

look at the different dimensions of transformational leadership when investigating transformational leadership antecedents, because transformational leadership dimensions differ in their association with possible antecedents (Deinert et al., 2015). Of all leadership styles, transformational leadership and mentoring have been found to include a very similar array of behaviors such as role modeling and support of the protégé/follower (e.g. Sosik & Godshalk, 2000).

Concerning the antecedents of transformational leadership behavior, extraversion has been found to be a crucial predictor of transformational leadership (Judge et al., 2002). Extraversion is one of the "Big Five" personality traits (Costa Jr. & McCrae, 2008) and ranges from introversion (i.e. low score of extraversion) to extraversion (i.e. high score of extraversion). Extraversion describes an outgoing, assertive, active, and excitement-seeking predisposition (Eysenck & Eysenck, 1975). Also, extraverts are predisposed to experience positive emotions and seek social attention (Ashton et al., 2002). Depue and Collins (1999) describe two sides of interpersonal behavior characteristic for extraverts: First affiliation, which is associated with the endeavor to seek and maintain warm personal relationships; and second agency, which describes socially dominant assertive and influential behavior. Previous research has already shown that extraversion is the Big Five personality trait that most strongly predicts both leadership emergence and leadership efficacy, and, more specifically, transformational leadership behavior (Bono & Judge, 2004; Deinert et al., 2015; Judge et al., 2002). For example, social dominance as a core behavior of extraversion includes sociability (Kalma et al., 1993) which is in turn related to transformational leadership (Bass, 1998).

Therefore, we propose:

H1: Mentor extraversion predicts transformational leadership received by the protégé.

Moreover, there is theoretical and empirical evidence that the four dimensions of transformational leadership differ in the way they are related to extraversion (Deinert et al., 2015). Extraverts are drawn to and enjoy change. Additionally, extraverts' assertive behavior can favor challenging the status quo and long-held beliefs. Following this reasoning and building on previous

research (Bono & Judge, 2004; Deinert et al., 2015) we assume that extraversion is associated with intellectually stimulating behavior.

Due to the positive emotionality and the optimistic view of the future which is an important part of extraversion (Watson & Clark, 1997), extraverts should be perceived as inspirational leaders. Also, the positive, ambitious, and influential nature of extraverts is likely to evoke positive emotions and confidence in followers (Bono & Judge, 2004). In line with this reasoning, there is empirical support for both the relation of extraversion to inspirational motivation as well as idealized influence (Deinert et al., 2015) and the combined measure of charisma (Bono & Judge, 2004).

Following Deinert et al. (2015), we do not propose a relationship between extraversion and individual consideration. One facet of extraversion is agency, which includes social dominance (Depue & Collins, 1999). An emphasis on dominance should be negatively related to an interest in good personal relationships. By contrast, affiliation, another facet of extraversion, is associated with the enjoyment of close relationships (Depue & Collins, 1999). Thus, these two aspects of extraverted behavior may cancel each other out in their relation to individual consideration (Deinert et al., 2015). Therefore, there should be no overall connection of individual consideration to extraversion. These theoretical assumptions are underlined by mixed findings regarding the relationship between extraversion and individual consideration. While Bono and Judge (2004) found a significant correlation, more recent metanalytic findings did not find support for this association (Deinert et al., 2015).

We therefore derive the following hypothesis concerning the relation between extraversion, intellectual stimulation, and charisma, but not individual consideration:

H1a-b*:* Mentor extraversion predicts intellectual stimulation (H1a) and charisma (a measure combining idealized influence and inspirational motivation) (H1b) received by the protégé.

Personality and Transformational Leadership in mediated environments

However, the main effects of extraversion on transformational leadership and its subcomponents proposed in the section above might not be present in every context in which

leadership takes place. In line with this reasoning, past research has shown it is important to investigate the interplay of individual and contextual factors to fully understand transformational leadership perceptions (Phaneuf et al., 2016).

More specifically, when it comes to the relationship between personality traits and transformational leadership, variations in its strength and direction suggests the existence of moderator variables (Judge et al., 2002; Phaneuf et al., 2016). Accordingly, empirical evidence suggests that the findings of various meta-analyses (Deinert et al., 2015; Judge et al., 2002) may no longer be valid when moderators are considered (Balthazard et al., 2009). We follow trait activation theory (Tett & Burnett, 2003) in stating that personality traits that predict the emission of behaviors are enhanced or reduced in different contexts. Following the social compensation hypothesis, which argues that shy or introverted individuals benefit from interactions conveyed through mediated communication (Kraut et al., 2002; Tian, 2011), we investigate MC as a relevant context for the emission of transformational leadership. Although some research hints there is no difference between extraverts and introverts in emerging as a leader in virtual teams (Serban et al., 2015), other research supports the notion that MC may offer special opportunities for introverts.

Rice and Markey (2009) found that introverted individuals experienced more anxiety after a face-to-face interaction than extraverted individuals. However, an interaction via online chat produced lower levels of anxiety for introverts than the face-to-face interaction. In the online chat condition, there was no significant difference between extraverts and introverts concerning levels of anxiety, which suggests that introverts and extraverts can reach similar levels of comfort with the communication. Specific experimental research on the moderating role of team virtuality (the degree to which a team works together virtually; Balthazard et al., 2009) in emergent *transformational* leadership research points in the same direction. Balthazard et al. (2009) found that there was no difference in emergent transformational leadership for extraverts and introverts in 100% virtual teams. Therefore, when it comes to the specific behavior of transformational leadership the gap between extraverts and introverts seems to no longer exist.

As Serban et al. (2015) pointed out, pure face-to-face or pure virtual interactions only rarely occur in the organizational context. We therefore follow the suggestion of Serban et al. (2015) and include MC as a proportion of communication, rather than a dichotomous variable. We subsequently predict an interacting effect of extraversion and MC. We do not see any indications for differences between the subfactors of transformational leadership. We derive the following hypotheses:

H2: Mediated communication moderates the relationship between mentor extraversion and transformational leadership received by the protégé such that the relationship between extraversion and transformational leadership is dissolved when the degree of mediated communication is high.

H2 a-b: Mediated Communication moderates the relationship between mentor extraversion and both intellectual stimulation (H2a) and charisma (a measure combining idealized influence and inspirational motivation) (H2b) received by the protégé such that the relationship between extraversion and transformational leadership subfactors is weaker when the degree of mediated communication is high.

The mediating role of transformational leadership on academic self-efficacy

Transformational leadership has been associated with many positive outcomes such as job satisfaction and performance (e.g. Braun et al., 2013). In the present study, we chose changes in academic self-efficacy as an outcome variable to measure the impact of transformational leadership behaviors in the peer mentoring context, as academic self-efficacy beliefs are crucial to succeed in the world of academia. More precisely, academic self-efficacy was found to be an antecedent of grade point averages and retention for students (Robbins et al., 2004). Hence, fostering self-efficacy is crucial to reducing dropouts and facilitating academic success.

Mentoring (Lester et al., 2011) and transformational leadership behavior (e.g., Hentrich et al., 2017) have been associated with the belief in one's ability to overcome and cope with obstacles and stress and thus are closely linked with experiencing self-efficacy as described by Bandura (1995). Following previous research on occupational self-efficacy (Rigotti et al., 2008) and Bandura's (2000) recommendation to investigate context-specific self-efficacy to obtain fine-grained results, we

therefore examine academic self-efficacy as the positive belief in one's ability to succeed at university and to cope with setbacks regarding one's studies (Robbins et al., 2004). More precisely, we investigate how academic self-efficacy changes through transformational leadership behavior over the course of a mentoring program.

There are four ways to enhance self-efficacy, namely, mastery experiences, vicarious experiences, social persuasion, and reliance on one's own physiological and emotional states (Bandura, 1995). *Mastery experiences* are the most effective way to enhance self-efficacy. By experiencing success and overcoming obstacles, individuals gain the belief that they can be successful in the future. *Vicarious experiences* are experiences provided by a social model. Seeing this social model succeed increases the individual's belief that he or she can achieve similar goals. The role models convey their knowledge of how to succeed via their behavior and expression of their thoughts. *Social persuasion* works through the (verbal) strengthening of people's beliefs that they can reach their goals. Lastly, individuals *rely on their own physiological and emotional states*, for example, stress reactions and their mood, in determining their self-efficacy.

Mastery experiences, vicarious experiences and social persuasion can be associated with transformational leadership, especially with charisma and intellectual stimulation (Prochazka et al., 2017). First, mastery experiences can result from inspirational motivating behavior (as a part of charisma): The leader provides positive feedback and displays a positive attitude toward the protégé's future. Second, vicarious experiences, such as seeing a person similar to oneself succeed, can be established via leading by example and the role modeling behavior of the leader. Such role modeling behavior can be found in the transformational leadership subdimension of idealized influence. We propose that the peer-mentoring context is particularly favorable for displaying such behavior when the mentor/leader and protégé/follower are similar in age, life situation, and major of studies, as similarity enhances the effects of vicarious experiences (Bandura, 1995). Lastly, intellectual stimulation and inspirational motivation can be associated with enhancing followers' confidence to think unconventionally and trust in the future, which can be seen as social persuasion.

Research revealed that self-efficacy can indeed be changed through interventions; however, research on investigating changes of self-efficacy in the field are scarce (Hahn et al., 2011). Although some empirical studies suggest otherwise (e.g. Felfe & Schyns, 2002), the vast majority of empirical studies have shown associations between transformational leadership and self-efficacy (e.g. Hentrich et al., 2017; Liu et al., 2010; Perko et al., 2014; Prochazka et al., 2017; Salanova et al., 2011).

Therefore, we propose that in the academic context, transformational leadership should not only be associated with academic self-efficacy per se but should *increase* academic self-efficacy over a given period of time. We suggest transformational leadership to be the link between extraversion and changes in protégés' academic self-efficacy.

H3: Transformational leadership received by the protégé mediates the relationship between mentor extraversion and protégé change in academic self-efficacy.

H3 a-b: Both intellectual stimulation (H3a) and charisma (H3b) received by the protégé mediate the relationship between mentor extraversion and protégé change in academic self-efficacy.

We also propose that the interaction effect of mentor extraversion and MC is influencing the mediating effect of transformational leadership on academic self-efficacy and therefore propose:

H4: MC moderates the mediated relationship between mentor extraversion and protégé change in academic self-efficacy via transformational leadership received by the protégé. We propose the mediation is dissolved when MC is high.

H4a-b: MC moderates the mediated relationship between mentor extraversion and protégé change in academic self-efficacy via intellectual stimulation (H4a) and charisma (H4b) received by the protégé. We propose the mediation is dissolved when MC is high.

Method

Sample and Procedure

Data was collected at three points of measurement (the overall study time lag was 10 months, see Figure 1) from 166 mentoring teams (N = 166 Mentors; N = 204 Protégés) of a student

peer-mentoring program of a large German university. We only used data from mentoring teams who participated in all three points of measurement. Most of the mentors (76.5%) were female, and the mentors' mean age was 22.17 years (*SD* = 3.15). The protégés' mean age was 20.10 years (*SD* = 4.72), and 77 % of the protégés were female. The three surveys were administered during the mentoring program. Participation in the first survey was mandatory in order to enter the mentoring program. As incentive for the other two points of measurement, all participants took part in a lottery to win scholastic-related prizes (e.g., backpacks).

At the first point of measurement, mentors were asked to rate their extraversion while protégés rated their baseline level of academic self-efficacy. At the second point of measurement, protégés indicated the frequency of usage of different means of communication (i.e., smartphone, face-to-face, etc.) and their mentor's transformational leadership behavior in the mentoring process. At the end of the mentoring program, protégés again indicated their academic self-efficacy. All questionnaires were administered online; items were provided in German and retrieved from validated German scales. Participants received invitations and reminders to participate via e-mail.

Measures

Mentor extraversion

Mentor extraversion was assessed using the 4 items of the German version of the Big Five Inventory short scale (BFI-K, Rammstedt & John, 2005) (e.g., "I am a person who is outgoing, sociable.") on a five-point Likert scale, ranging from 1 = not at all to 5 = very much. The Cronbach's alpha of the scale was .75.

Mediated Communication

Following the example of Goodcase et al. (2018), we used a ratio to depict the modality of communication. We calculated the ratio of computer mediated communication to assess whether mentoring was conducted primarily face-to-face or primarily via other (i.e. digital) means of communication. We asked protégés to indicate the frequency of face-to-face interaction during the mentoring relationship ("How often did you meet with your mentor?") and computer-mediated

communication ("How often did you have contact with your mentor via other means of communication (e.g. phone, Skype) since the start of the mentoring program?). The degree of MC was then calculated:

$$MC = \frac{number\ of\ mediated\ interactions}{number\ of\ mediated\ interactions + number\ of\ face\text{-}to\text{-}face\ interactions}\ x\ 100$$

MC ranged from 0% to 100% with a mean of 77% mediated communication used for mentoring. The high proportion of MC emphasizes the relevance of MC in the present sample.

Transformational Leadership

We assessed the transformational leadership received by the protégé using 11 items of the German Transformational Leadership Inventory (TLI, Heinitz & Rowold, 2007) rated on a five-point Likert scale ranging from *1 = strongly disagree* to *5 = strongly agree*. To prevent artificial factors we chose to only include positively worded items (Podsakoff et al., 2003). In the present study we adapted the scale to fit the mentoring context (e.g., changing "leader" to "mentor"). Following Bono and Judge (2004), we computed a combined measure of charisma, combining the dimensions "idealized influence" and "inspirational motivation".

This procedure resulted in six items measuring charisma (e.g., "Provides a good model to follow."). Furthermore, we used three items to assess intellectual stimulation (e.g., "Has provided me with new ways of looking at things which used to puzzle me.").

We used two items to measure individual consideration (e.g. "Behaves in a manner that is thoughtful of my personal needs.").

Academic self-efficacy

We adapted eight items of the general self-efficacy scale (GSES, Schwarzer & Jerusalem, 1999) to assess academic self-efficacy (e.g., "If a problem appears during my studies, I can cope with it out of my own strength."). Participants rated their self-efficacy beliefs on a five-point Likert-scale ranging from *1 = not at all* to *5 = very much*. Cronbach's alpha of the scale was .84 (T1) and .94 (T3). To assess changes in academic self-efficacy, we computed the standardized residual change score

following the recommendation by Schaufeli et al. (2009) for depicting changes in longitudinal studies. To obtain change scores, academic self-efficacy at T3 was predicted by the corresponding academic self-efficacy at T1. Standardized residual change scores were obtained by using the differences of the predicted and observed Time 3 scores.

Control variables

Theoretical work and empirical research suggests that demographic characteristics like age and gender of both parties of the mentoring relationship can affect mentoring outcomes (e.g., Ragins, 1997). We therefore also ran analyses with mentor age and gender as well as protégé age and gender as control variables.[1]

Statistical analysis

Since our data consists of protégé-data nested into mentor-data, we used hierarchical linear modelling in HLM 8 (Raudenbush et al., 2019) to take the multilevel structure of the data into account. We centered all predictors and control variables at their grand mean prior to entering them into the model. While, according to Enders and Tofighi (2007), this procedure is recommended for level 2 predictor variables in general, for level 1 predictor variables, the centering procedure is dependent on how results are aimed to be interpreted. Since we were interested to interpret MC with reference to the overall level of MC and not in relation to the respective mentoring team (a person uses a generally high level of MC and not just a "higher" level compared to other protégés within his or her mentoring team) we decided to also center the level 1 predictor MC at the grand mean. This procedure, in our case, was additionally indicated, since the present sample also included many mentoring teams consisting of mentoring dyads (i.e., one mentor and one protégé). Thus, with group sizes on level 1 of N = 1 centering on the respective group mean does not make sense.

Results

[1] Including control variables did not change the pattern of results.

Table 1 shows the means, standard deviations, correlations, and Cronbach's alphas for the study variables.

Preliminary analyses

First, we determined the amount of variance explained at level 1 (protégé) and level 2 (mentor) by calculating the intraclass coefficients for transformational leadership and its subcomponents with two-level intercept-only models. For transformational leadership, the variance component at the protégé level was .43 (*SE* = 0.09); the variance component at the mentor level was .09 (*SE* = 0.08). Thus, for transformational leadership received, 83% of the variance was between-person variance. Consequently, 17% of the variance was attributable to the mentor. For changes in academic self-efficacy, the variance component at the protégé level was .95 (*SE* = 0.19) and the variance component at the mentor level was .07 (*SE* = 0.16); 94% of the variance was attributable to between-person variance. With the between-team variation reaching up to 18%, preliminary analyses underline the importance of taking the team structure of the mentoring teams into account by conducting hierarchical linear modeling.

Test of Hypotheses

Main Effects

In Hypothesis 1, we proposed a main effect of mentor extraversion at T1 on transformational leadership received rated by protégé at T2. Using hierarchical linear modelling, we tested the proposed model against the null model. We calculated the difference between the likelihood ratio of the models. The difference follows a chi-square distribution; the degrees of freedom are the number of variables added in each model.

The proposed model for transformational leadership showed a significant improvement over the null model (Δ – 2 × log likelihood = 4.55, *df* = 1, *p* = .031). Mentor extraversion was a positive predictor of transformational leadership rated by protégé (estimate = 0.15; *SE* = 0.07; *t* = 2.15; *p* =.033). Concerning specific transformational leadership dimensions, for intellectual stimulation

received, the direct effect of mentor extraversion, the proposed model showed a significant improvement over the null model (Δ – 2 × log likelihood = 5.30, *df* = 1, *p* = .020). Mentor extraversion was a positive predictor of intellectual stimulation received as rated by the protégé (estimate = 0.21; *SE* = 0.09; *t* = 2.32; *p* =.022). For charisma, the proposed model showed a significant improvement over the null model (Δ – 2 × log likelihood = 5.36, *df* = 1, *p* = .019). Also, mentor extraversion was a positive predictor of charisma rated by protégé (estimate = 0.17; *SE* = 0.07; *t* = 2.36; *p* =.020). Thus, Hypotheses 1, 1a &1b, stating that mentor extraversion predicts transformational leadership received, were supported.

Interaction Effects

In order to test the moderation hypothesis that MC is moderating the relationship between mentor extraversion and transformational leadership received by protégé, we compared 4 models. First, we ran the null model; in a second step, we included extraversion and MC as main effects. In the third step we followed recommendations on cross-level interactions from (Aguinis et al., 2013) by adding a random slope to the random intercept model. In a final step, we included the interaction term between mentor extraversion and transformational leadership to see whether this interaction term improved the model. The interaction terms of extraversion and MC did not significantly predict transformational leadership (estimate = -0.43, *SE* = 0.36, *t* = -1.21, *p* = .228, *ns*) and charisma (estimate = - 0.31, *SE* = 0.40, *t* = -0.79, *p* = .432, *ns*) in the final model. Also, including the interaction term in this last step did not improve the model for transformational leadership (Δ – 2 × log likelihood = 1.46, *df* = 1, *p* = .225) or the subcomponent of charisma (Δ – 2 × log likelihood = 0.62, *df* = 1, *p* > .500). However, including the interaction term improved the model for intellectual stimulation (cf. Tale 2). In a further step, we probed the simple slope of the significant interaction term between mentor extraversion and intellectual stimulation, following the procedure used by Preacher et al. (2006). Therefore, we used values 1 SD above and below the mean of MC. As expected, when MC was low, mentor extraversion was positively associated with intellectual stimulation received by protégé (estimate = 0.37, *SE* = 0.11, *t* = 3.24, *p* = .001). In contrast, when MC was high, mentor

extraversion was no longer related to intellectual stimulation received by the protégé (estimate = 0, *SE* = 0.12, *t* = -0.00, *p* = .999, *ns*). The interaction is illustrated in Figure 2. Thus, Hypothesis 2a was supported, while data did not show support for Hypotheses 2 and 2b.

Figure 2

Effect of extraversion on intellectual stimulation received at different levels of MC

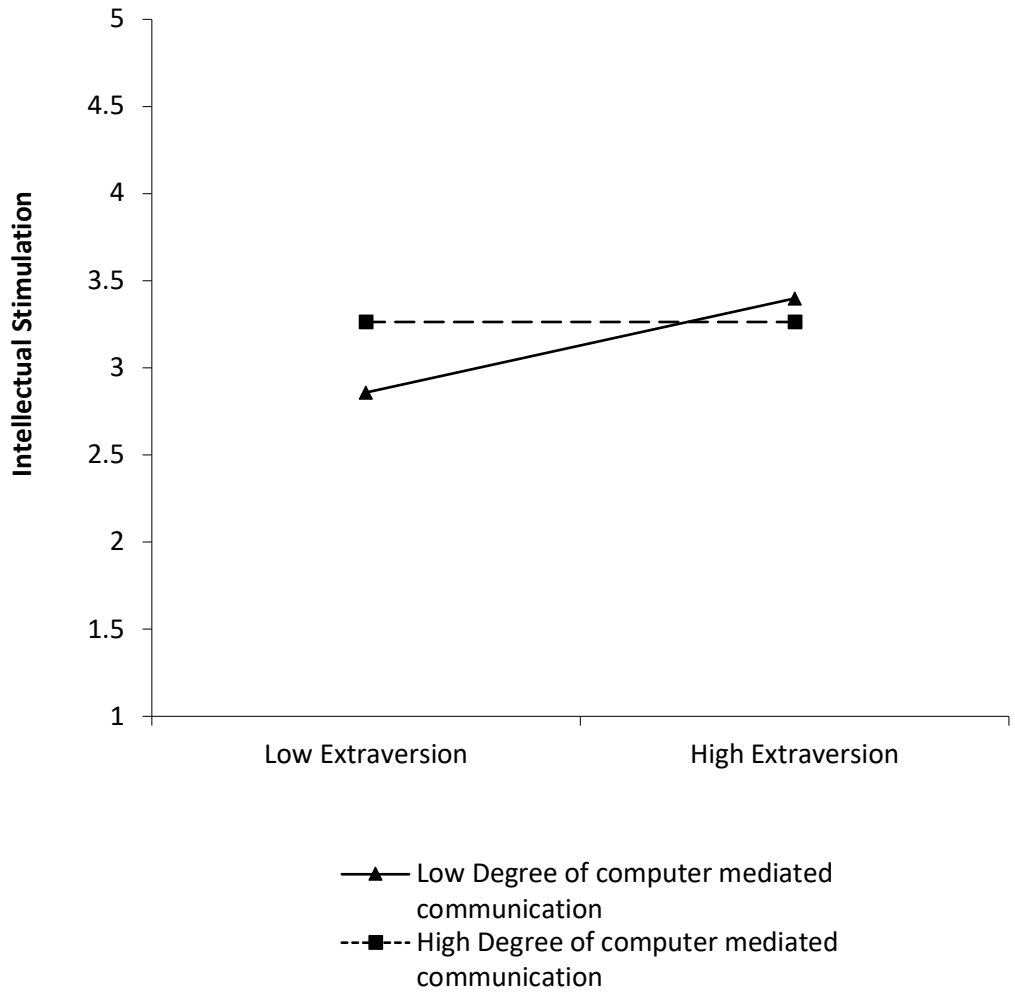


Table 1

Means, standard deviations, intercorrelations, and reliabilities for all study variables

	Variable	*M*	*SD*	1	2	3	4	5	6	7	8	9	10	11	12	13
1	Mentor Extraversion	3.81	0.74	(0.75)												
2	Mediated Communication	0.77	0.16	0.10	-											
3	Mentor Extraversion* MC	2.96	0.86	0.72 **	0.74 **	-										
4	Transformational Leadership	3.52	0.72	0.15 *	0.09	0.14 *	(0.90)									
5	Intellectual Stimulation	3.18	0.97	0.16 *	0.12	0.16 *	0.89 **	(0.85)								
6	Charisma	3.47	0.75	0.16 *	0.07	0.15 *	0.96 **	0.78 **	(0.84)							
7	Individual Consideration	4.15	0.82	-0.01	-0.01	0.09	0.64 **	0.39 **	0.52 **	(0.74)						
8	Academic self-efficacy T1	3.86	0.47	0.15 *	-0.05	0.07	0.13	0.14 *	0.10	0.11	(0.84)					
9	Academic self-efficacy T3	3.76	0.67	0.03	0.04	0.04	0.21 **	0.20 **	0.19 **	0.11	0.39 **	(0.93)				
10	Mentor Age	22.17	3.05	-0.82	-0.11	-0.13	0.13	0.10	0.12	0.12	0.00	0.05	-			
11	Protégé Age	20.10	4.72	-0.03	-0.05	-0.05	-0.03	-0.00	-0.05	-0.00	0.10	0.02	0.26 **	-		
12	Mentor Gender	-	-	-0.12	-0.05	-0.11	0.03	0.04	0.05	-0.07	0.06	-0.01	-0.00	-0.02	-	
13	Protégé Gender	-	-	0.10	0.02	0.08	0.02	0.01	0.07	-0.09	-0.01	0.15 *	-0.02	-0.09	-0.20 **	-

Note. N = 204. Figures in parentheses are Cronbach's alphas.

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

Table 2

Multilevel estimates for models predicting intellectual stimulation.

	Null Model				*Model 1*				*Model 2*				*Model 3*			
Variable	*Estimate*	*SE*	*t*		*Estimate*	*SE*	*t*		*Estimate*	*SE*	*t*		*Estimate*	*SE*	*t*	
Intercept	3.18	0.07	46.32	***	3.18	0.07	47.26	***	3.18	0.07	47.20	***	3.20	0.07	47.99	***
Extraversion					0.20	0.09	2.16	*	0.19	0.09	2.06	*	0.18	0.09	2.00	*
MC					0.66	0.42	1.58		0.60	0.43	1.39		0.42	0.42	1.01	
Extraversion*MC													-1.14	0.47	-2.44	*
− 2 × log likelihood			564.42				556.63				556.49				550.93	
Δ – 2 × log likelihood							7.80	*			0.14				5.56	*
df							2				2				1	
Level 1 variance (*SE*)	0.85 (0.17)				0.82 (0.16)				0.81 (0.16)				0.80 (0.16)			
Level 2 variance (*SE*)	0.09 (0.15)				0.07 (0.14)				0.08 (0.15)				0.07 (0.14)			

Note. * $p < .05$ *** $p < .001$.

Mediation

In hypotheses 3, 3a-b we proposed that the relation of mentor extraversion and changes in protégé academic self-efficacy is mediated via transformational leadership and its subdimensions intellectual stimulation and charisma. For the mediation hypotheses, after running the null model, we included the direct effect of extraversion on the change score of academic-self efficacy (model1). In a next step, we tested the direct effect of transformational leadership — and its subdimensions — on changes in academic self-efficacy while accounting for extraversion (model2). Model 2 showed significant improvement over model 1 (as calculated for Hypothesis 1) for overall transformational leadership (Δ – 2 × log likelihood = 6.50, *df* = 1, *p* = .010), intellectual stimulation (Δ – 2 × log likelihood = 5.94, *df* = 1, *p* = .014) and charisma (Δ – 2 × log likelihood = 6.47, *df* = 1, *p* = .011). In a next step, we tested the indirect effect of extraversion on change of academic self-efficacy through transformational leadership (and its subdimensions). To test for the indirect effects, we used the Monte Carlo method with 10000 resamples (Bauer et al., 2006; Selig & Preacher, 2008, June). We used the effect of extraversion on overall transformational leadership, intellectual stimulation, and charisma, respectively, as calculated for Hypothesis 1. We then calculated the coefficients of overall transformational leadership (estimate = 0.25, *SE* = 0.10, *t* = 2.58, *p* = .014), intellectual stimulation (estimate = 0.18, *SE* = 0.07, *t* = 2.47, *p* = .018) and charisma (estimate = 0.24, *SE* = 0.09, *t* = 2.58, *p* = .014) on changes in academic self-efficacy after controlling for extraversion. Results of the Monte Carlo method supported significant indirect effects of extraversion on changes in academic self-efficacy through transformational leadership (*B* = 0.04, 95% CI [0.001, 0.093]), intellectual stimulation (*B* = 0.04,95% CI [0.001, 0.094]) and charisma (*B* = 0.04, 95% CI [0.003, 0.097]). Thus Hypotheses 3, 3a and 3b were supported.

Moderated Mediation

In the previous steps of the analysis, we found a significant moderation of extraversion and MC on intellectual stimulation. We also found a significant indirect effect of extraversion on changes in academic self-efficacy via intellectual stimulation. Therefore, in a further step, we tested the indirect conditional effect for the moderated mediation hypothesis. To obtain the path coefficient for

the effect of intellectual stimulation while controlling for the interaction term, we conducted four steps. First, we ran the null model for change in academic self-efficacy. In the second step, we included extraversion and MC, then added a random slope to the random intercept model (Aguinis et al., 2013). In the third step, we added the interaction term of extraversion and MC. In the final step, we included intellectual stimulation. The model significantly improved (Δ – 2 × log likelihood = 4.70, *df* = 1, *p* = .028). We used the same steps as in the mediation analysis but used the path coefficient for the interaction terms. We then calculated the coefficients of overall transformational leadership (estimate = 0.25, *SE* = 0.10, *t* = 2.52, *p* = .016), intellectual stimulation (estimate = 0.17, *SE* = 0.07, *t* = 2.38, *p* = .023) and charisma (estimate = 0.24, *SE* = 0.09, *t* = 2.52, *p* = .016) on changes in academic self-efficacy after controlling for extraversion and MC. The Monte Carlo method (Bauer, Preacher, & Gil, 2006; Selig & Preacher, 2008) revealed a significant indirect effect (*B* = -0.20, 95% CI [-0.409, -0.016]. Thus, Hypothesis 4a was supported.

Additional Analysis

We also ran additional analyses focusing on individualized consideration and its prediction by extraversion and the interaction between extraversion and MC, respectively. For individual consideration, we did not find a direct effect of mentor extraversion. The proposed model did not show a significant improvement over the null model (Δ – 2 × log likelihood = 0.04, *df* = 1, *p* > .500, *ns)*. Also, mentor extraversion did not significantly predict individual consideration rated by protégé (estimate = -0.02, *SE* = 0.08, *t* = -0.18, *p* = .858*, ns*.). Additionally, concerning the interaction of extraversion with MC, there was no significant effect (estimate = 0.12, *SE* = 0.50, *t* = 0.23, *p* = .816, *ns*), and including an interaction term did not show significant improvement over the model with extraversion and MC as predictors of individual consideration (Δ – 2 × log likelihood = 0.05, *df* =1, *p* > .500, *ns*).

Thus, there was neither a significant main effect of extraversion nor a significant interaction effect of extraversion with MC in predicting individual consideration.

Discussion

In the present longitudinal study, we investigated leader extraversion as an antecedent of follower/protégé-rated transformational leadership and its subdimensions of charisma, intellectual stimulation, and individual consideration at different usage levels of MC. We also examined the mediating effect of transformational leadership and its subdimensions between mentor extraversion and change in the protégé's academic self-efficacy as an outcome. In line with our hypotheses, extraversion predicted overall transformational leadership and intellectual stimulation and charisma in particular. Overall transformational leadership as well as intellectual stimulation and charisma also mediated the relationship between extraversion and change in academic self-efficacy. Thus, leader extraversion influences follower self-efficacy via transformational leadership. Furthermore, we found an interaction effect of extraversion and MC in predicting intellectual stimulation. As predicted, in mentoring relationships in which the use of MC was high, extraversion no longer predicted intellectual stimulation perceived by the protégé. Also, the indirect effect of leader extraversion on changes in follower/protégés' academic self-efficacy via intellectual stimulation differed at levels of MC. In mentoring relationships high in MC use, leader extraversion did not indirectly influence changes in academic self-efficacy via intellectual stimulation.

In line with previous research (Bono & Judge, 2004; Deinert et al., 2015) our hypotheses concerning the relation between extraversion and overall transformational leadership, intellectual stimulation, and charisma were confirmed. The relationship between extraversion and intellectual stimulation can be explained by extraverts' affinity to change and their assertive behavior (Deinert et al., 2015). Furthermore, extraversion and charisma most likely relate because the positive emotionality and optimistic view of the future displayed by extraverts are likely to evoke confidence in followers (Bono & Judge, 2004). In other words, extraverted individuals are more likely to be perceived as inspiring, charismatic, and stimulating leaders than introverted individuals. Additionally, the findings support the line of reasoning of Deinert et al. (2015), which argues that the dimensions of transformational leadership should be examined separately rather than using transformational leadership as an overall measure. More specifically, besides the overall relation between

extraversion and transformational leadership, we found extraversion to be related to intellectual stimulation and charisma while *not* being related to individual consideration.

The non-significant relation of extraversion and individual consideration is in line with previous research (Deinert et al., 2015) and the theoretical assumption that extraversion unifies contradicting behaviors of social dominance and affiliation which most likely are differently related to individual consideration. The varying relation of extraversion to the different subdimensions of transformational leadership might also be an explanation for some inconsistent or weak findings for the relation of extraversion and overall transformational leadership (Bono & Judge, 2004).

The importance of differentiating between the dimensions of transformational leadership becomes salient when taking the context of MC into account. We found the interaction effect of mentor extraversion and degree of MC not to be related to overall transformational leadership, in contrast to some first findings that found MC exerting a nullifying effect (Balthazard et al., 2009). Thus, contrary to our hypotheses, we found no interaction effect between mentor extraversion and MC in predicting overall transformational leadership nor in predicting charisma, in line with Serban et al. (2015). As for charisma, the moderating effect for extraversion and MC might not be strong enough to become significant. Charismatic language and the expression of thoughts might be strongly related to extraversion irrespective of the context. Since the interaction between extraversion and MC only relates to one subdimension of transformational leadership (that is, intellectual stimulation), it is not surprising that there is no significant interaction effect of extraversion and MC on overall transformational leadership.

However, as proposed, we found a significant interaction of mentor extraversion and MC in predicting intellectual stimulation received by the protégé. This interaction effect of mentor extraversion and MC in predicting intellectual stimulation is in line with previous experimental studies of emergent leadership (Balthazard et al., 2009) and supporting trait activation theory (Tett & Burnett, 2003). Our results suggest that with respect to intellectual stimulation, introverts are capable of “bridging the gap” with extraverts in contexts in which MC is used to a higher degree. The results also indicate that MC is a facilitator for introverts to display equal levels of intellectual

stimulation as extraverts do. Consequently, it seems possible to challenge follower's ways of thinking via MC. The variety of MC channels allows one to choose the synchronicity of the communication, ranging from video-chat (immediate response) to e-mail (asynchronous communication). This sense of control might enhance the comfort of introvert leaders to challenge their followers.

Our findings also support the fact that transformational leadership (as well as its subdimensions intellectual stimulation and charisma) in mentoring is important to foster protégés' academic self-efficacy. This underlines the importance of mentors' transformational leadership behavior in obtaining desirable mentoring outcomes. Regarding the mixed findings of previous studies on the relation between transformational leadership and self-efficacy, we add to the literature by finding a positive effect of transformational leadership for self-efficacy in a specific—that is, academic—context. Our results indicate that extraversion has an indirect effect on changes in academic self-efficacy via transformational leadership. Thus, extraverted mentors appear to change their protégés' academic self-efficacy by displaying more transformational leadership behavior.

However, our moderated mediation results indicate that the indirect effect of extraversion on changes in academic self-efficacy is not valid at high degrees of MC use. Particularly, the gap between extraverted and introverted mentors in influencing mentees' academic self-efficacy through intellectual stimulation, closes at high degrees of MC use. Our study is among the first to depict real changes in academic self-efficacy by including the residual change score of academic self-efficacy in our model.

Limitations and future research

We acknowledge several limitations to our study. First, we investigated a student sample. Therefore, generalizability of the findings might be limited. However, one of the goals of the present study was to examine the leadership behavior of digital natives in the field to draw conclusions for the future workforce which required a sample in a certain age span. Future research could expand the model to the organizational context and to different age groups.

A second limitation concerning the sample is that it mostly consisted of German students. Previous studies have already indicated that the relationship of extraversion and ratings of

transformational leadership might not be culturally universal (Shao & Webber, 2006). Although the results should be generalizable for Western cultures, future research should further investigate the effects in other cultures.

Furthermore, we chose leaders' personality as the antecedent of transformational leadership. A further extension for future research could be to investigate followers' personality as well. In line with this reasoning, follower personality already has been shown to predict ratings of transformational leadership (Felfe & Schyns, 2006). Accordingly, it would be interesting to investigate both leaders' and followers' personality facets at different levels of MC used. For example, in face-to-face settings, introverted leadership seems to be better suited to lead team members who are proactive (Grant et al., 2011). Thus, investigating similar relationships in virtual team settings would be an interesting extension to previous research.

Theoretical and practical implications

Our results have several theoretical and practical implications. First, we extended the theoretical basis of trait activation theory (Tett & Burnett, 2003) by investigating a mixed context of MC rather than investigating either a purely face-to-face or virtual environment, thereby answering the call by Serban et al. (2015). Our results are partially in line with predictions derived from trait activation theory. In a rather mixed than pure virtual context, trait activation theory seems to be important when it comes to intellectual stimulation. As figure 2 indicates, the introverts' and extraverts' display of intellectual stimulation is equally high in virtual contexts. We also extend research on leadership in the digital context (Balthazard et al., 2009; Serban et al., 2015) by investigating both overall transformational leadership and its different dimensions and how they relate to extraversion as proposed by Deinert et al. (2015). The specific behaviors of transformational leadership relate to change in academic self-efficacy, which emphasize the importance of investigating actual changes as outcomes.

The results of the present study also hold practical implications: First, results underline leaders' ability to affect the self-efficacy of their followers, which is in line with previous research (Hentrich et al., 2017; Liu et al., 2010; Perko et al., 2014; Prochazka et al., 2017; Salanova et al.,

2011). Self-efficacy is an important outcome in several areas of life, as it affects for example (academic) performance, retention, stress, and health (e.g. Chemers et al., 2001), therefore it is important to find ways to foster self-efficacy. Although our findings are context specific, we are confident that practical implications derived can be generalized to other contexts such as organizations and schools. Accordingly, mentoring program coordinators should encourage mentors to also show transformational leadership behavior towards their protégés. Going one step further, mentors in academia (and other fields) should be trained in transformational leadership. Our results also indicate that introverts can use mediated communication to increase their ability to display intellectually stimulating behavior and thereby increase their positive effects on followers' self-efficacy beliefs. With mediated communication becoming an integral part of organizational life, our results indicate that extraverts and introverts will equal out in their efficacy in providing intellectual stimulation. With this in mind, HR-development can encourage managers to use mediated communication for their leadership tasks if they would expect to benefit based on their personal dispositions. Since extraversion is a stable personality trait, the choice of context can be seen as a veritable way to equalize leadership performance between extraverts and introverts.

Conclusion

We used a longitudinal design with three points of measurement to investigate extraversion as an antecedent of transformational leadership and changes in academic self-efficacy as an outcome of transformational leadership behavior. The findings of the present study shed light on how MC affects leadership perceptions and effectiveness in the field. Accordingly, the findings advance the understanding of the interplay of personality and MC in predicting transformational leadership behaviors and provide guidance on how introverts can bridge the gap with extraverts in providing intellectual stimulation. We also advance the field in understanding that leadership is a key factor in increasing academic self-efficacy through overall transformational leadership and the transformational leadership dimensions of charisma and intellectual stimulation.

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PART II: INTRINSIC MOTIVATION AS A DOUBLE-EDGED SWORD:

Investigating effects on well-being and the role of flex work practices as moderator to buffer adverse effects

Abstract

Ensuring employee well-being is a crucial task for HRD managers. In the present study, we investigated intrinsic motivation as an antecedent of changes in employee well-being (i.e., job satisfaction and emotional exhaustion). The majority of research on intrinsic motivation has focused on its positive outcomes. In addition to those positive direct effects, the present study adds to prior research by also examining adverse indirect effects of intrinsic motivation on well-being. Specifically, since intrinsic motivation is associated with working excessively (Van den Broeck et al., 2011), we proposed diminished detachment as a mediator in the adverse indirect relationship between intrinsic motivation and well-being. We also investigated whether this adverse relationship unfolded differently depending on the use of flex work practices (FWPs). We collected data from 408 employees nested in 117 teams of a German manufacturing company at two points of measurement before and after the introduction of FWPs to the company. Results showed that intrinsic motivation had a positive direct effect on job satisfaction, but no direct relation to emotional exhaustion. Moreover, we found adverse indirect effects of intrinsic motivation on changes in both aspects of employee well-being via reduced detachment. Finally, making use of FWPs moderated these indirect effects in a way that the negative indirect effect of intrinsic motivation on well-being disappeared for employees who used FWPs. This research is among the first to explore potential downsides of intrinsic motivation and investigate the role of intrinsic motivation as a double-edged sword in fostering well-being.

Keywords: Intrinsic motivation, well-being, detachment, inconsistent mediation

Introduction

Increasing demands in the working world put employees' well-being at risk (Halbesleben & Buckley, 2016). As well-being is important not only in terms of mental health but also as an antecedent of performance (Wright & Cropanzano, 2000), it is an important task for HRD managers to look out for employees' well-being. An antecedent associated with employee well-being is intrinsic motivation (Sheldon et al., 2004). Intrinsic motivation can be defined as a state of engaging in a task out of interest in it and liking it and is generally viewed as a positive state in the work environment (Ryan & Deci, 2004). Although intrinsic motivation and well-being already have been investigated cross-sectionally (Van den Broeck et al., 2013) and at the day-to-day-level (Kammeyer-Mueller et al., 2013), results of long-term effects of intrinsic motivation on changes in well-being are scarce (see Fernet et al., 2010 for an exception). Furthermore, there is no research on potential adverse effects of intrinsic motivation. Imagine you love what you do at work; you feel energized and satisfied with what you are doing, and, consequently, you are high in well-being. What if this activation persists when you arrive home at the end of the day, causing you to think about your unfinished tasks even when work is over, making it more difficult for you to "let work be work" when you are supposed to be at rest? And how does this difficulty "switching off" affect your well-being? In the present study, we seek to gain a more holistic picture of the functioning of intrinsic motivation over time by investigating its obvious direct positive effects but also its potential adverse effects through the inhibition of detachment from work (finding mental distance from work; Etzion et al., 1998; Sonnentag & Fritz, 2007).

We build on Conservation of Resources (COR) theory (Hobfoll, 2001) as a theoretical framework for our study. According to COR theory, a resource can be anything that is personally valuable for the individual, such as time or support (Hobfoll, 2001). Since resources have a personal value, individuals are drawn to protect and acquire new resources. COR theory posits that individuals rich in resources (such as being intrinsically motivated or having time) also tend to invest those

resources to gain more resources, such as social support (Halbesleben et al., 2014; Hobfoll, 2001). Thus, resources increase over time in so-called "gain spirals."

Following the idea of these gain-spirals, much attention has been paid to positive outcomes of intrinsic motivation. For example, intrinsic motivation has been shown to be associated with job satisfaction, positive employee attitudes, and performance (Cho & Perry, 2011; Deci & Ryan, 2004). We follow this stream of research by investigating desirable outcomes of intrinsic motivation on two opposed indicators of well-being (Hülsheger & Schewe, 2011): job satisfaction and emotional exhaustion.

However, in a further step, we question the view of intrinsic motivation as a "never-draining resource" due to occurring gain spirals (Hobfoll, 2001). We aim at taking a more differentiated look at the construct of intrinsic motivation and propose that intrinsic motivation might not only be a valuable resource but might also yield some downsides. Intrinsic motivation and its consequent reinvestment could also drain resources over time; the replenishment of resources may be especially impeded (Halbesleben et al., 2014). Research on positive motivational processes at work have already found adverse long-term effects in the form of increased emotional exhaustion (Junker et al., 2020).

We propose detachment as a potential mediator of this relationship: One potentially adverse consequence of intrinsic motivation is excessive work behavior (Van den Broeck et al., 2011) that, in turn, can lower detachment (Huyghebaert et al., 2018). Detachment describes a state in which employees are mentally distant from work during non-work hours (Etzion et al., 1998; Sonnentag & Fritz, 2007) and has been shown to be a crucial precondition for well-being (Sonnentag & Bayer, 2005). Therefore, high intrinsic motivation might yield adverse consequences for employees' well-being by impeding employees' detachment from work during non-work hours (cf. Huyghebaert et al., 2018; Van den Broeck et al., 2011), considering that being invested at work can also impair family life and recovery (Halbesleben et al., 2009; Kühnel et al., 2009).

But how can possible adverse effects of intrinsic motivation be attenuated? One important tenet of COR theory is that individuals seek control over their resources (Hobfoll, 2001). One possibility to increase employees' control over their job is flexible work practices. Flexible work practices (FWPs) are measures to increase flexibility of *where* (working from home), *when* (flexitime), and, in terms of sabbaticals, *how long* work is done (Hill et al., 2008). The already-high number of organizations offering FWPs, has recently been boosted with the consequences of the Covid-19 pandemic, due to which a flexible style of working has been referred to as the "new normal" (Rofcanin & Anand, 2020).

Therefore, we seek to investigate the relationship between flexible work practices and intrinsic motivation. More precisely, we investigate how the voluntary use of flexible work practices interacts with employees' intrinsic motivation in predicting detachment and well-being, and we propose that flexible work practices can buffer potential adverse long-term effects of intrinsic motivation by giving employees control over where work is done. We conducted a longitudinal field study with quasi-experimental character over the course of six months; collecting data before and after FWPs were introduced in a large manufacturing company. FWPs were used to encourage employees to find the right place for the completion of their work; employees could decide themselves whether the use of FWPs was advantageous for them and if they wanted to use them. Thus, our measure of the usage of FWPs serves as a behavior-based proxy for the preference to work remotely and potentially integrate home and work.

The contribution of the study is threefold. First, we expand COR Theory (Hobfoll, 2001) by introducing limitations to the proposed gain spirals. We therefore investigate intrinsic motivation as a double-edged sword in its effect on well-being: In addition to the desired effects of intrinsic motivation on well-being, we investigate the indirect, potentially adverse long-term-effect of intrinsic motivation on well-being via reduced detachment. By examining this indirect adverse effect in addition to the overall positive effect of intrinsic motivation, we contribute to a more holistic view of intrinsic motivation.

Second, this study expands longitudinal findings of the effects of intrinsic motivation (Fernet et al., 2010; Kammeyer-Mueller et al., 2013) on two aspects of well-being (job satisfaction and emotional exhaustion). We build on those two crucial indicators of well-being and propose that taking a longitudinal perspective helps to gain a more comprehensive view of the functioning of intrinsic motivation over time. Our study design allows us to investigate how intrinsic motivation predicts actual changes in well-being over time, using residual change scores (Schaufeli et al., 2009).

Third, we add to research on FWPs (Hill et al., 2008) by examining how employees might benefit from the voluntary use of FWPs. By investigating voluntary use of FWPs, we shed light on how the ability and preference to use flexible work practices can have beneficial effects on the work-home interface (Beigi et al., 2018). More specifically, we propose that the ability to use FWPs can support employees who are highly invested in their jobs to detach from work while at home, which will in turn buffer adverse effects on their well-being.

Theory

Intrinsic motivation is a well-established construct in motivational research. It is rather broadly defined as a motivational state in which individuals engage in a task out of interest and desire to do so (Ryan & Deci, 2004). Intrinsic motivation is present when individuals feel autonomy, competence, and relatedness (Ryan & Deci, 2004). We focus on intrinsic motivation since it is a broad construct that is not only culturally universal, but also relevant for nearly every area of life (Gagné et al., 2014).

Subjective well-being has been defined as consisting of three components: presence of positive affect, absence of negative affect, and high levels of life satisfaction (Diener, 1984; Diener et al., 1999). As the focus of the present study is well-being in the organizational context rather than well-being in terms of life satisfaction, we follow the approach by Hülsheger and Schewe (2011) in dividing well-being into two different aspects: personal ill-being and job-related well-being (cf. Hülsheger & Schewe, 2011). Job satisfaction is an indicator of “job-related well-being;” in contrast, emotional exhaustion, as a dimension of burnout, is an indicator of “personal ill-being” (Hülsheger &

Schewe, 2011). Similar to positive affect, "ill-being" and "well-being" are unique factors contributing to mental health (Ryff et al., 2006). Thus, positive changes in overall well-being (as it is referred to in the present study) can consist of an increase in "job-related well-being" (i.e., job satisfaction) and a decrease in "personal ill-being" indicated by emotional exhaustion (Hülsheger & Schewe, 2011). To go beyond correlational data of absolute levels of intrinsic motivation and outcome variables, we use residual change scores of emotional exhaustion and job satisfaction (Schaufeli et al., 2009) to take initial levels of emotional exhaustion and job satisfaction into account. But how does intrinsic motivation affect employees' well-being over time?

Main Effects of Intrinsic Motivation on well-being

Although much research has focused on performance outcomes of motivation (e.g. Kusurkar et al., 2013), intrinsic motivation also has been shown to be crucial when it comes to well-being (Deci & Ryan, 2000; Sheldon et al., 2004). This goes in line with COR theory (Hobfoll, 2001) and the view of intrinsic motivation as a resource. In fact, intrinsic motivation has been shown to enable goal-directed behavior and foster concentration on tasks (Halbesleben et al., 2014; Shirom, 2011). Moreover, intrinsic motivation per se is defined as energizing (Deci & Ryan, 2000, 2004) and has been shown to be negatively related to emotional exhaustion (Fernet et al., 2010; Fernet et al., 2004; Gagné et al., 2014; Grant & Sonnentag, 2010). Also, Van den Broeck et al. (2011) found a negative relation between autonomous motivation (which intrinsic motivation is the prototype for) and emotional exhaustion. Kammeyer-Mueller et al. (2013) investigated intrinsic motivation and emotional exhaustion at the day-to-day level and found that intrinsic motivation was negatively related to post-work emotional exhaustion if pre-work emotional exhaustion was held constant.

H1a: Intrinsic motivation negatively predicts emotional exhaustion.

For employees who are high in intrinsic job motivation (i.e., have fun doing their job and derive pleasure from it), basic needs, such as autonomy, are fulfilled (Deci & Ryan, 2004). When needs are fulfilled and job-related resources (such as intrinsic motivation) are high, employees most probably will acquire further resources (Hobfoll, 2001). Therefore, for those who are high in intrinsic

motivation, working in one's job should be satisfying. Previous studies have already shown a relation between intrinsic motivation and federal employee attitudes such as employee satisfaction (Cho & Perry, 2011). Since Cho and Perry (2011) conducted a cross-sectional study, we aim at expanding their results to *changes* in work satisfaction over a 6-month period after the introduction of FWPs by taking initial levels of job satisfaction into account.

H1b: Intrinsic motivation positively predicts job satisfaction.

Intrinsic motivation as a double-edged sword: Adverse indirect effects of intrinsic motivation via reduced detachment

In a further step, we seek to investigate potential downsides of being invested at work that differ from the mere positive picture painted of intrinsic motivation in theory and research. While recent research has already found harmful effects of intrinsic motivation on well-being in the long run (i.e., by increasing emotional exhaustion, Junker et al., 2020), in this study we seek to look at underlying processes and consequences of the broader construct of being intrinsically motivated at work.

As Macey and Schneider (2015, p. 25) state "there are limits to the pool of energy and resources available to employees." We note that not only negative events at work but also positive events can drain energy, since they also demand attention (Beal et al., 2005). Thus, although intrinsic motivation can be seen as a resource, that does not mean that intrinsic motivated employees have unlimited energy.

Research on work engagement (a construct closely related to intrinsic motivation) indicates that it is negatively associated with taking breaks while working (Bakker & Oerlemans, 2016). Kammeyer-Mueller et al. (2013) found that the effectiveness of intrinsic motivation as a resource in reducing emotional exhaustion can be impaired by mitigating factors, such as when employees already start their day exhausted. Therefore, it is important to recover, and, in order to do so, detach. Detachment is defined as mentally distancing oneself from work-related thoughts during non-work time (Sonnentag & Bayer, 2005). Detachment is a crucial recovery experience and as such

enhances well-being (Wendsche & Lohmann-Haislah, 2016). More precisely, detachment has been found to correlate positively with life satisfaction and negatively with emotional exhaustion (Wendsche & Lohmann-Haislah, 2016).

But this important recovery process might be impaired for employees high in intrinsic motivation. There already exists evidence that concepts related to intrinsic motivation such as job involvement can negatively relate to detachment (Kühnel et al., 2009; Sonnentag & Kruel, 2006). Lack of detachment has been discussed as an outcome of unfinished goals during the work-day, which remain active in the mind after one arrives at home (Smit, 2016). Since intrinsic motivation has been associated with working excessively (Van den Broeck et al., 2011), goal attainment might be impaired when work-time-constraints hit. Additionally, working excessively has been found to relate to lack of detachment (Huyghebaert et al., 2018). More precisely, we propose that intrinsic motivation yields an adverse indirect relation with changes in job satisfaction and emotional exhaustion via reduced psychological detachment. This mediation effect that we propose (i.e., a mediation effect that has the reversed sign of the direct effect) is called “inconsistent mediation” (MacKinnon et al., 2000; Shrout & Bolger, 2002). Although intrinsic motivation in general should produce a desirable effect on job satisfaction and emotional exhaustion, it can also impair well-being when more specific psychological processes are considered. Recent research has found similar inconsistent mediation effects for job involvement (Kühnel et al., 2009). While job involvement is directly positively related to work engagement after a short respite, it also has a negative indirect effect on work engagement via reduced detachment.

Thus, building on research on workaholism and its sub-component of working excessively (Huyghebaert et al., 2018; Van den Broeck et al., 2011), we propose that detachment mediates the effects of intrinsic motivation on emotional exhaustion and job satisfaction.

H2a: Intrinsic motivation will have a positive indirect effect on emotional exhaustion via the impairment of the capacity toward psychological detachment.

H2b: Intrinsic motivation will have a negative indirect effect on job satisfaction via the impairment of the capacity toward psychological detachment.

Following Gross and colleagues' (2011) line of reasoning on positive work events, we assume that the potential negative consequences of motivation might depend on context variables. Employees have constraints regarding how they can invest their resources at work (i.e., because of work-time constraints; Johns, 1991). However, an important antecedent for detachment is to finish one's work goals for the day (Smit, 2016). Due to inflexible constraints of where and when those work goals can be finished, tasks can remain unfinished. One possibility for gaining control over how to invest resources at work are FWPs. Accordingly, FWPs have been shown to be used to by employees to successfully pursue their goals and is associated with higher in-role job performance as rated by a supervisor (Ng & Lucianetti, 2016). FWPs allow employees to finish their tasks in a flexible way at home and/or in the environment which they feel suits the task best. Consequently, if integration of home and family through FWPs is possible, being engaged might not interfere with being detached (Halbesleben et al., 2009).

Although working from home can have its downsides (e.g., increased conflict between family and work; Delanoeije et al., 2019), we assume that especially those employees who voluntarily choose to use FWPs and therefore prefer integrating work and home can benefit from this flexibility (Beigi et al., 2018; Gadeyne et al., 2018). This is also in line with research finding that voluntarily working from home is associated with lower stress, whereas being forced into flexible work by the employer is associated with negative consequences such as work-to-family conflict and burnout (Kaduk et al., 2019). Therefore, the *voluntary* integration of two domains via FWPs might alter the effects of intrinsic motivation on impaired detachment, as FWPs increases employees' control over how to invest their resources (cf. Hall et al., 2006). FWPs allow employees to find the right place for their task (e.g., as tasks demanding concentration can be conducted at home rather than in an open-plan office) finish them more effectively and, thus, save resources such as time (Grandey & Cropanzano, 1999). Therefore, we propose the voluntary use of FWPs to restore resources and

buffer the long-term effect of intrinsic motivation on detachment and – in a further step – will buffer negative indirect consequences on both indicators of well-being.

H3: Voluntary use of FWPs moderates the relationship between intrinsic motivation and detachment such that the path between intrinsic motivation and detachment is weaker when FWPs are used (rather than not used).

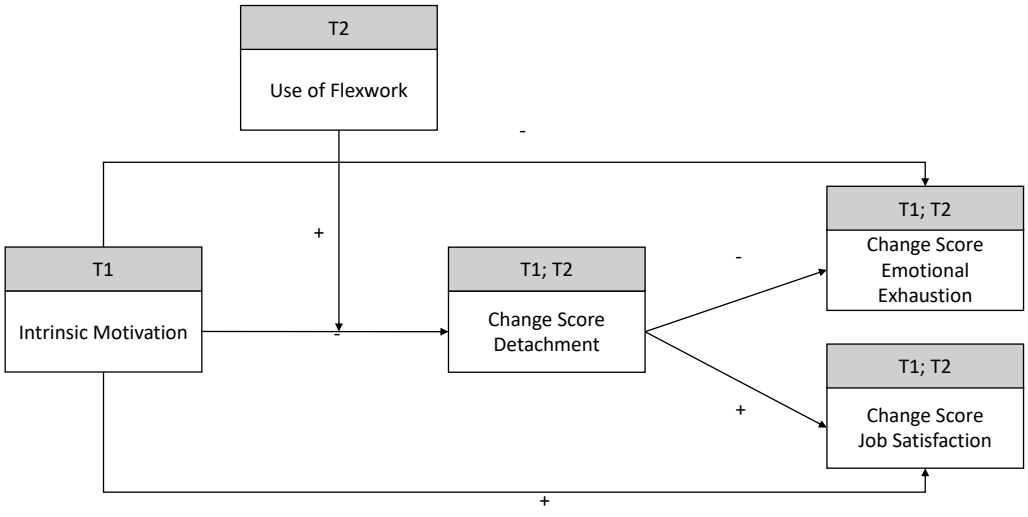
Accordingly, we propose:

H4a: Voluntary use of FWPs moderates the mediated relationship of intrinsic motivation on emotional exhaustion via detachment, such that the indirect effect of intrinsic motivation on emotional exhaustion via detachment is weaker when FWPs are used (rather than not used).

H4b: Voluntary use of FWPs moderates the mediated relationship of intrinsic motivation on job satisfaction via detachment, such that the indirect effect of intrinsic motivation on job satisfaction via detachment is weaker when FWPs are used (rather than not used).

Figure 1

Overview of theoretical model and points of measurement



Method

Sample and Procedure

We collected data at two points of measurement with a time lag of six months at a large European vehicle, engine, and machine manufacturing company before and after FWPs were implemented in the company. We contacted all employees in every department in which FWPs were feasible. In total, 3,645 employees were contacted. At T1 741 employees (20.33%) and at T2 417 employees completed the questionnaire, which results in a dropout rate between the two points of measurement of 43.72%. We then excluded participants with missing values in the focal variables. The remaining participants were 408 employees from 117 teams. Team size ranged from two to 36 employees (M = 9.83; SD = 7.14). We chose to account for the team size, as coordination of work and individual agreements on FWPs use might be more complex in bigger teams.

Most of the participants were male (71.1%). Two percent of participants were younger than 25 years, 43% were between 26 years and 35 years, 31% were between 36 years and 45 years, 19% were between 46 years and 55 years, and 5% were older than 55 years. Concerning weekly working hours, 89% were full-time employees, 7% worked 75%, 3% worked 50%, and 1% of participants worked less than 50%. The two surveys were administered online. At the first point of measurement, we collected demographic data and controls (age, gender, working hours and team size) as well as participants' intrinsic motivation. At this measurement point, participants also rated their baseline level of detachment, emotional exhaustion, and job satisfaction prior to introduction of FWPs. Six months after FWPs had been introduced, we asked the participants to rate their levels of detachment, emotional exhaustion, and job satisfaction again. At this second measurement point, participants also indicated whether they still used FWPs. All items were provided in German. For scales with no validated German translation, we used the back translation method (Brislin et al., 1973).

To assess changes in detachment, job satisfaction, and emotional exhaustion, we computed the standardized residual change score following the recommendation by Schaufeli et al. (2009) for

depicting changes in longitudinal studies. Following this procedure, detachment, job satisfaction and emotional exhaustion at T2 were predicted by the corresponding construct at T1. Standardized residual change scores then were obtained by using the differences of the predicted and observed Time 2 scores. Thus, higher change scores mean greater changes over time. If not indicated otherwise, all items were rated on a five-point Likert scale ranging from *1 = strongly disagree* to *5 = strongly agree*.

Measures

Intrinsic motivation

Intrinsic motivation was assessed using the German validated three-item subscale of the Multidimensional Work Motivation Scale (MWMS, Gagné et al., 2014). A sample item was: "I have fun doing my job." The Cronbach's alpha of the scale was .88.

Use of FWPs

Voluntary use of FWPs was assessed by one item asking the participants whether they were using FWPs 6 months after the introduction of FWPs. The answers were dummy-coded *0 = no, I don't use FWPs* and *1 = yes, I use FWPs*.

Detachment

We assessed detachment using the four-item psychological detachment subscale of the Recovery Experience Questionnaire (Sonnentag & Fritz, 2007). Items refer to time away from work. A sample item was: "During time after work, I forget about work." Cronbach's alpha of the scale was .90 (T1) and .92 (T2).

Emotional Exhaustion

We used five items of the exhaustion subscale from the Oldenburg Burnout-Inventory (OLBI; Demerouti et al., 2003) to assess emotional exhaustion. To prevent artificial factors and other psychometric problems, we chose to only include positively worded items (Podsakoff et al., 2003). One sample item was: "There are days where I feel tired before I arrive at work." Cronbach's alpha of the scale was .83 (T1) and .86 (T2).

Job Satisfaction

To assess job satisfaction, we used the three items of the job satisfaction subscale from the Michigan Organizational Assessment Questionnaire (MOAQ-JSS; Camman, Fichman, Jenkis, & Klesh, as cited in Bowling & Hammond, 2008). We slightly adapted the items by including the company's name. An original item of the scale was "All in all, I am satisfied with my job." Cronbach's alpha of the scale was .75 (T1) and .89 (T2).

Control variables[2]

We controlled for gender, age, weekly work hours, and team size. Controls were measured at T1. For anonymity reasons and restrictions imposed by the work council, we measured age (*1 = younger than 25 years*; *2 = 26 to 35 years*; *3 = 36 to 45 years*; *4 = 46 to 55 years* and *5 = older than 55 years*) and weekly work hours (*1 = less than 50%*; *2 = 50%*; *3 = 75%* and *4 = 100%* of 35 to 40 hours per week) as categorial variables. Gender was coded *1 = male* and *2 = female*.

Statistical analysis

Since our data consisted of employees nested in teams, we used hierarchical linear modelling in HLM 8 (Raudenbush et al., 2019) to take the multilevel structure of the data into account. We calculated the difference between the likelihood ratio of the models. The difference follows a chi-square distribution; the degrees of freedom are the number of variables added in each model. We centered all interval scaled predictors and the continuous control variable (team size) at their grand mean prior to entering them into the model and prior to building respective interaction terms, following the recommendations by Enders and Tofighi (2007).

Results

Table 1 shows the means, standard deviations, correlations, and Cronbach's alphas for the study variables.

[2] Results were the same without control variables.

Preliminary analyses

First, we determined the amount of variance explained at level 1 (employee) and level 2 (team) by calculating the intraclass coefficients for the mediator and the outcomes using two-level intercept-only models. For changes in detachment, the variance component at level 1 was .94 (*SE* = 0.07); the variance component at level 2 was .06 (*SE* = 0.05). Thus, for changes in detachment, 94% of the variance was between-person variance. Consequently, 6% of the variance was attributable to the team. For changes in exhaustion, the variance components were .95 (*SE* = 0.07) at level 1 and .04 (*SE* = 0.04) at level 2; 96% of the variance was attributable to between-person variance. The variance components for changes in job satisfaction were .91 (*SE* = 0.07) at level 1 and .08 (*SE* = 0.05) at level 2; 92% of the variance was attributable to between-person variance.

The between-team variation reaches up to 9%. Although ICCs are not high, we take the nested structure of the data into account by conducting hierarchical linear modeling to also account for between-team variance. However, a major part of the variance can be attributed to between-employee variance. Therefore, our preliminary analyses hint that the emphasis on within-level variables in our model is justified.

Test of Hypotheses

Main Effects

In Hypotheses 1a and b, we proposed a main effect of intrinsic motivation at T1 on changes in job satisfaction and emotional exhaustion at T2. To investigate these hypotheses, we used hierarchical linear modelling. First, we tested the model including control variables against the null model. For emotional exhaustion, including the control variables showed a significant improvement over the null model ($\Delta - 2 \times$ log likelihood = 22.22, *df* = 4, $p < .001$). Age (estimate = -0.11; *SE* = 0.05; *t* = -1.98; *p* =.049) and weekly working hours (estimate = 0.24; *SE* = 0.11; *t* = 2.12; *p* =.035) were negative predictors of changes in emotional exhaustion. Including intrinsic motivation (estimate = -0.06; *SE* = 0.06; *t* = -0.99; *p* =.325, *ns*) as a predictor did not significantly improve the model ($\Delta - 2 \times$ log likelihood = 0.96, *df* = 1, $p > .500$, *ns*). Thus, Hypothesis 1a was not supported.

Table 1

Means, standard deviations, and intercorrelations for all study variables

	Variable	*M*	*SD*	1	2	3	4	5	6	7	8	9	10	11	12
1	Intrinsic Motivation	3.93	0.76												
2	FWPs	0.62	0.49	0.06											
3	Detachment T1	3.45	0.80	0.76	-0.09										
4	Job Satisfaction T1	4.19	0.63	0.62 **	-0.01	0.19 **									
5	Emotional Exhaustion T1	2.47	0.78	-0.35 **	0.06	-0.43 **	-0.43 **								
6	Detachment T2	3.46	0.82	-0.04	-0.08	0.63 **	0.09	-0.30 **							
7	Job Satisfaction T2	4.01	0.81	0.42 **	0.03	0.21 **	0.47 **	-0.32 **	0.28 **						
8	Emotional Exhaustion T2	2.47	0.81	-0.22 **	0.01	-0.34 **	-0.26 **	0.53 **	-0.49 **	-0.54 **					
9	Team Size	14.21	9.39	-0.09	-0.21 **	-0.02	-0.06	0.11 *	0.01	-0.03	0.08				
10	Gender	-	-	0.03	0.11 *	-0.07	0.05	-0.01	-0.05	-0.01	0.05	-0.12 *			
11	Age	-	-	-0.02	-0.08	0.08	0.02 *	-0.01	0.07	0.11 *	-0.10 *	-0.08	-0.09		
12	Weekly working hours	-	-	0.06	-0.03	-0.01	-0.00	0.10	-0.08	-0.00	0.12	-0.04	-0.38 **	-0.06	-

Note. N = 408.

* p < .05 ** p < .01.

For job satisfaction, including the control variables showed a significant improvement over the null model for job satisfaction (Δ – 2 × log likelihood = 16.11, *df* = 4, *p* = .003). Age (estimate = 0.14; *SE* = 0.05; *t* = 2.57; *p* =.011) was a positive predictor of changes in job satisfaction. Including intrinsic motivation (estimate = 0.19; *SE* = 0.06; *t* = 2.89; *p* =.004) as a predictor significantly improved the model (Δ – 2 × log likelihood = 8.28, *df* = 1, *p* = .004), supporting Hypothesis 1b.

Indirect Effects

In order to test the mediation hypotheses, we tested the indirect effect of intrinsic motivation on change in emotional exhaustion (Hypothesis 2a) and job satisfaction (Hypothesis 2b) through changes in detachment. To test for an indirect effect, we used the Monte Carlo method with 10000 resamples to assess the mediation effects (Bauer et al., 2006; Selig & Preacher, 2008, June). Path a describes the effect of intrinsic motivation on changes in detachment. We followed the same procedure as for Hypotheses 1a and b to calculate the effect of intrinsic motivation on detachment. Including controls did not significantly improve the null model (Δ – 2 × log likelihood = 8.73, *df* = 4, *p* = .067, *ns*). However, including intrinsic motivation in the second step did significantly improve the model (Δ – 2 × log likelihood = 4.97, *df* = 1, *p* = .024). Intrinsic motivation was a significant negative predictor (estimate = -0.15; *SE* = 0.07; *t* = -2.24; *p* = .026) of detachment.

Path b describes the effects of intrinsic motivation on changes in emotional exhaustion (Hypothesis 2a) and job satisfaction (Hypothesis 2b) after controlling for intrinsic motivation (see Table 2 for effect on job satisfaction and Table 3 for effect on emotional exhaustion). Results of the Monte Carlo method supported significant indirect effects of intrinsic motivation via detachment on changes in emotional exhaustion (*B* = 0.06, 95% CI [0.008, 0.115]) and job satisfaction (*B* = -0.04, 95% CI [-0.073, -0.004]). Thus, Hypotheses 2a and 2b were supported.

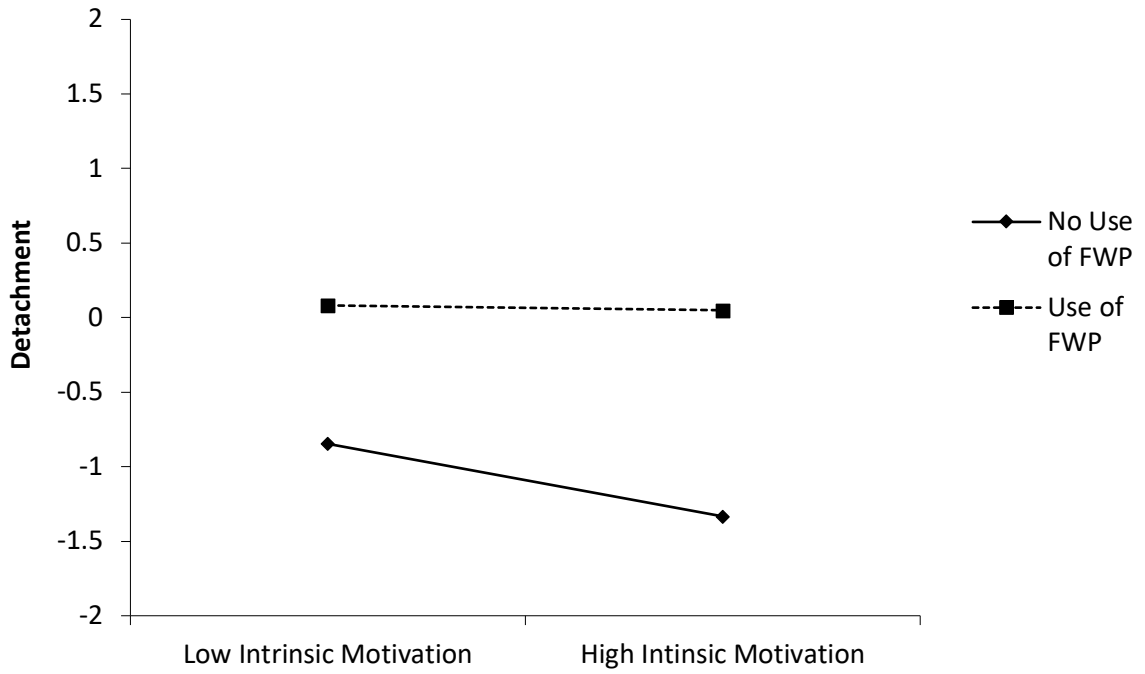
Interaction Effect

To test the moderation hypothesis, we compared four models. First, we ran the null model. In a second step, we included the control variables (Model 1), then we included intrinsic motivation and use of FWPs as main effects (Model 2). Intrinsic motivation significantly predicted changes in detachment (estimate = -0.15; *SE* = 0.07; *t* = -2.23; *p* = .028), while use of FWPs did not significantly

predict changes in detachment (estimate = -0.02; *SE* = 0.22; *t* = -0.21; *p* = .834). In a final step, we included the interaction term between intrinsic motivation and flex work to see whether this interaction term improved the model fit (Model 3). Including the interaction term improved the model (see Table 4) and significantly predicted changes in detachment (estimate = 0.30, *SE* = 0.13, *t* = 2.27, *p* = .024).

Figure 2

Effect of intrinsic motivation on detachment when flex work was used/ not used



Following the procedure by Preacher et al. (2006), we tested the simple slopes of intrinsic motivation predicting change in detachment for employees who made use of flex work and employees who did not make use of flex work. As expected, when flex work was not used, intrinsic motivation was negatively associated with detachment (estimate = -0.32, *SE* = 0.10, *t* = -3.18, *p* = .002).

Table 2

Multilevel estimates for models predicting changes in job satisfaction

	Null Model				*Model 1*				*Model 2*				*Model 3*			
Variable	*Estimate*	*SE*	*t*	*p*	*Estimate*	*SE*	*t*	*P*	*Estimate*	*SE*	*t*	*p*	*Estimate*	*SE*	*t*	*p*
Intercept	0.00	0.06	0.07	.941	-0.29	0.56	-0.52	.601	-0.18	0.56	-0.32	.751	-0.19	0.54	-0.36	.722
Team Size					-0.00	0.01	-0.29	.773	-0.00	0.01	-0.07	.943	0.00	0.01	0.00	.998
Age					0.14	0.05	2.57	.011	0.14	0.05	2.57	.011	0.13	0.05	2.56	.011
Gender					-0.02	0.12	-0.16	.871	-0.04	0.12	-0.31	.759	-0.05	0.12	-0.43	.671
Working hours					-0.02	0.11	-0.15	.880	-0.04	0.11	-0.38	.707	-0.03	0.11	-0.29	.773
Intrinsic Motivation									0.19	0.06	2.89	.004	0.22	0.06	3.56	<.001
Detachment													0.24	0.05	5.12	<.001
− 2 × log likelihood			1148.88				1132.77				1124.49				1099.80	
Δ – 2 × log likelihood							16.11	.003			8.28	.004			24.69	<.001
Df							4				1				1	
Level 1 variance (*SE*)	0.91 (0.07)				0.88 (0.07)				0.87 (0.07)				0.85 (0.07)			
Level 2 variance (*SE*)	0.08 (0.05)				0.10 (0.05)				0.09 (0.05)				0.05 (0.04)			

Table 3

Multilevel estimates for models predicting changes in exhaustion

	Null Model				*Model 1*				*Model 2*				*Model 3*			
Variable	*Estimate*	*SE*	*t*	*p*	*Estimate*	*SE*	*t*	*p*	*Estimate*	*SE*	*t*	*p*	*Estimate*	*SE*	*t*	*p*
Intercept	-0.00	0.05	-0.07	.941	-0.89	0.55	-1.60	.112	-0.92	0.56	-1.67	.098	-0.87	0.50	-1.72	.089
Team Size					0.00	0.01	0.55	.586	0.00	0.01	0.47	.640	0.00	0.00	0.62	.537
Age					-0.11	0.05	-1.98	.049	-0.11	0.05	-1.99	.047	-0.10	0.05	-2.09	.038
Gender					0.20	0.12	1.72	.087	0.21	0.12	1.79	.075	0.21	0.11	1.94	.053
Working hours					0.24	0.11	2.12	.035	0.24	0.11	2.18	.030	0.23	0.11	2.22	.028
Intrinsic Motivation									-0.06	0.06	-0.99	.325	-0.12	0.06	-2.11	.035
Detachment													-0.41	0.04	-9.20	<.001
− 2 × log likelihood			1149.95				1127.72				1126.76				1049.95	
Δ – 2 × log likelihood							22.22	<.001			0.96	>.500			76.81	<.001
Df							4				1				1	
Level 1 variance (*SE*)	0.95 (0.07)				0.93 (0.07)				0.93 (0.07)				0.78 (0.06)			
Level 2 variance (*SE*)	0.04 (0.04)				0.03 (0.04)				0.02 (0.04)				0.01 (0.03)			

Table 4

Multilevel estimates for models predicting changes in detachment

	Null Model				*Model 1*				*Model 2*				*Model 3*			
Variable	*Estimate*	*SE*	*t*	*p*	*Estimate*	*SE*	*t*	*p*	*Estimate*	*SE*	*t*	*p*	*Estimate*	*SE*	*t*	*p*
Intercept	0.00	0.06	0.01	.989	0.22	0.57	0.38	.705	0.14	0.57	0.25	.803	0.17	0.57	0.30	.768
Team Size					0.00	0.01	0.27	.785	0.00	0.01	0.06	.955	-0.00	0.01	-0.07	.945
Age					0.00	0.06	0.03	.973	0.00	0.06	0.01	.995	0.00	0.06	0.08	.938
Gender					-0.02	0.12	-0.14	.888	-0.00	0.12	-0.02	.987	-0.02	0.12	-0.18	.855
Working hours					-0.05	0.11	-0.47	.640	-0.03	0.11	-0.29	.769	-0.04	0.12	-0.33	.740
Intrinsic Motivation									-0.15	0.07	-2.23	.027	-0.32	0.10	-3.18	.002
Flex Work									-0.02	0.11	-0.21	.834	-0.02	0.11	-0.18	.858
Intrinsic Motivation × Flex Work													0.30	0.13	2.27	.024
− 2 × log likelihood			1154.94				1146.22				1141.20				1136.09	
Δ – 2 × log likelihood							8.73	.067			5.02	.079			5.12	.022
Df							4				2				1	
Level 1 variance (*SE*)	0.94 (0.07)				0.94 (0.07)				0.93 (0.07)				0.92 (0.07)			
Level 2 variance (*SE*)	0.06 (0.04)				0.06 (0.04)				0.06 (0.04)				0.06 (0.04)			

Moreover, when flex work was used, intrinsic motivation was not significantly related to detachment (estimate = -0.02, *SE* = 0.16, *t* = -0.13, *p* = .898, *ns*). The interaction is illustrated in Figure 2. Thus, Hypothesis 3 was supported.

Conditional Indirect Effects

In a final step, we tested the conditional indirect effect of intrinsic motivation on changes in emotional exhaustion and job satisfaction via changes in detachment for conditional values of FWPs. To assess the indirect effect, we used the same steps as in the mediation analysis. This time, however, path a described the interaction effect of intrinsic motivation and FWPs on changes in detachment as tested in Hypothesis 3. Path b described the effect of detachment on changes in job satisfaction and emotional exhaustion while controlling for the interaction term. To test for both effects, we applied five steps. First, we ran the null models for changes in job satisfaction and emotional exhaustion, respectively. Then, we included the control variables. In the third step, we included intrinsic motivation and FWPs. In the fourth step, we added the interaction term of intrinsic motivation and FWPs. In the final step, we included detachment.

We calculated the coefficient of detachment on changes in emotional exhaustion after controlling for the control variables, intrinsic motivation, FWPs, and the interaction term (estimate = -0.41, *SE* = 0.04, *t* = -9.15, *p* < .001). The model significantly improved at the last step (Δ – 2 × log likelihood = 76.04, *df* = 1, *p* < .001). The Monte Carlo method (Bauer et al., 2006; Selig & Preacher, 2008, June) revealed a significant indirect effect (*B* = -0.12, 95% CI [-0.234, -0.016]. Thus, Hypothesis 4a was supported.

Finally, we used the same procedure to test Hypothesis 4b proposing a moderated mediation effect on changes in job satisfaction. The coefficient of detachment significantly predicted changes in job satisfaction after controlling for the control variables, intrinsic motivation, FWPs and the interaction term (estimate = 0.24, *SE* = 0.05, *t* = 5.11, *p* < .001). The model significantly improved at the last step (Δ – 2 × log likelihood = 24.67, *df* = 1, *p* < .001. The Monte Carlo method (Bauer, Preacher, & Gil, 2006; Selig & Preacher, 2008) revealed a significant indirect effect (*B* = 0.07, 95% CI

[0.010, 0.151]. Thus, Hypothesis 4b was supported. Intrinsic motivation indirectly affected changes in emotional exhaustion and job satisfaction via changes in detachment.

Discussion

In the present study, we examined intrinsic motivation as a double-edged sword in its relation to changes in well-being and in the context of voluntary use of FWPs. We therefore not only examined a proposed positive direct effect of intrinsic motivation on two facets of well-being (i.e., reduced emotional exhaustion and increased job satisfaction), but we also investigated potential adverse effects of intrinsic motivation on well-being via a lack of detachment. In a last step, we took a closer look at a potential buffering effect of voluntary use of FWPs on this adverse indirect relationship. As expected, we found a direct positive effect of intrinsic motivation on changes in job satisfaction. However, contrary to our prediction, intrinsic motivation did not directly relate to decreased emotional exhaustion. Thus, our findings concerning the main effects of intrinsic motivation are mixed. However, we found indirect adverse effects of intrinsic motivation via detachment on both indicators of well-being (i.e., job satisfaction and emotional exhaustion), fully supporting our hypotheses. Finally, as predicted, the indirect adverse effect of intrinsic motivation on well-being was moderated by voluntary use of FWPs in a way that the effect vanished when FWPs were used.

As mentioned above, we only found a main effect of intrinsic motivation on employees' job satisfaction. This finding is in line with the assumption drawn from COR theory that resources have positive long-term effects (Hobfoll, 2001) as well as expanding on prior cross-sectional findings on the relation between intrinsic motivation and job satisfaction (Cho & Perry, 2011). However, we found no direct relation between intrinsic motivation and changes in emotional exhaustion. This finding contradicts the theoretical assumption that resources such as intrinsic motivation can be reinvested to reduce emotional exhaustion over a longer period of time (Hobfoll, 2001). It also contradicts previous mostly cross-sectional findings linking intrinsic motivation and emotional exhaustion, which might seem surprising at the first look (Fernet et al., 2010; Fernet et al., 2004;

Gagné et al., 2014; Grant & Sonnentag, 2010; Van den Broeck et al., 2011). However, our findings are similar to previous research suggesting that the power of intrinsic motivation as a resource might be impaired when initial levels of emotional exhaustion are taken into account (Kammeyer-Mueller et al., 2013). This underlines the importance of considering actual changes in crucial outcome variables. Additionally, as Halbesleben et al. (2014) point out, valuable resources do not necessarily lead to positive outcomes. Our finding goes in line with this proposition and points in the direction that – especially when taking a longitudinal perspective – potentially beneficial direct effects of intrinsic motivation on emotional exhaustion may be overshadowed by adverse indirect effects.

Concerning the adverse effects of intrinsic motivation on well-being via detachment, the results fully supported our assumption that intrinsic motivation negatively predicted changes in well-being via a lack of detachment. Thus, results indicate that resource gain-spirals can be limited for intrinsically motivated employees, since the investment of resources can impair the recovery process after work, resulting in impaired well-being. This finding is in line with previous research on the related construct of job involvement (Kühnel et al., 2009). It also expands findings by Kühnel et al. (2009) investigating the mediating effect of detachment over a longer period of time. The findings emphasize the importance of detachment for the recovery process and the maintenance of resources at work.

Notably, we found a moderating effect of voluntary use of FWPs. Having access to and voluntarily using FWPs appeared to dissolve the adverse indirect effects of intrinsic motivation on changes in both indicators of well-being via a lack of detachment. This finding supports the idea that FWPs can help employees to gain control over when they finish their work tasks, (Kelly & Moen, 2007) which in turn may facilitate the process of switching off from work during non-work hours. This finding contributes to the broader discussion of the effects of FWPs. Our results indicate that the use of FWPs, seems to be beneficial for intrinsically motivated employees, especially for those who voluntarily choose to use FWPs after their introduction and thus seem to prefer working flexibly.

Limitations and future research

We acknowledge several limitations to our study. First, we measured voluntary use of FWPs with a dichotomous variable, indicating whether FWPs were still used after the introduction of FWPs to the organization. We used this variable as a proxy for the preference to work flexibly, as it is a rather objective indicator of behavior rather than a self-report. However, future research could measure this construct more precisely, for example by also investigating the amount of flex-work used. Also, future research could add a more latent measure of the fit between FWPs offered by the organization or supervisor and the individual's work-home integration preference.

Second, due to practical constraints, our moderator, mediator, and outcome variables were measured at the same point of time. This restricts the longitudinal nature of our findings to some degree. However, the moderator was a rather objective variable referring to behavior. Also, for detachment and both components of well-being, initial levels were taken into account by computing residual change scores (Schaufeli et al., 2009). Thus, our results depict actual changes in the mediator and outcome variables.

Third, we only used self-reports, which can lead to common method variance and a subsequent inflation of relationships between variables (Podsakoff et al., 2003). On the other hand, self-reports are preferable if we seek to investigate personal attitudes such as job satisfaction and intrinsic motivation. However, future research should also investigate more distal outcomes of intrinsic motivation. As well-being already has been shown to be associated with performance (Wright & Cropanzano, 2000), investigating the indirect effect of intrinsic motivation on changes in performance via detachment and well-being would be an interesting addition to the model examined in the current study. Also, future research could expand outcome variables from individual-level-variables (e.g., well-being) to organizational level-variables (e.g., organizational performance, turn-over), which would help to investigate the business impact of potential downsides of intrinsic motivation via detachment.

Furthermore, additional moderating effects should be taken into account. Leader behavior such as empowering leadership, self-efficacy beliefs, or factors within the organizational context

other than FWPs – such as policies regarding availability during non-work hours – could also play a role in how intrinsic motivation relates to detachment.

Additionally, in the present study, we focused on intrinsic motivation. For future research it would be interesting to also investigate extrinsic motivation to compare effects of both autonomous and controlled motivation on well-being via detachment.

Theoretical and practical implications

The theoretical and practical implications of this study are manifold. First, we extended COR theory (Hobfoll, 2001) by identifying constraining factors to the gain-spirals of resources. Our results are partially in line with the assumptions derived from COR theory, as intrinsic motivation was positively related to changes in job satisfaction. However, the observance in this study of a nonexistent direct relationship between intrinsic motivation and changes in emotional exhaustion over a longer period underlines the need to investigate changes in outcome variables rather than cross-sectional correlations. Additionally, our research is among the first to investigate adverse effects of intrinsic motivation; the results also add to research on other motivational processes such as work engagement (Junker et al., 2020) by shedding light on mechanisms in the adverse relationships of positive motivational states and well-being. Our results also underline the importance of not overlooking potential adverse effects of intrinsic motivation on well-being. We also investigated a new and emerging context for applying COR theory to work: The use of FWPs has been shown to diminish adverse effects as it buffers the relationship between intrinsic motivation and lack of detachment.

As the Covid-19 pandemic has drastically changed the way we work (Rofcanin & Anand, 2020), the current need for flexible work arrangements due to the unpredictable environment adds to the importance of the findings. We can also derive practical implications: In addition to the recommendation for leaders to evoke feelings of autonomy, competence, and relatedness (Deci & Ryan, 2004) in employees to motivate them, ensuring employees' detachment is of additional importance in order to prevent resource drain among employees.

Therefore, HR managers should encourage employees to detach properly to remain satisfied at work and not become emotionally exhausted. One possibility to foster employees' ability to detach are trainings dedicated to improving the recovery experience (Hahn et al., 2011). Our findings suggest that providing an organizational environment which fosters detachment (e.g., by offering FWPs) is another possibility to enhance recovery. Intrinsically motivated employees who seem to have difficulty detaching might need this organizational support to benefit from their own personal resources. Therefore, the introduction of FWPs to organizations seems to be an appropriate measure to prevent intrinsically motivated employees from impairing their well-being via a lack of detachment. Our results thereby point in the direction that favorable effects occur when FWPs are used *voluntarily*. Mandatory use of FWPs might yield different results (cf. Kaduk et al., 2019).

Conclusion

We used a longitudinal design with two points of measurement before and after the introduction of FWPs in a European company to investigate intrinsic motivation as a double-edged sword in predicting two aspects of well-being. The present study advances our knowledge of long-term effects of intrinsic motivation, as intrinsic motivation has not only positive relationship with job satisfaction but also an indirect adverse effect on job satisfaction and emotional exhaustion via lack of detachment. In addition to this inconsistent mediation effect, the findings of the current study also enrich our knowledge of how voluntary use of flexible work policies can foster employee well-being.

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