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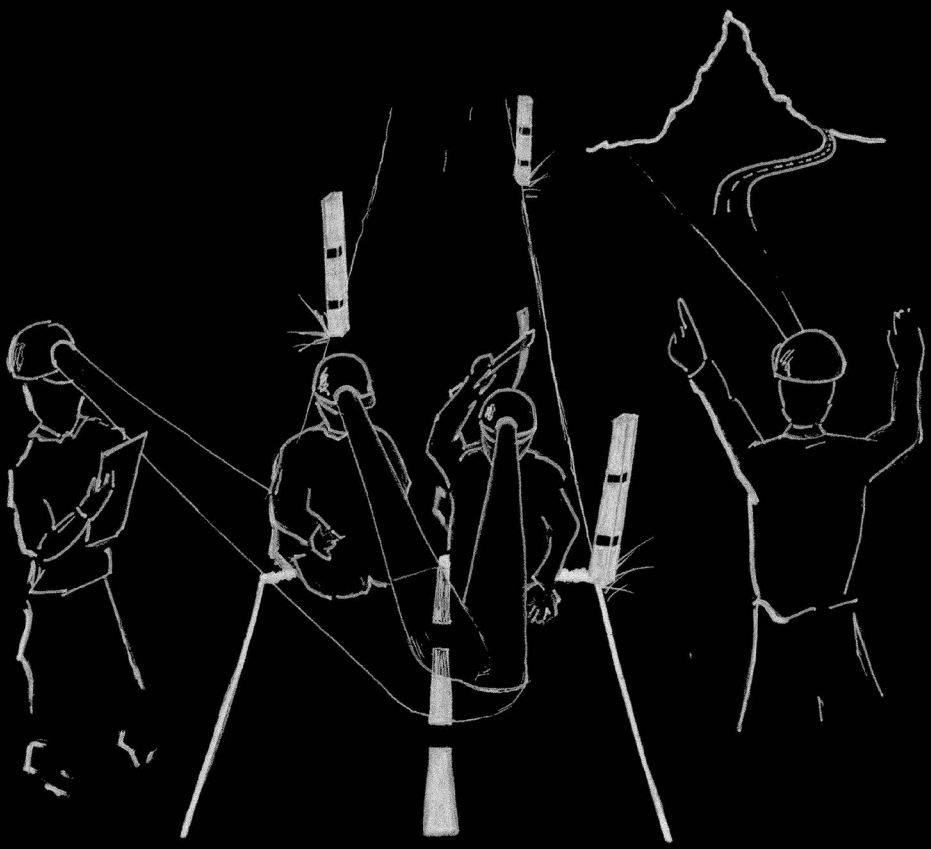
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Attention!
An Affective Approach to Anticipated Action



Cognitive, Affective, and Motivational Processes Underlying Proactive Behavior



Inge Wolsink

Attention! An Affective Approach to Anticipated Action

Cognitive, Affective, and Motivational Processes Underlying Proactive Behavior

ACADEMISCH PROEFSCHRIFT

ter verkrijging van de graad van doctor

aan de Universiteit van Amsterdam

op gezag van de Rector Magnificus

prof. dr. ir. K.I.J. Maex

ten overstaan van een door het College voor Promoties ingestelde

commissie, in het openbaar te verdedigen in de Agnietenkapel

op vrijdag dag 24 november 2017, te 14.00 uur

door Inge Wolsink

geboren te Amsterdam

Promotiecommissie

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Cover Design: Inge Wolsink

Photo by **Nenad Saljic**, http://www.nenadsaljic.com/

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A

Dankwoord - Acknowledgements

Geen enkele prestatie is puur en alleen afhankelijk van jezelf. Ten eerste wil ik dus graag het toeval bedanken. Als vrouw heb ik het geluk gehad om specifiek in deze tijd in Nederland te zijn geboren. Ik bedoel, stel je voor dat ik 200 jaar geleden was geboren, of in een land waar toegang tot betaalbaar onderwijs niet vanzelfsprekend is. Dan was er van dit boek niks terecht gekomen. Ten tweede had met geen mogelijkheid kunnen zijn waar ik nu ben zonder hulp, inspiratie, kennis, coaching en vertrouwen van anderen. Dat geldt niet alleen voor de afgelopen vier jaar waarin ik heb doorgestudeerd om mezelf wetenschapper te mogen noemen, maar minstens net zozeer voor de periode daarvoor. Zonder nieuwsgierigheid, eigenzinnigheid, twijfel en gedrevenheid geen wetenschap. Als ik deze eigenschappen niet al ver voor het promotietraject met hulp van anderen had ontwikkeld, was ik er nooit aan begonnen en had ik al helemaal de eindstreep niet gehaald. Dus, tegen de gebruiken in en ten behoeve van de verhaallijn, in chronologische volgorde de mensen die in significante mate indirect dan wel direct hebben bijgedragen aan dit boekwerk.

Mijn wetenschappelijke ontwikkeling begon vroeg. Ik heb twee fantastische ouders die mij twee essentiële dingen hebben bijgebracht: *1)* je kunt álles worden als je maar je best doet dus laat je nooit door iemand vertellen dat je iets niet kunt, en *2)* nieuwe dingen leren is leuk. Van jongs af aan ben ik bedolven onder nieuwe ervaringen. Op mijn derde ging ik naar mijn eerste concert, een celloconcert, en leerde mijn vader me schaken. Althans, hij deed een poging met het uitleggen van de regels. De strategie was denk ik toen nog ver te zoeken. Toen de strategie kwam beloofde hij me een prijs van 100 gulden als ik hem ooit zou verslaan. Nooit gelukt. Mijn zusje lukte het wel, meerdere keren zelfs. Ik hoop dan maar dat een doctorstitel volstaat als bewijs van enig analytisch inzicht ☺. Vanaf het moment dat ik kon lezen struinde ik samen met mijn moeder de bibliotheek af. Toen de lijst van Jan Terlouw, Karl May en Thea Beckman uitgeput raakte, ging ik deels over op de boekenkast des huizes. Mama maakte me enthousiast voor Goethe, Isabel Allende en Benoïte Groult, terwijl papa me de essentie van de Naam van de Roos uitlegde, Lord of the Rings promootte ('begin eerst maar met dit boekje – de Hobbit'), en de geschiedenis van het Romeinse keizerrijk en de Ilias en de Odyssee onder de neus duwde. Mijn eindexamen Grieks heb ik puur en alleen doorstaan omdat ik Homerus een keer of drie had gelezen en de teksten min of meer uit mijn hoofd kende want huiswerk deed ik niet. Ik had een 5 trouwens dus dat was ook weer bewijs dat mijn geheugen niet fotografisch is.

Een paar keer per jaar waren mijn zusje en ik een week bij mijn oma, een bijzonder avontuurlijke en intelligente vrouw. Bij haar ontwikkelde ik op lange wandelingen de liefde voor natuur. Ondertussen somde zij alle soorten paddenstoelen, planten, en vogels op die we tegen kwamen. Overal wist ze iets over te vertellen. Als het regende leerde ze ons naaien, breien, tekenen en schilderen. De kaft van dit proefschrift is dus aan haar te danken. Ik leerde ook dat het normaal was dat je als 70-jarige vrouw zonder man op vakantie ging naar Nieuw-Zeeland, dat je nooit te oud bent om nieuwe dingen te leren, en dat eigenwijs zijn niet per definitie een slechte eigenschap is. Het enthousiasme waar ik als kind aan werd blootgesteld als ik vragen stelde over hoe de wereld in elkaar zit (papa, hoe werkt het heelal eigenlijk – 'Nou, ik heb hier een encyclopedie, zoek dat maar op. Misschien is het heelal wel een leuk onderwerp voor een werkstuk'), heeft ervoor gezorgd dat ik vandaag de dag nog net zo nieuwsgierig ben als toen ik 8 was. Dat is waarom ik onderzoeker ben. Ik wil weten hoe het zit, en ben bereid om eindeloos te puzzelen tot ik (een soort van) oplossing heb.

Ik kreeg mijn liefde voor bergen met de paplepel ingegoten (zie ook kaft). Daardoor weet ik nu precies hoe ik moet resetten als m'n hersenen in overdrive gaan omdat het puzzelen even teveel wordt. Een paar weken in een willekeurige bergketen en ik ben weer als nieuw. Op de trektochten met papa leerde ik technische en psychische survival skills. Gewoon doorlopen als het pijpenstelen regent, de tent opzetten na een dag van 8 uur lopen, schuilen naast een steen als de bliksem inslaat, vuur maken met nat hout, en kaartlezen zonder de kaart te draaien. Toen ik wat beter dan gemiddeld cello bleek te kunnen spelen en het plan had opgevat om daar mijn beroep van te maken, stapten we in de auto naar Parijs omdat mijn celloleraar Jaap daar 'dé cello' voor mij had gezien bij een kleine vioolbouwer tegenover de Notre Dame. Je had gelijk Jaap, het was liefde op het eerste gezicht, en mijn instrument houdt ook de liefde voor muziek nog steeds levend. Bedankt papa en mama, dat jullie mij dat plezier hebben geschonken. Mijn instrument, maar ook de inspiratie die al begon bij mama die aan bed 's avonds 'summer time' van Gershwin zong. De muziek die ik altijd in mijn hoofd hoor en de mogelijkheid om die zelf tot uiting te kunnen brengen is onbetaalbaar. Los van de rijke opvoeding, hebben jullie mij ook tijdens de periode van mijn proefschrift ieder op je eigen manier enorm gesteund. Papa als reviewer van papers en bewaker van het proces, mama in de rol van coach en motivator. De stem die ik nodig had als alles tegenzat en ik dacht dat het nooit meer goed zou komen. Het was niet altijd makkelijk, vooral niet in de worsteling naar het einde toe. Ik hoop dat ik jullie niet zulke slapeloze nachten heb bezorgd als in mijn middelbare school periode, toen jullie nog écht dachten dat ik ergens in een goot zou eindigen.

A

De middelbare school verliep dus niet bepaald vlekkeloos. Bij de diploma uitreiking werd op het podium gegrapt 'dat Inge Wolsink haar eindexamen heeft gehaald is een heus wonder, gezien het feit dat ze maar de helft van de lessen heeft bijgewoond'. Recalcitrant, is denk ik het beste woord om mij te omschrijven in die tijd. Toch zijn er op school mensen geweest die mij hebben weten te raken. Niet geheel vreemd pasten die zelf ook niet zo in 'het systeem'. In het bijzonder mijnheer Visser, die Nederlands gaf en mijn creatieve geest aanwakkerde met zijn rare schrijfopdrachten ('beschrijf een station vanuit het perspectief van 10 verschillende dieren of objecten' – zo beschreef ik onder andere het station als kroket in een trek-muur). Hij daagde me uit schrijven verder te ontwikkelen en dit vind ik nu nog steeds één van de leukste dingen aan mijn vak. Op de middelbare school leerde ik ook 3 hele goeie vriendinnen kennen: Sofie, Susanne en Fionna. Zij boden in deze roerige periode altijd een luisterend oor en misschien droegen ze ook wel een beetje bij aan het escalatiegedrag dat nodig was om mezelf te herontdekken. Met Fionna heb ik tot op de dag van vandaag een ontzettend hechte band. Jij bent er in alle fases van mijn leven vanaf de middelbare school geweest, in hele goede en ook in dramatische tijden. Hoewel we als dag en nacht verschillen was jij altijd begripvol, altijd een steun, geduldig, en een relativerende stem ('ik word echt al moe überhaupt van dat jij beschrijft wat je doet op een dag, laat staan dat ik het ook allemaal zou moeten doen') op momenten dat ik dat nodig had. Over de jaren heen heb ik geprobeerd die stem een beetje te integreren. Als ik als een kip zonder kop loop rond te rennen hoor ik hem soms. Ik zal nooit echt rustig aan gaan doen, maar ik luister wel ☺. Fi, jij bent en blijft mijn beste vriendin, mijn maatje, mijn extra zusje.

Arjen, Sylvain, en Surya leerde ik in dezelfde periode kennen. Met Arjen rookte ik mijn eerste jointje met als resultaat mijn niet al te beste eerste gedicht – 'de meneer met de peer'. Maar op de avonden met de jongens ontwikkelde ik vooral mijn befaamde schaterlach. Ik verdenk mezelf hier een beetje van plagiaat aangezien mijn lach zoveel lijkt op die van jou Syl, en Arjens moeder niet voor niks onze lachsalvo's door elkaar haalde. Ik heb serieus zoveel gelachen met jullie dat mijn buik er spontaan weer pijn van gaat doen als ik eraan denk. Na de middelbare school werd Suur een beroemde rapper en als trouwe groupies volgden we alle optredens. Ondertussen werkte ik fulltime in de horeca, waar ik Fleur ontmoette. Samen maakten we de reguliersdwarsstraat onveilig. Twee meisjes van 19 op stap in de Exit, de April en de Soho, op dat moment nog waar hét gebeurde in de gay scene van Amsterdam. Altijd een recept voor hilariteit. Daar in Rose's Cantina tijdens een dienst met jou kwam de omslag. Ik stond voor de computer bij de bar twee thee en een koffie op tafel 47 in te voeren, en ik dacht: 'o mijn god, als ik niet NU iets met mijn hersenen ga doen, dan sterven ze voorgoed af'. Het was tijd om te gaan studeren.

Geheel toevallig schreef Suur zich in voor dezelfde studie (psychologie), en ging Syl ook studeren, en hadden we toen naast rap feestjes afstruinen een nieuwe missie (na 4 jaar een triple cum laude party organiseren). Syl, ondanks dat je zelf ook heel ambitieus bent, relativeerde jij toch altijd de studie, en tegenwoordig ook het werk. Als ik weer te gedisciplineerd loop te doen hoor ik altijd jouw stem in m'n hoofd: 'Plingeling, het is toch ook belangrijk dat we lol hebben in het leven? Dus: volgende week ga je mee naar deze party/wanneer ga je eens mee op wintersport/wilde jij niet altijd al eens leren surfen?'. Ik kan altijd op jou rekenen voor een gezonde dosis enthousiasme en een heel arsenaal aan leuke dingen om te doen, maar ook voor een relativerend gesprek over eigenlijk alles. Suur, jij wakkerde het wetenschappelijke vuurtje aan in verhitte discussies over Bayesiaanse statistiek, de Vrij Wil, en Conspiracy Theories. Maar even los van alle wetenschaps onzin, ben je inmiddels gewoon m'n beste mattie (waarover later meer onder het kopje paranimfen). Nienke leerde ik kennen tijdens het gesprekspracticum, een soort gevoelens-kamp van 7 weken waarin je jezelf binnenstebuiten dient te keren. Al je slechte kanten worden daar opgelepeld. Maar gelukkig wilde Nienke toch vriendinnen met me worden. Nien, je bent de beste luisteraar die ik ken, en je geeft altijd het juiste advies. Zonder oordeel, maar confronterend als het nodig is. Een avond wijntjes met jou biedt naast heel veel lol altijd nieuwe inzichten en zijn op verschillende momenten in mijn leven doorslaggevend geweest in het nemen van belangrijke beslissingen.

Samen met mijn twee fantastische paranimfen, Suur en Amber (Wamberto) richtte ik na de studie het 'wetenschapsclubje' op (ja, dat klinkt vreselijk elitair, en dat is het ook). Suur en ik leerden Wam kennen tijdens een onderzoeksproject en zijn, verbonden door onze passie voor onderzoek en ons perfectionisme, nooit meer uit elkaar gegaan. Inmiddels zijn we allemaal doorgerold in de academische wereld, en bespreken we de lusten en lasten van het werk en wetenschappelijke vraagstukken vanuit onze verschillende vakgebieden. Maar de belangrijkste reden om samen te komen is heel veel eten en drinken en lachen / boos worden over allerhande idioterieën in de wereld. Sowieso ben ik jullie natuurlijk dankbaar dat ik altijd terecht kan voor advies over (geschreven) werk. Maar wat ik echt extreem waardeer, is dat ik met jullie een soort humor (een giftige mix van cynisme en sarcasme) kan delen die ik verder met niemand heb. Wij begrijpen elkaar op een niveau dat verder gaat dan gewoon lachen en bevriend zijn. Relationeel, maar ook intellectueel. Zo met elkaar kunnen schakelen binnen de vertrouwde omgeving van een vriendschap is heerlijk stoom afblazen. En misschien het allerbelangrijkste: mijn eindeloze fouten (sommige dingen leer ik echt nooit) zijn voor jullie puur entertainment. Jullie zullen me nooit maar dan ook nooit veroordelen. Ik kan compleet mezelf zijn, inclusief tragische faalacties, in de wetenschap dat jullie er altijd om kunnen lachen. Daarnaast weet ik van jullie allebei dat ik

volledig op jullie kan bouwen als dat nodig is. Bijvoorbeeld in het geval van deze promotie. Ik kan het met alle vertrouwen uit mijn neurotische handen laten kletteren.

Wam en Suur zijn inmiddels niet meer de enigen in het wetenschapsclubje. Sowieso kwam dokter Oscar erbij, die me gelukkig heeft verzekerd dat het feit dat ik een keer bijna van m'n stokje ging niet met een falend hart te maken had maar gewoon met promotie-stress. Maar ik heb nog iemand ontmoet tijdens mijn studie. Het meest bepalende moment uit mijn studie psychologie was een college van Denny Borsboom. Denny deed iets dat mijn leven voorgoed heeft veranderd: hij maakte mij enthousiast voor een bachelor methodenleer. En dat is bijzonder, want in die tijd waren er van de 500 ongeveer 10 studenten per jaar die methodologie gingen studeren én statistiek was absoluut niet mijn sterkste kant want ik had vroeger op school niet opgelet bij wiskunde. Deze bachelor bracht mij twee dingen: *1)* het idee dat ik onderzoek weleens heel leuk zou vinden (want waarom ga je anders methodologie doen), en *2)* een plek naast Mats in de klas. Mats leerde mij statistiek wél te begrijpen (onder het mom van 'bijles' werden we verliefd op elkaar), om 9.00 op de universiteit te zijn (want hij was er dan altijd en ik wilde geen minuut missen), en tafeltennis (tijdens de lange dagen sommetjes maken was tafeltennis vaste prik in de pauzes). Zelfs na herhaaldelijke avonden biertjes drinken in Kriterion dacht ik nog dat het allemaal zo'n vaart niet zou lopen, maar zoals de meeste mensen die dit lezen wel weten, was dat een beetje naïef van mij. Jij bent nog steeds mijn grote liefde, mijn sparringpartner, mijn grafiekenspecialist, mijn bunker als ik me in het oog van een emotionele tornado bevind, de beste knuffelaar in de wereld, de meest integere en oprechte persoon die ik ooit heb ontmoet, en geen man in pak heeft er ooit zo fantastisch uitgezien als jij (inclusief Ryan Gosling in z'n blauwe smoking). Zonder jouw onvoorwaardelijke steun en geduld had ik deze PhD nooit tot een goed einde kunnen brengen. Mijn onhaalbare ideeën die ik koste wat het kost doordruk komen met een flinke dosis stress, en je hebt je hierdoor nooit laten afleiden van de essentie: dat we bij elkaar horen. Denny zei een paar maanden geleden op de promotie van Robert dat het schrijven van het dankwoord huilen geblazen zou worden en ik kan op dit moment bevestigen dat hij daar gelijk in had.

Jos en Ida, jullie hebben mij meteen opgenomen in de familie. Je schoonouders krijg je er gratis bij, en het is altijd maar afwachten of je mazzel hebt. Ik had dus dikke mazzel. Jullie zijn de afgelopen 7 jaar enorm betrokken geweest, niet alleen bij Mats, maar ook bij mij. Altijd geïnteresseerd, soms ook een beetje bezorgd. Bedankt voor alle hulp met onze gestoorde verhuizing en verbouwing, de leuke dans voorstellingen, en weekendjes Terschelling. Zo in de eindfase van mijn studie toen ik Mats ontmoette zijn er drie docenten geweest die mij ontzettend

geïnspireerd hebben om me verder te ontwikkeling als onderzoeker. Nils, Carsten en Matthijs begeleidden me op onderzoeksprojecten, en jullie hebben me op kritische maar zeer enthousiasmerende manier gestimuleerd om het maximale uit mezelf te halen. Elk project was een les, technisch gezien, maar ook in zelfvertrouwen en uitvogelen dat ik onderzoeker wilde worden.

Zo kwam ik bij Deanne en Frank terecht. Mijn promotoren Deanne en Frank waren vanaf het begin af aan stimulerend en enthousiast over mijn ideeën. Niks was te gek, alles kon, als ik mijn ideeën maar goed had uitgewerkt. Ik kreeg volledige autonomie over wat ik wilde doen, de middelen om het uit te voeren, én het vertrouwen dat ik het op de juiste manier zou aanpakken. Ik herinner me vooral de inspirerende brainstorm sessies met Deanne waar we allebei op onze stoel zaten te wippen en ik onze hersenen soms letterlijk hoorde knisperen van het nadenken over nieuwe theoretische invalshoeken en onderzoeksdesigns. Deanne, jij hebt het bijzondere talent om echt over álles mee te kunnen praten en je wist altijd precies waar mijn onderzoek over ging, ook al heb je 8 PhD studenten. Frank, jij bent een meester in het uitvoeren van heel veel verschillende taken zonder ook maar een moment in paniek te raken. Van jou heb ik geleerd om maximaal resultaat te boeken zonder altijd 100 procent te gaan ('Kijk, die laatste 10%, van 90 naar 100, die kost in verhouding twee keer zoveel energie als de eerste 90%. En bij veel dingen is 90% gewoon genoeg'). Voor iemand die altijd in zeven sloten tegelijk loopt en ook alles perfect wil doen is dat zo ongeveer de belangrijkste les die je kunt leren: kies 1 ding waar je echt 100% in wil investeren. Frank en Deanne, bedankt voor alle gezellige momenten, alle feedback en brainstorm sessies, maar vooral voor jullie vertrouwen in mij. Ik heb altijd het gevoel gehad dat jullie in mij geloofden, en dat is essentieel geweest voor de ontwikkeling van mijn ideeën.

Naast Frank en Deanne zijn er nog twee mensen die een belangrijke bijdrage hebben geleverd aan mijn proefschrift, als co-auteurs, maar ook als mentoren. Ilja was de eerste persoon 'buiten' de business school tot wie ik me wendde, omdat ik zijn expertise nodig had bij mijn hoofdstuk over cognitieve processen. Naast al je theoretische input, hulp bij programmeren, samen onderzoeksdesigns ontwikkelen, en de analyse van resultaten, ben je ook een onwijs gezellig en vrolijk persoon, was je nooit te beroerd om me een hart onder de riem te steken en altijd een beetje op je hoede of ik mezelf niet de grond in werkte. Bij Suzanne ging ik te rade voor mijn hoofdstuk over affectieve processen. Sowieso had ik nooit zonder je expertise gekund. Maar het was ook heel fijn om 'van buitenaf' de feedback te krijgen dat mijn ideeën leuk waren want ik vraag me constant af of het überhaupt wel ergens op slaat wat ik aan het doen ben. Jij

bent vanaf mijn studie al een voorbeeld geweest van een eigenzinnige jonge vrouw die met groot succes haar eigen plan trekt. Om jaren later samen te kunnen werken was echt cool. Op gebied van techniek heb ik heel veel gehad aan de hulp van Jasper, die altijd een slimme manier had om mijn ingewikkelde designs te programmeren, en van Bert, die me wegwijs maakte in de wereld van fysiologische metingen waar ik echt geen bal vanaf wist. Jullie liepen altijd net een stapje extra om mijn ideeën te verwezenlijken.

Omdat ik me snel verveel, deed ik er wat dingetjes naast, en ook daar waren mensen waar ik inspiratie uit haalde. Zoals mijn cellolerares Lucie, wiens stem ik nog altijd in mijn hoofd hoor als ik mijn instrument bespeel. Joyce, mijn danslerares die altijd maar positief en energiek bleef zelfs als ik compleet gefrustreerd was omdat het me niet snel genoeg lukte om een choreografie in mijn hoofd te krijgen. Bas, de dirigent van het CREA orkest, die me uitlegde dat 'verwachtingen de ouders zijn van teleurstelling'. Dit is natuurlijk waarom die choreografie niet snel genoeg lukte, maar (te) hoge verwachtingen zijn sowieso de story-of-my-life, dus dit was een belangrijke levensles. Ironisch genoeg doe ik nu onderzoek naar hoe verwachtingen beïnvloeden hoe mensen emotioneel op feedback reageren. Puur toeval natuurlijk! Bas daagde me verder uit om in 3 weken Dvorák celloconcert in te studeren als vervanger van de solist tijdens de repetities. Voor de mensen die niet thuiszijn in de klassieke muziek: het celloconcert van Dvorák is één van de moeilijkste stukken die ooit voor cello zijn geschreven en het ligt ver buiten mijn bereik als cellist. Ik heb zeker 20 keer heb gezegd dat er echt no-way was dat ik dit stuk in 3 weken zo kon krijgen dat ik het met orkest kon repeteren. Bas heeft zeker 20 keer gezegd dat dat onzin was. En dus heb ik Dvorák celloconcert met orkest gespeeld. Welke amateur cellist kan dat nou zeggen? Daarna was alles wat ik ooit nog gedaan heb in vergelijking een peace-of-cake. Zelfs die PhD. Nouja, niet echt, maar als het tegenzat, of ik moest een belangrijke presentatie geven, dan dacht ik vaak terug aan die repetities, aan hoe vreselijk zenuwachtig ik toen was maar toch: 'gewoon ogen dicht en gaan.'

In jaar 3 van mijn promotietraject vroegen Sander en Lothar mij of ik zin had om samen met hen een nieuw orkest op te zetten. Natuurlijk! Toch tijd zat. Maarja, tegen zo'n vraag zeg je natuurlijk geen nee. Ik ben ook nog steeds blij dat ik dat heb gedaan. Ik weet dat ik een jaar geleden weleens een klaagzang heb afgestoken over alle verantwoordelijkheden en stress die erbij komen kijken, maar echt, ik haal zoveel energie uit deze muzikale projecten (vooral nu ik uit het bestuur ben ☺), ik had het voor geen goud willen missen. Elk project wordt het weer leuker, beter, gezelliger. Het klinkt misschien een beetje sentimenteel, maar toen we nog bij CREA speelden, was het echt een droom om samen met jullie iets nieuws te beginnen. Ik was enorm

vereerd dat jullie mij überhaupt vroegen dit samen te doen, maar ik geniet er ook gewoon elke keer van als we samen muziek maken. Zonder die muziek zou ik er geen bal aan vinden, en wie wil er nu een saai leven?

Within my own department, I would like to thank everyone who was there to make the 1st, and later the 2nd floor of the M-building feel like home. A special thanks to my first roomies on the 1st floor, René and Meg. Our fun and cosy 4 square meter office really made me feel at home when I first started. Wendelien, Corine, Stefan, Claudia, Annebel, Gabor, Flore, Arno, Alan, Merlijn, Vlad, Liselore: thanks for the lunches, coffee brakes, and always being available for help, questions, and complaints. Bram en Monika, ontzettend bedankt voor jullie acteerprestaties als leidinggevenden in mijn eerste studie. Bas, Sophia, en Fleur, heel erg bedankt voor al jullie hulp en oplossingen als ik weer mega snel iets geregeld moest hebben. Altijd goed, altijd snel, en altijd met een gezellig praatje. Zonder jullie zou de hele ABS uit elkaar vallen, for real. Marc, bedankt dat jouw deur altijd openstond, het is heel fijn als je ook vanaf onderop dingen in de organisatie kunt aankaarten. Rob, bedankt voor je heerlijke relativerende en relaxte modus operandi. Je hield mij maar vooral ook mijn kamergenootjes enigszins toerekeningsvatbaar in de chaos die onderwijs heet. Sofija and Eloisa, whenever I felt like the most stupid person alive, both of you were there to remind me that I had actually gained knowledge and experience over the years. I enjoyed our statistics summer school and Eloisa, your endless passion for grasping every little detail of that course. I loved going to conference(s) together, although we have to re-do Dublin because stupid Ireland would not admit you to the last one Sofija. I hope for many more drinks and dinner dates in the future.

Francesca, in those first 2 years (through that big pile of newspapers on your table ;-), you were my focus point. Starting a PhD with full autonomy can be a real mind-fuck. But you were always there, working your ass off, showing me at least the structure of working hard. I knew how to do that, so that was a good starting point: 'I just stick with her, work hard, and see where I will end up'. I still cannot believe how much we were in sync. To have someone sitting across my table, being in full focus 9 to 10 hours a day, was just heaven. Luckily, we found so much more than duo-focus. Our friendship developed slowly but surely, and I always look forward to our lunch breaks, drinks, and pizza dates. With you it is always a mix between fun and great political discussions. Sharing points of view with someone who knows so much about what is going on globally, is exhilarating, and sometimes frustrating (because what the hell are people are doing??), but at least we share our level of frustration about the world.

Renske en Hannah, ik had na Francesca nooit gedacht dat ik nog blij zou kunnen zijn met andere kantoorgenoten, maar we hebben we met z'n drietjes zo'n fijne, gezellige, en functionele werkplek gecreëerd. Ik ben heel trots op mijn bijnaam de focus krokus. Zo trots zelfs dat ik hem als argument heb gebruikt toen men tijdens een sollicitatie gesprek opmerkte dat het, kijkend naar mijn CV, leek alsof ik mij niet zo goed kon op één ding kon concentreren. Gelukkig werk ik nog om de hoek zodat we af en toe onze koffie- en lunch dates kunnen herhalen. Hannah, jij bent de liefste en meest toegewijde collega ooit. Je past op iedereen en je haalt het beste uit mensen naar boven. Je staat altijd klaar met feedback, positieve energie, en tijd om 'even mijn intro door te lezen'. Ik ben zo blij dat we samen in een kamer kwamen te zitten. Anders had ik je nooit zo goed leren kennen en had ik er nu niet een heel lief vriendinnetje bij. Ik hoop op nog heel veel sushi avonden, weekend fiets lunches, kick-boks sessies, en calisthenics trainingen.

Renske, jij verdient een standbeeld voor alle hulp met ingewikkelde statistische modellen. Niet alleen aan mij, maar aan de hele vakgroep, waarvan akte! Maar wat ik uiteindelijk toch het meest ben gaan waarderen is je meesterlijk droge humor, je ongefilterde eerlijkheid, je geduld met mijn rare dingetjes, en je vermogen om mijn shit te relativeren terwijl je zelf veel meer te verduren hebt dan ik. Toen we aan hetzelfde project begonnen had ik echt nooit gedacht dat we zó goed zouden kunnen samenwerken en al helemaal niet dat we het zo goed met elkaar zouden kunnen vinden. Waar we bij het coördineren van onze eerste gezamenlijke cursus nog weleens een clash hadden, lopen onze huidige gezamenlijke projecten als een kabbelend bergbeekje. Linksom of rechtsom komen we tegelijk beneden en we vullen we elkaar moeiteloos aan zonder dat we er een woord aan vuilmaken. Na vier jaar ben ik een goede vriendin rijker. Ik denk dat we zo ongeveer alle kanten van elkaar wel hebben gezien… om 2 uur 's nachts in Parijs 3 kwartier door de stromende regen fietsen in je zomerjurk en zonder kaart of paraplu doet toch iets met een mens. We waarderen elkaar om wie we zijn, inclusief de verschillen. Eigenlijk ben ik Deanne en Frank het meest dankbaar dat ze ons allebei hebben aangenomen en dat wij elkaar daardoor ontmoet hebben.

Zonder mijn studenten was dit proefschrift er niet geweest. Jullie hebben bijgedragen aan mijn werk door leuke stukken te schrijven, data te verzamelen en me scherp te houden met vragen en nieuwe ideeën. In het bijzonder Patricia, die in haar eentje de kar trok bij mijn eerste groep scriptie studenten en daarmee het hele project naar een hoger niveau trok. Jorien en Johanna, die met z'n tweetjes 200 participanten regelden voor een complex onderzoeksdesign met herhaalde metingen. Hanne die een originele scriptie schreef en mij daarmee aan het denken zette, en Linda, Leonie en Gizem, die een perfect gebalanceerd team waren waardoor ik alles uit

handen kon geven. Gizem, jij bent als enige student meerdere jaren bij mijn onderzoek en onderwijs betrokken geweest. Je schreef consistent goede stukken en je was altijd betrouwbaar en consciëntieus. Perfectionistisch als ik ben is het een verademing om samen te werken met iemand die altijd kwaliteit levert. Dank voor je toewijding en inzet over de jaren heen.

Tim, my brother-from-another-mother, bedankt voor je creatieve inspiratie, je tomeloze energie en enthousiasme, tuin- en huis tips, en samen keihard kunnen lachen over onze genetische overlap. Marjo, Hub, Herbert en Rita, ik heb altijd gevoeld dat als er echt iets aan de hand zou zijn, ik bij jullie terecht kon. Ondanks dat we elkaar niet heel vaak zien, voelt het altijd als thuiskomen bij jullie. Anke, het was een beetje lastig om jou te plaatsen in de chronologie omdat onze relatie van onze jonge jaren tot nu zo veranderd is. Van mijn kleine zusje waar ik me verantwoordelijk voor voel ben je veranderd in een jonge vrouw die haar passie gevonden heeft, en een vriendin waar ik bij terecht kan als ik even in de knoop zit. Jij begrijpt als geen ander hoe ik in elkaar zit en hoe ik zo geworden ben. Nu we allebei volwassen zijn kunnen we daar heel goed over praten en kostelijk om lachen. Sowieso ben jij zo ongeveer de droogste persoon die ik ken. Je kunt een hele avond luisteren en er dan op één moment een super rake en grappige opmerking uitgooien die iedereen aan het denken zet. Ik zit dan van binnen altijd helemaal stuk te gaan ☺. Ik kijk altijd uit naar onze film dates en drankjes, maar vooral ben ik gewoon heel trots op ons, dat we allebei zo op onze eigen manier zijn gekomen waar we nu zijn, en dat we zo'n goede relatie hebben dat we dat met elkaar kunnen delen.

Inmiddels zit ik in een nieuwe vakgroep. Niet geheel volgens plan ben ik hier langer met mijn proefschrift bezig geweest dan de bedoeling was. Nils en Kai, heel erg bedankt voor jullie geduld en steun. David, Xia, Lisanne, YongQi, Romy, Annemiek, Giel, Svenja en iedereen die ik per ongeluk een keer gecornerd heb bij de koffie automaat: bedankt voor het aanhoren van mijn klaagzang en het tolereren van mijn humeur in de afronding van mijn manuscript. Het zal nogal wat absorberend vermogen hebben gekost, maar het was fijn dat het kon en dat niemand me met een laptop om de oren heeft geslagen. Finally, I would like to thank the (highly) esteemed members of my defence committee. Gerben, Willemijn, Annebel, Steffen, and Sandra, thank you so much for taking an interest in my work, and for taking the time to read it. The fact that experts reflect on what you have done, is really why you write it all up. I look forward to the 24th of November because exchanging knowledge with curious and critical researchers, for me, is really what makes this job so fantastic. I am grateful to have been given the opportunity to write this dissertation, to think and learn about proactivity for 4 years, and to be able to exchange views with you in what I hope to be a tough and lively debate.

Preface

In the past four years, I have investigated which internal processes help or hinder people to engage in proactive behavior. Most people have some notion of what proactive behavior is, or at least of what it is not. Being proactive is not passively waiting for instructions, or reacting to problems only after they have appeared. Rather, being proactive is to create an opportunity or solve a problem before it knocks on your door. There are many ways in which individuals can be proactive. For example, people may actively seek feedback to monitor their performance, they may voluntarily suggest ideas to improve things in their environment, or they can take the initiative to change dysfunctional procedures. All proactive behavior is aimed at future improvement, at being ahead of opportunities and problems, and taking appropriate action if the current situation requires change. Proactive people do not accept things as they are, but rock the boat until they have changed it to their ideal state.

People that know me well may find it amusing that I started to study this topic. I think it is safe to say that I like to 'rock the boat' (I will not make any claims about whether this is always efficient, effective, or smart). Being a proactive person myself was a good starting point to study this topic, because the empirical research cycle starts with observation. Although I know that introspection is severely biased, my dissertation is about the internal processes that drive proactive behavior, and the only person I can truly internally observe, is myself. Therefore, I started this project by trying to understand what happens during my own proactive process.

I wondered how much thinking goes into my proactive behavior, how my feelings influence whether I am proactive or not, and whether I engage in proactivity because I like novel experiences, or because I want people to praise me. These three questions turned out to be the central questions in the chapters of this dissertation, and I will briefly outline how those initial questions and ideas developed from observing myself and the people around me, to objective and testable scientific hypotheses. I wrote this personal note in an attempt to connect scientific methods to simple, real-life questions, because ultimately, many empirical questions arise from observations in real life. An honest description of where that process started for me, may hopefully help lay-

people to grasp what this dissertation is about, but may also help scholars to relate the complexity of my chapters to the simple beginning, the fundamental questions.

The first thing I noticed when reading the proactivity literature, is that proactive behavior was assumed to be the result of a very conscious, deliberate, and well-elaborated choice. According to the literature, people think about influencing the future, they deliberately plan how and when to take action, and they persist over time, focusing their attention on the effective execution of proactive behavior. However, as a person who likes to challenge the status quo, I wondered: is that really always the case? Do I always carefully decide and plan on whether and how to be proactive? Or can proactive behavior also be habitual? I started to notice that my own tendencies to challenge the status quo, to feel responsible for everything that is not functioning optimally, and to always want to be one step ahead of everything, were extremely difficult to turn off. In fact, it is so effortful to override my tendency to be proactive, that *not* being proactive might be more of an explicit choice than being proactive.

Then I started to observe friends and colleagues, people in my orchestra, people in my dance group, and I noticed the same thing. People in groups have roles, and these roles seem quite hard to override. It is always the same person who takes charge of the skiing trip, the same people usually challenge musical ideas within the hierarchical structures of the orchestra, and it is always the same person who volunteers to set up new training schedules in the dance group. So I decided to try to unravel how much attentive, effortful thinking goes into deciding to become proactive, and how much of such cognitive effort we need for the successful execution of proactive behavior. The answers to those two questions, are presented in the first empirical chapter (Chapter 2) of this dissertation.

Another thing I noticed, was that I sometimes used proactive behavior to feel good about myself. If I had a bad day, or if I was frustrated because my research was not running smoothly, I had a stronger tendency to start new initiatives within the orchestra. For example, I would think about a new way to organize cello group rehearsals. Instead of leading three rehearsals myself, I would split the group in three, and I would ask three talented group members to organize small group rehearsals, which they themselves would prepare and lead. I read that accountability, autonomy and

confidence enhances proactive behavior. So I tried to enhance proactivity in the cello group by making them responsible for understanding and mastering the music before I (as the group leader) got involved in the process. Thinking about how to improve the musical experience in my group gave me a good feeling, and distracted my attention away from feeling bad about other things.

It distracted me from not being able to write, from feeling insecure about my ability to comprehend the literature, let alone to contribute to the literature. It gave me a feeling of control. This is how the idea for Chapter 3 came about, which revolves around how (negative) feelings can enhance proactive behavior, and how proactive behavior may help to cope with negative feelings. Interestingly, in the literature, the leading idea was that positive feelings (not negative ones) make people proactive. So I decided to manipulate participants into experiencing either positive or negative feelings, and measured how that influenced proactive behavior in the lab. I also measured how people felt after they engaged in proactive behavior, to test this novel idea that proactive behavior makes people feel better.

Chapter 4 is rooted in my personal shift from doing experimental research in a laboratory during my studies in psychology, to studying 'real' behavior in the organizational context at a business school. In shifting from one field to the other, I saw differences between the two types of research-designs that could be relevant for studying why people engage in creativity (generating novel ideas). In Chapter 4, I differentiate between *proactive* creativity, which is self-started, the way it usually occurs in organizations, and *reactive* creativity, which is a response to a request from someone else, and how creativity is usually measured in experimental research. I did that because (besides being self-started versus requested), there are two other important contextual differences between reactive and proactive creativity. First, in the organizational context, there are many different goals and tasks employees need to juggle. In experiments, creativity is usually the only task, so there is no distraction from other tasks or goals. Proactive creativity thus requires 'multi-tasking', whereas reactive creativity does not. Second, in organizations, proactive creativity can render punishment or reward, whereas reactive creativity in experiments is usually anonymous and neither punished or rewarded. Considering these differences is, in my opinion, important if we want to know why people voluntarily engage in creative behaviors.

The leading idea in the literature is that creativity is engaged in for mere enjoyment. Motivation for creativity comes from within: those who are passionate and do what they love are creative. In contrast, those who are driven by external factors such as a desire for recognition, rewards, or promotions, are not creative. In Chapter 4, I wanted to find out why individuals who are motivated by such external factors are sometimes indeed (as suggested in the literature) un-creative, and under which circumstances their creativity might thrive. Studying the difference between single-task reactive creativity, and proactive creativity, which requires juggling between tasks while considering rewards and costs for several tasks, could help me to pin-point which context would help or hinder externally driven individuals to be creative. The primary idea presented in Chapter 4, is that individuals who are driven by external rewards are not anti-creative, they are just easily distracted by other tasks that are more rewarding.

Last, I would like to explain this dissertation's title, - Attention! An Affective Approach to Anticipated Action - with the purpose that perhaps, it may help you to remember parts of the dissertation in the future (the title is mnemonic). *'Anticipated Action'* represents proactive behavior, which is the dependent variable in all my studies. *'Approach'* stands for approach motivation, which is the tendency to engage in (approach) behavior when you think it will make you feel good. Approach motivation is the motivational mechanism that I study in Chapter 4 on proactive creativity: some people approach fun and novel tasks, and some approach external rewards. *'Affective'* stands for Chapter 3, in which I investigate how feelings (called affect in the literature) influence proactive behavior, and how proactive behavior influences affect. *'Attention!'* stands for the cognitive mechanism that I study in Chapter 2, on how much attention people need for deciding to be proactive, and for the successful execution of proactive behavior. Last but not least, 'Attention' is there to draw your attention to the title, and hopefully, to (part of) the content of my dissertation. I thank you for paying attention to this preface, and I hope it has raised some questions to which you will find answers in the following chapters.

CHAPTER 1

Anticipated Action

Introduction to the Topic of Proactive Behavior

Proactivity is a buzz-word. Popular books about 'how to be great at life' describe proactivity as a key characteristic of successful people. Effective individuals do not just let life happen to them. They carefully design their life (Covey, 1991). As proactive people presumably design their own futures and are therefore more successful, there are many tips, blogs and other coaching tools about how to be proactive, even one on how to teach your children proactive behavior (e.g., Jett, 2010; "5 Ways to Teach Your Kids to Be Proactive"). Exploration of vacancy websites in the Netherlands shows that 'proactivity' renders more hits than any other competency[1]. While it used to be fine to show up at work on time and execute assigned tasks, nowadays, organizations seem to need employees who can work without close supervision, communicate important issues to others, update their skills and knowledge, and help shape the future of the organization, all without being specifically requested to do so. This means that we need to learn how people take the initiative to design and transform their environments, by studying proactivity as an active performance behavior in modern work places (Frese, 2008).

In vacancies, employers use a plethora of characteristics when they describe the proactive person: proactive people take the lead, are self-directing, positive, critical, hands-on, conscientious, focused, professional and flexible. These rather positive characteristics can apply to almost all professions or jobs including truck-drivers, warehouse workers, nurses, personal assistants, corporate recruiters, engineers, sales managers or teachers. It thus seems like employers want proactive employees in a large variety of professions, because they believe proactive behavior is good for their organization. However, there is a lot that we do not know about how or why people become proactive. For example, there has been little research on the basic underlying processes of how people think when they are proactive, how they feel when they are proactive, on what keeps them motivated and focused on proactive tasks or actions, or what distracts them from these actions. The aim of this dissertation, is to investigate those questions to better understand how proactivity works, why different people engage in proactivity, and what employers need to take into account when they expect people to be proactive.

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[1] In the Netherlands, you will get around a 1:4 ratio of hits compared to the word 'work', and more hits than any other competency such as for example, 'experienced' (5:4), team-player or team-spirit (10:1), stress resistant (3:1), enthusiastic (2:1), drive (2:1)'.

During the past 20 years, researchers have come to agree that proactive behavior is an anticipatory action employees take to impact themselves and/or their environments (Crant, 2000; Grant & Ashford, 2008; Parker, Williams, & Turner, 2006). Proactive people adapt their environment rather than adapting to their environment. They anticipate future problems or opportunities instead of waiting to (re)act only when a problem or opportunity knocks on their door. They take an active as opposed to a passive approach to work, and they challenge the status quo instead of conforming to existing norms. By doing so, they seek future improvement, in themselves and in their environment. 'Proactive employees are explicitly intending to impact themselves or their environment; when employees choose to behave proactively they focus on changing the self, another, or their context in a meaningful way' (Grant & Ashford, 2008, p. 9).

Broadly summarized, proactivity theorists have described four phases of the proactive process: *(1)* anticipation, in which people envision a different future and generate the goal to change it, *(2)* planning, in which people plan when and how to reach their proactive goals, *(3)* enacting, in which people try to impact their future through proactive behavior, and *(4)* monitoring, in which people reflect on the outcomes of proactive behavior, persist if the goal is not yet reached, or choose an alternative course of action (Fay & Frese, 2001; Grant & Ashford, 2008; Parker, Bindl, & Strauss, 2010). Taken together, proactive people try to predict and control their own future through envisioning and (re)creating part of it. My dissertation will zoom in on different aspects of the proactive process: on what happens when people 'choose' to be proactive, on how they select and evaluate proactive ideas, on how people actively and persistently sustain proactive behavior in the face of setbacks, and on how proactive behavior is evaluated by others in terms of novelty (does the behavior result in change) and usefulness (is this change valuable).

Creativity is closely related to proactive behavior because both creativity and proactivity often include creating something new. Creativity is the generation of original and useful ideas (Runco & Jaeger, 2012), and it will regularly come up as an aspect of proactive behavior during this dissertation. Proactively influencing the future requires people to think of ideas on how to bring about change. Both originality and usefulness can be important for effective proactive behavior, because change is possible when ideas are novel in a given context, and useful in the sense that they can actually be

implemented. Our studies thus focus on proactive behavior in terms of its occurrence and frequency, but also on the creative quality of proactive behavior, or the proactive aspects of creativity (hence we use the term proactive creativity or creative proactivity at times). Thus, although these two concepts differ at least to some extent (not all creative ideas are self-initiated or put into action and not all proactive behavior is creative) we assume that they are also strongly interrelated (e.g., Rank, Pace & Frese, 2004). Further, in contrast to proactivity, creativity is often studied in experimental research. Therefore, we draw on knowledge from the experimental creativity literature alongside the literature on proactive work behavior to explain the role of cognition, affect and motivation in proactive behavior.

In the following paragraphs, I will provide a short review of the development of proactivity research across the past decades that is specifically relevant for my dissertation. I will start with personality characteristics, followed by behavioral tendencies, and one more specific proactive behavior, all of which play a specific role in the empirical chapters. After that, I will summarize relevant evidence based on Parker and colleagues' (2010) model of proactive motivation. This model describes 3 main drivers of proactivity: *can-do, reason-to, and energized-to*. In short, the model proposes that people need to feel that they are able to successfully execute proactive behavior, that they have a reason to be proactive, and that they have the energy to be proactive. After this, I will briefly introduce the three empirical chapters of my dissertation, Chapter 2 on cognitive processes, Chapter 3 on affective processes, and Chapter 4 on motivational processes involved in proactivity. Chapter 5 describes the conclusions and implications of these empirical chapters, and integrates them in a new conceptual framework of how motivation, affect, and cognition might influence the proactive process.

Proactive Personality: The Intention to Change

In this dissertation, we address both trait and state proactivity. Trait refers to a stable personality characteristic, whereas state refers to a behavioral act of proactivity. Thus, proactive behavior refers to individuals behaving proactively as an isolated event. Trait-proactivity refers to individuals who habitually behave proactively across a variety of situations. We refer to these individuals as trait-proactive. Their passive-reactive counterparts tend to rarely show proactive behavior. Bateman and Crant (1993) first

conceptualized proactivity as a trait. They defined the proactive personality as a relatively stable tendency to intentionally change the environment. 'Proactive people scan for opportunities, show initiative, take action, and persevere until they reach closure by bringing about change' (Bateman & Crant, 1993, p. 105). Follow-up studies showed that proactive employees have successful careers because they gather career-strategic knowledge, engage in network building, and update their skill-sets. As a result, they earn more salary, get more promotions, better performance evaluations, and are more satisfied with their careers than passive-reactive employees (Crant, 1995; Seibert, Crant, & Kraimer, 1999; Seibert, Kraimer, & Crant, 2001; Thompson, 2005). Furthermore, proactive people have a motivation to learn, and are extraverted as well as conscientious (Major, Turner, & Fletcher, 2006; Tornau & Frese, 2013). Thus, proactive people are performers, who are social, diligent, and eager to learn new things.

Personal Initiative: A Behavioral Syndrome

The (organizational) environment can also help or hinder proactive behaviors. Parallel to the study of proactive personality in the US, the concept of personal initiative was developed in Europe (Frese, Kring, Soose, & Zempel, 1996). Personal initiative is self-starting, going beyond what is expected, aimed at improvement, focused on the long-term, and persistent in the face of setbacks (Frese et al., 1996). Although personal initiative is assumed to reflect proactive behavior across multiple situations (forming a behavioral tendency), the degree of personal initiative can change depending on the situation, whereas proactive personality is stable. Personal initiative thus (in part) depends on the environment. For example, Frese and colleagues (1996) showed that employees working in former East Germany showed far less personal initiative than employees in former West Germany. They argued that these proactivity differences were caused by differences in control (the degree of autonomy at work) and job complexity (variety of tasks and skills at work) between the former East (less control and complexity) and the former West (more control and complexity). Fay and Frese (2001) distinguished between personal initiative as a trait (similar to proactive personality) and a behavior. Both the behavior and trait of personal initiative play a central role in Chapter 3 on the underlying affective processes of proactive behavior.

Voice: A specific Proactive Behavior

Besides proactive people, and people who show personal initiative, there are several other specific proactive behaviors, such as proactively seeking feedback to improve performance (Ashford & Cummings, 1985), taking charge to implement change (Morrison & Phelps, 1999) and proactively adapting parts of the job (Wrzesniewski & Dutton, 2001). Although most of these proactive behaviors are associated with career success, there are exceptions. 'To voice', is to speak up through the constructive communication of problems, challenging opinions, and suggestions for improvement (Van Dyne & LePine, 1998; Morrison, 2011). Voice is aimed at improvement; it helps organizations to learn from their mistakes (Edmondson, 1996), to avoid crises because employees see problems that managers overlook (Ferraris & Carveth, 2003), and it increases team innovation and creativity (De Dreu, 2002; Zhou & George, 2001). Yet, the study by Seibert et al. (2001) revealed that employees who voice often are less eligible for promotions and receive a lower salary than their colleagues who voice little.

There are many reasons why employees are reluctant to speak up. Some fear that their leaders will feel criticized when they speak up or are afraid that speaking up may harm career opportunities, especially when the relationship between leaders and employees is poor (Burris, Detert, & Chiaburu, 2008; Detert & Edmondson, 2011). Voice can thus be good for the organization, but potentially harmful for the employee. This conflict makes it an interesting behavior to study with regards to internal cognitive and motivational processes, and it thus plays an important role in the chapters about cognition and motivation (Chapter 2 and 4).

Can-do

According to Parker, Bindl and Strauss (2010), there are three motivational pathways to proactive behavior. The first is the 'can-do' pathway and represents the employee's perception of the capability to successfully enact proactive behavior (Bindl, Parker, Totterdell, & Hagger-Johnson, 2012). The can-do pathway is supported by research showing that the individuals' confidence in the successful execution of proactive behaviors (that is their role breadth self-efficacy) plays a major role in the

execution of proactive behaviors (Ohly & Fritz, 2007; Parker, 1998; Parker et al., 2006). Can-do motivation also likely depends on whether the employee perceives that proactive behavior may be costly. For example, in the case of voice behavior, speaking up may involve social costs because it challenges the status quo (Morrison, 2011). Proactive behavior may also involve investment-costs: time, attention and energy invested in proactive behavior cannot be invested in other tasks (Parker et al., 2010). These social and investment-costs of proactive behavior will play a role in Chapter 2, about cognitive processes in voice behavior, and in Chapter 4, about how people divide their attentional resources across core tasks and proactive creative tasks.

Reason-to

Next to being able to successfully execute proactive behavior, people need a reason for proactivity. Reason to – motivation reflects the individuals perception that it is worthwhile to engage in proactivity (Bindl et al., 2012). There are several reasons why people may engage in proactive behaviors. Those reasons may be internal, such as being intrinsically motivated. Intrinsically motivated people engage in an activity because it satisfies them (Gagné & Deci, 2005). They have a high need for autonomy, and an autonomous environment is one of the most important drivers of proactive behavior (Den Hartog & Belschak, 2012; Frese, Kring, Soose, & Zempel, 1996; Grant & Ashford, 2008; Parker et al., 2006). Since proactive behavior is autonomous, self-started behavior, employees are likely to pursue this behavior for intrinsic reasons (Parker et al., 2010). However, the prospect of extrinsic rewards may also be a reason for proactive behavior. As described earlier, proactive behavior can have many positive career consequences (Seibert et al., 2001) which may fuel extrinsic motivation (Ryan & Deci, 2000). In part, proactive behavior may thus also be fueled by the anticipation of tangible gain. In Chapter 4, we investigate whether intrinsic or extrinsic reasons for proactivity affect the creativity of proactive behaviors in organizations.

Another reason for proactive behavior, may be the experience of negative feelings at work: negative affect (Parker et al., 2010). When people experience negative feelings at work, they may use proactive behavior to relieve those negative feelings. For example, people may voice because they are angry or frustrated about a current situation at work (Grant, 2013). Job stressors and problems such as inadequate materials or

procedures can increase proactivity because one wants to solve the problem or avoid these stressors in the future (Fay & Sonnentag, 2002; Fritz & Sonnentag, 2009). Other work suggest that negative affect is specifically relevant for the primary phases of the proactive process: identifying a problem, generating the goal to be proactive, and planning to engage in proactive behavior, but that positive affect and energy are needed for proactive enactment (Bindl et al., 2012; Den Hartog & Belschak, 2007; Sonnentag & Starzyk, 2015). In Chapter 3, we investigate whether negative affect can be a reason for proactive behavior, or whether it is more likely facilitated by positive affect.

Energized-to

The third motivational path to proactive behavior is the energized-to path. Energized-to motivation is assumed to fuel proactive engagement through positive, activating affect because such feelings trigger an approach tendency and enhance broad thinking and flexibility of actions (Fredrickson & Branigan, 2005; Seo, Bartunek, & Barrett, 2010; in Parker et al., 2010). For example, longitudinal studies show that employees who recover from work during leisure time show increased engagement and proactive behaviors on the next work-day. Presumably, people thus need to 're-charge their batteries' to be active the next day and to be able to persistently initiate change over time (Binnewies, Sonnentag, & Mojza, 2009; Sonnentag, 2003). In a similar vein, sleep quality enhances proactive behavior at work through enhancing feelings of vitality (Schmitt, Belschak, & Den Hartog, 2016), and vigor provides entrepreneurs with the energy and willpower they need to take initiative (Hahn, Frese, Binnewies, & Schmitt, 2012). Research on mood and affect indicates that positive activating feelings such as enthusiasm and inspiration enhance proactive behavior of students and employees (Bindl, Parker, Totterdell, & Hagger-Johnson, 2012; Den Hartog & Belschak, 2007; Fritz & Sonnentag, 2007). In Chapter 3, we address the question of whether indeed positive affect enhances proactive behavior, or whether proactive behavior may (also) enhance positive affect and energy.

Empirical Need

Although there is well-developed theory and empirical knowledge from field research about the drivers of proactivity, there is hardly any experimental research to

provide causal evidence. For example, proactive behavior is quite complex and is therefore assumed to be preceded by careful cognitive elaboration: people think before they act (e.g., Chiaburu, Marinova, & Van Dyne, 2008). However, the initiation of proactive behavior might be quite automatic, enhancing elaborative thought processes only along the way. Similarly, role breadth self-efficacy and positive affect are related to proactive behavior and primarily considered as a driver (e.g., Den Hartog & Belschak, 2007; Parker et. al., 2006). They could however, also be a consequence. Perhaps proactive behavior can enhance confidence and positive feelings over time. Furthermore, although good performance evaluations are assumed consequences of (some) proactive behaviors (e.g., Seibert et al., 2001), they may also be a driver: the prospect of tangible rewards tied to good performance evaluations may motivate proactivity. There may also be differences between trait-proactive and passive-reactive individuals that are difficult to reveal in field studies that rely on questionnaires to measure both the proactive trait and proactive behavior. A clear distinction between trait and behavior would allow for an investigation of the interaction between trait and situation. This could provide insight into cognitive, affective, and motivational differences between trait-proactive and passive-reactive individuals.

In summary, we need causal evidence to back up the existing theories, because without measuring proactive behavior while manipulating its putative antecedents experimentally, the direction of causality cannot be established. Therefore, one important contribution of the research presented in this dissertation, is to study proactive behavior with the use of experimental designs. Our experiments were developed such as to allow participants to develop ideas and take initiative, or speak up with their ideas and concerns, on their own accord. All experiments involved interaction with a leader, who was responsible for successful task completion. Any effort that was undertaken by participants during the experiments to challenge the leader, to opt for alternative solutions to problems, to voice suggestions, problems or a change of direction, were the participant's own initiative and not required. In the studies presented here, the experimental designs were used to empirically test the underlying cognitive, affective and motivational processes of proactive behavior, and in two of the chapters (2 and 4), the findings were also replicated in (and extended to) a field study sample. Below, I will briefly introduce these topics and chapters.

Chapter 2: Attention! - Cognitive Processes

One assumption about the role of cognition in proactivity, is the idea that proactive behavior is always a well elaborated deliberate choice that requires *attention*. Employees explicitly intend to impact themselves or their environment. They thus *choose* to be proactive (Grant & Ashford, 2008), and it is likely that setting a proactive goal involves a deliberate decision process (Parker et al., 2010). Because proactivity is self-starting, goal-directed, future focused, challenging and, sometimes even potentially damaging for those who engage in it, people are assumed to deliberately and elaborately think and plan before they act (Chiaburu, Marinova, & Van Dyne, 2008). Proactive people influence their environment and whether people choose to influence something is thought 'to involve a deliberate decision process in which the individual assesses the likely outcomes of his or her behaviors' (Parker et al., 2010, p. 834). However, this thought process may be different for people who are often proactive versus people who are rarely proactive. Someone who is rarely proactive, and thus has little experience with the behavior, may elaborate extensively before becoming proactive. In contrast, this decision process may be faster and more intuitive for those who are frequently proactive. Practice with proactivity or automated behavioral patterns in proactivity evoking situations may make the decision process of frequently proactive people more habitual and the choice process less deliberate.

Frese and colleagues (1996) have argued that personal initiative requires an action orientation, and action-oriented people do not ponder on the problems and advantages of their goals; they quickly translate goals into actions. This implies that those who are very proactive might think less extensively before they act than those who are more passive-reactive. To effectively translate proactive goals into actions, people may fall back on learned, automated and intuitive thought-action patterns. Thinking about the pros and cons of taking action for too long may sometimes even result in a failure to enact a proactive behavior because the opportunity has passed. Proactive people who often produce proactive behavior may thus be more intuitive in their assessment of whether they can be proactive (i.e., can-do motivation). They may calculate risks and benefits fast and fluently, making it easier for them to anticipate when opportunities arise. The first aim of Chapter 2 was thus to establish how much 'thinking' is involved in executing proactive behaviors and to test the idea that for those

who are often proactive, proactivity could be more automatic and intuitive than for those who are usually not proactive. This would show that although proactive behavior is self-started and aimed at influencing the environment, the choice to be proactive is not always extensively elaborated.

To investigate whether proactive and passive-reactive people differ in the amount of thought that goes into proactive behavior, we chose to focus specifically on voice behavior in organizations, for two reasons. First, since voice is a type of proactive behavior that is risky, in the sense that it may also have negative (social) consequences for the actor, those possible negative consequences intuitively imply that people think before they act. Research shows however, that risky decisions are often made with the use of heuristics, not just with deliberate systematic evaluation (Kahneman & Tversky, 1979). Because voice is risky, employees may possibly need to consider many elements. For example: 'Is my idea any good? Will my supervisor be offended? How will this affect my overall career? How should I convey the message?' Although this seems like a complex evaluation process, the very complexity of risky decisions makes it more likely that people rely on automatic scripts and choose the behavior that felt good in the past (Slovic, Finucane, Peters, & MacGregor, 2004). Second, a more pragmatic advantage of studying voice behavior, is that voice can be captured in an experimental design. Voice can be measured as the act of speaking up and is visible for others rather than focused only on the self (such as for example, career initiative). Our studies in Chapter 2 are thus aimed to observe how much elaborate thought is necessary for the execution of voice behavior.

The broader question we tried to explore in this chapter on cognitive processes, is to what extent voice behavior can be the result of more automatic response patterns and habits, and to what extent it is the result of a deliberate and extensively elaborated decision process. We argue that to study how much people think during the voice process, we need to distinguish between two things: *(1)* the choice to voice, reflected in the act of speaking up itself, and *(2)* the content of voice, reflected in the (creative) quality of the behavior. The research question of this chapter was thus *'How much thinking do people need for choosing to voice, and how much do they need for executing high-quality voice?'*. Chapter 2 includes three studies, two using experimental research designs and one multi-source survey study involving employees and managers in a variety of

organizations. In addition, two further multi-source field studies were conducted for scale development purposes, and these are reported in the supplementary materials for that chapter. All studies investigated the same hypotheses, namely that *(a)* executing high quality voice requires more deliberate and elaborate thinking than deciding to voice in and of itself, and *(b)* the cognitive process of voicing high quality is different for people who voice often than for people who voice rarely: frequent voicers are likely to rely more on automatic thinking and intuition, infrequent voicers are more likely to elaborate, relying on complex cognitive thinking capacity.

Chapter 3: Affect - Affective Processes

Another fundamental idea in the proactivity literature, is that positive activating *affect* enhances proactive behavior through stimulating broad and flexible thinking (Den Hartog & Belschak, 2007; Parker, Bindl, & Strauss, 2010). Although supported by cross-sectional and longitudinal data linking positive affect and energy to proactivity (Fritz & Sonnentag, 2009), the causal effect of positive affect on proactive behavior has never been tested experimentally, and the effect of negative affect is still quite unclear (e.g., Bindl, Parker, Totterdell, & Hagger-Johnson, 2012). Thus, we performed an experiment to test whether proactive behavior is caused by positive activating affect, but also whether negative activating affect might drive proactive behavior. A behavioral measure of personal initiative was designed, incorporating not only self-initiation, challenge and improvement, but also persistence during multiple communication rounds and depth of arguments while trying to override a leader's (false) assumptions. We developed a more persistent measure of proactivity that was aimed at capturing several rounds of initiative rather than one individual voice act, because we expected that negative affect would enhance a narrow and persistent attention focus. Because the mental-affective process of proactive participants was expected to be different than the one of passive-reactive participants, trait-personal initiative was measured prior to the experiment.

The research question of this paper was: '*What are the affective causes and consequences of proactive behavior, and are these different for trait-proactive vs. passive-reactive individuals?'* Besides assessing the influence of affect on proactive behavior, the study also aimed to provide an alternative explanation of previously found positive affect – proactive behavior relationships in the literature. Although positive affect might drive

proactivity through the energized-to pathway, it may also be the other way around: proactive behavior may enhance positive affect. Controlling your environment through proactivity may provide relief from negative feelings by enhancing positive ones. These anticipated positive feelings may thus also be a reason-to be proactive, particularly for proactive people. Proactivity is rooted in people's need to change and control the environment (Bateman & Crant, 1993), and proactive people could thus use proactive behavior to change their internal affective states as well as their environment. If proactive people automatically desire to improve things generally, they may also proactively strive to improve their own affect. Thus, proactive people (as opposed to passive-reactive people) may feel more positive affect due to proactive behavior because they enjoy being proactive. Therefore, they may anticipate positive affect as a consequence of proactive behavior thereby increasing their motivation to engage in proactivity as long as they do not experience positive affect already.

Chapter 4: Approach - Motivational Processes

In the final empirical chapter of this dissertation (Chapter 4), we focused on individual differences in *approach motivational sensitivity*. The 'approach' motivational system in the brain is wired to react to anticipation of rewards: people engage in behaviors that have previously resulted in rewards, and they refrain from behavior that resulted in punishment. We thus engage in goal-directed behavior because we anticipate that the behavior will make us feel good (Carver, 2006; Gray, 1990). Reward anticipation enhances positive feelings, and increases the tendency to approach those rewards thus stimulating goal-directed behavior. People may thus engage in proactive behavior because they anticipate that it makes them feel good, a possibility we also explored in Chapter 3. In Chapter 4, however, we focused on individual differences in sensitivity to reward anticipation, which is labeled approach motivational sensitivity (Carver, 2006; Carver & White, 1994). People who are approach sensitive thus more easily triggered by the prospect of rewards than those who are not approach sensitive. Previous experimental research showed that approach sensitivity enhances creative behavior in the lab (De Dreu, Nijstad, & Baas, 2011) and the purpose of our study was to see whether this was also the case for more proactive (self-initiated) forms of creativity within an organization.

For this purpose, we specifically looked into two types of approach sensitivity: a sensitivity to intrinsic rewards (feeling rewarded by fun and novel experiences) and a sensitivity to extrinsic rewards (feeling rewarded by winning and performance). The research question in this chapter, was '*What type of approach sensitivity helps (or hinders) proactive creative behavior in the organization?* Because proactivity is voluntary autonomous behavior, authors suggest intrinsic motivation is an important reason to be proactive (Parker et al., 2010). People who are sensitive to intrinsic rewards may thus initiate more creative ideas in the organization. However, engaging in proactive behavior may also increase the possibility of attaining certain extrinsic rewards (performance evaluation, promotions, salary increases, e.g., Seibert et al., 1999), specifically when proactive behavior is seen as creative by supervisors. The fact that proactive creativity can result in extrinsic rewards, means that people who are sensitive to those rewards may show more proactive creativity.

In this final empirical chapter, we therefore investigated under what circumstances approach sensitivity to intrinsic and extrinsic rewards helps or hinders reactive creativity (when creativity is requested and the only task) and proactive creativity (when creativity is self-initiated in a multi-task context). We expected that sensitivity to intrinsic rewards would be positively related to both reactive and proactive creativity because intrinsic motivation has previously been related to creativity (Amabile, Hill, Hennessey, & Tighe, 1994) and because intrinsically motivated people generally seek out challenging and novel tasks, which is what creativity is all about. Whether or not creativity is thus requested and the only task (reactive) or whether it is self-initiated and not the only task (proactive), should not matter because engaging in change-oriented original behavior should always feel rewarding to intrinsically motivated people.

In contrast, we expected that context would play a larger role for people that are sensitive to extrinsic rewards. In organizations, proactive creativity is a self-initiated solution to a self-discovered problem; there is no clear outline on what renders extrinsic rewards. Many other tasks and goals that are more clearly defined and thus signal easier rewards, may draw attention away from engaging in proactive creativity. The potential costs (loss of rewards for other tasks) associated with undertaking proactive creativity, may thus negatively influence can-do motivation, in particular for those who are sensitive to extrinsic rewards. We thus specifically expected negative relationships

between extrinsic reward sensitivity and proactive creativity (not with reactive creativity), and we expected these negative relationships to be strongest when core tasks (compared to creative tasks) were highly reward salient.

Two studies were designed to investigate whether intrinsic and extrinsic approach sensitivity relate to proactive creativity in organizations. We first studied this in a multi-source survey organizational field study, asking colleagues and leaders to rate the proactive creativity of their co-workers and subordinates. Next, we designed a within-participant experiment in which participants were required to divide their attention between two tasks: one core task, and one voluntary task (proactive creativity). We manipulated reward saliency of the core task within participants, by making it easy (or difficult) to gain monetary rewards by successfully completing the core task. We hypothesized that people that are sensitive to extrinsic reward should be distracted by the reward saliency of the core task, and therefore show decreased proactive creativity.

Overarching Themes

One reoccurring theme in this dissertation is the interaction between traits and behavior. Because we measured proactive (creative) behaviors as objective observations in the lab, it was possible to investigate how individual differences interact with situational manipulations. For example, in Chapter 3, we measured personal initiative as a trait (using a questionnaire) to be able to explore whether the reactions of proactive people to our affect manipulations would differ from the reactions of passive-reactive people. This lead us to the conclusion that affective processes underlying proactive behavior are likely to be different for proactive and passive-reactive individuals. In Chapter 4, we tested whether individual differences in approach sensitivity predicted whether participants were distracted by reward saliency of competing tasks. This indicates that depending on the context (is proactivity rewarded, are other tasks rewarded, is proactivity shared with colleagues, or with leaders?), either the sensitivity to intrinsic, or the sensitivity to extrinsic rewards is likely to influence proactive creativity. The idea that behavior results from an interaction between personality and environment is not new (e.g., Diener, Larsen, & Emmons, 1984). The empirical work presented in this dissertation, however, suggests that it is also an important idea to consider in the field of proactive behavior.

Another reoccurring theme is attention focus. This is addressed either directly in Chapter 2 by investigating cognitive processing, or indirectly in Chapter 3 through the activation of broad or local attention focus by affect, and in Chapter 4 through approach sensitivity to extrinsic rewards, which attracts attention to tasks that render easy rewards. In the overall discussion section (Chapter 5), I will return to the issue of how attention focus, affect, and approach motivation may all influence proactivity. I will re-interpret the findings from the empirical chapters, and integrate them with novel theories about how affect shapes the focus of attention (Clore & Huntsinger, 2007; Gable & Harmon-Jones, 2008; Huntsinger, 2012; Huntsinger & Clore, 2012). The purpose of Chapter 5 is to point out avenues for future research through the development of a new model that explains how affect and approach motivation may shape the proactive process through shifting and tuning attention focus over time.

CHAPTER 2

Attention!

Cognitive Processes

Dual Cognitive Pathways to Voice Quality

- Frequent Voicers Improvise, Infrequent Voicers Elaborate-

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Submitted for publication

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Theory and studies were designed by I. Wolsink, with input from all authors and specific help from I. G., Sligte on the design of study 2. All authors contributed with valuable comments during theory development, study design, and analysis. I. Wolsink acted as lead author, with all authors contributing to the writing by providing valuable comments and input to the text of the manuscript.

Abstract

We investigate the involvement of Working Memory Capacity (WMC, the cognitive resource necessary for controlled elaborate thinking) in voice behavior (speaking up with suggestions, problems, and opinions to change the organization). While scholars assume voice requires elaborate thinking, some empirical evidence suggests voice might be more automatic. To explain this discrepancy, we distinguish between voice quantity (frequency of voice) and voice quality (novelty and value of voiced information) and propose that WMC is important for voice quality, but not voice quantity. Furthermore, we propose that people who voice often need less WMC to reach high voice quality than people who voice rarely. To test our ideas, we conducted three studies: a between-participant lab-study, a within-participant experiment, and a multi-source field-study. These studies confirmed that voice quantity is unrelated to WMC. Voice quality is positively related to WMC, but only for those who rarely voice. This indicates that the decision to voice (quantity) might be more automatic and intuitive than often assumed, whereas its value to the organization (quality), relies more on the degree of cognitive elaboration of the voicer. It also suggests that frequent and infrequent voicers use distinct cognitive pathways to voice high quality information: frequent voicers improvise, while infrequent voicers elaborate.

"Wise men talk because they have something to say; fools, because they have to say something"

Plato

We all know people in our work context who speak up frequently, fast, and fluently and individuals who are vocally more frugal. Yet, as Plato suggests, people who speak up rarely may offer great insight when they do, while those who speak up frequently may not always add novelty or value. Quantity thus does not always equal quality. This paper is about that difference between the quantity and the quality of speaking up, specifically in terms of the amount of thought that goes into these different aspects. In the literature, speaking up through the constructive communication of problems, challenging opinions, and suggestions for improvement, is labeled voice behavior (van Dyne & LePine, 1998; Morrison, 2011). Voice is proactive, discretionary, planned behavior, with the intent to change something in the organization. Voice is important for organizations as management is often too far removed from the workplace to be able to oversee all haphazard, errors, inefficiencies, improvement opportunities, and customer complaints. Managers therefore need their employees to come forward with such potentially useful information in order to be aware of what needs to be changed (see Morrison, 2011).

Before people voice, they need something potentially important to say. But even if that is the case, individuals only engage in voice when they judge voicing to be sufficiently instrumental to achieve change and safe to show (e.g., Morrison, Wheeler-Smith, & Kamdar, 2011). For the voicer, there are thus many aspects to consider before speaking up, for example: 'Do we need change?', 'Does my suggestion make sense?', 'Will my supervisor be offended?' 'What is the best way to argue my case?' This implies that people likely think carefully and elaborately before they speak up, and thus need extensive cognitive resources to do so. However, the question of how much cognitive elaboration one needs for voice has not been empirically investigated to this date. Investigating the depth of cognitive elaboration in voice behavior is not only important for understanding the fundamental underlying cognitive mechanisms of voice, but it also has practical implications. If voice requires cognitive elaboration, people need the time and cognitive resources to do so. If voice is more habitual and automatic, a managers rational and elaborate plea for the safety of voicing has little chance of enhancing voice.

The goal of this paper, is thus to investigate the depth of cognitive elaboration in voice behavior. Dual process theories (Barrett, Tugade, & Engle, 2004; Chaiken & Trope, 1999; Evans, 2008; Kahneman, 2011; Petty & Wegener, 1999) propose that there are two modes of cognitive

processing. The first (system 1) is fast, intuitive, heuristic, and automatic. The second (system 2) is slow, deliberate, systematic, and elaborate. In the voice literature, there is an ongoing debate on whether voice is cognitively elaborated or can also be automatic. On the one hand, scholars propose that voice is proactive, future focused, and challenging, and therefore requires systematic, elaborative cognitive processing (Chiaburu, Marinova, & van Dyne, 2008; Liang, Farh, & Farh, 2012). On the other hand, researchers argue that whether people voice or stay silent, may depend on automatic responses and schemas that operate below the level of conscious, rational decision making (Morrison, 2011). In support of that, empirical evidence suggests that part of voice might not depend on elaborate cognitive processing: individual differences in general cognitive ability are unrelated to voice (LePine & Van Dyne, 2001), and actively withholding voice seems to depend on fear and implicit beliefs about the effectiveness of voice rather than rational, well elaborated decision making (Detert & Edmondson, 2011; Kish-Gephart, Detert, Treviño, & Edmondson, 2009).

Here, we propose a way to reconcile both positions, by arguing that there are two components of voice that should be distinguished, because one requires more elaborate thought and cognitive resources than the other. More specifically, we argue that it is essential to distinguish between the act of voicing (*'voice quantity'*, how often does one speak up), and the creative quality of the voiced content (*'voice quality'*, does voice entail novel and valuable information). People may intend to voice something important, but high quality intention does not equal high quality output. A voiced message may be something that is already known, thus not adding knowledge, or something that cannot be used or implemented, thus not adding value. As Chiaburu and colleagues (2008) note, to the extent that the voiced message is complex, important, and changing, elaborate thinking and cognitive resources may matter. The issue here is that the complex, important, and changing attributes of voice refer more to the quality of voiced content than the behavior of voicing something per se.

Although broader measures of cognitive resources such as General Mental Ability have been studied in relation to the quantity of voice (e.g., LePine & Van Dyne, 2001) the quality of voice has not yet been related to cognitive resources. We therefore propose that to reveal where in the voice process elaborate cognitive processing matters most, both quantity and quality of voice should be studied simultaneously. Presumably, elaborate processing is more important for quality than for quantity. Previous research has shown that elaborate processing is important for original idea generation in experiments (De Dreu, Nijstad, Baas, Wolsink, & Roskes, 2012). The generation of original ideas is one aspect that is important for voice quality. Further, we argue

that cognitive elaboration is also necessary for evaluating how valuable a message is, and how it should be communicated to others. Voicing high quality is more complex than the mere generation of an original idea. Voice is a proactive behavior (self-started, extra-role, challenging behavior in the social environment), and creativity studied in experimental research is reactive (requested, in-role, free brainstorming in an anonymous setting). People who voice high quality do not only generate original ideas upon request, they search for problems themselves, proactively generate ideas, select the best suggestion in order to solve the problem, and communicate this to others. For these reasons, cognitive elaboration should enhance voice quality beyond mere idea generation.

A2

If voice quality requires more elaborate processing than voice quantity, then voice quality (and not voice quantity) should be linked to the cognitive resource in the brain that is central to elaborate cognitive processing, which is Working Memory Capacity. Elaborate and systematic cognitive thought is limited by Working Memory Capacity (Evans, 2003). Working Memory Capacity (WMC hereafter) refers to the amount of information one can actively perceive in the attentional field and use for thoughts or actions (Fukuda, Vogel, Mayr, & Awh, 2010). Working memory represents those thoughts that we are aware of (Evans, 2008), and the Capacity of Working Memory supports conscious control over our thoughts, feelings, and actions (Barret, Tugade & Engle, 2004). Both individual differences in WMC as well as manipulations of WMC by means of distraction of attention, have been used in previous research to study the role of elaborate thought and controlled attention in idea generation (De Dreu et al., 2012). We therefore propose that a difference between quantity and quality of voice in terms of cognitive processing depth, should be reflected in differential relationships between these voice components and WMC.

We present 3 studies using different methods to investigate how voice quantity and quality are related to individual differences in WMC and are causally affected by WMC load-manipulations. We contribute to the literature by offering new theoretical insights about the differential involvement of cognitive processing in different components of voice, hereby reconciling current opposing views in the voice literature. Specifically, Study 1 (lab study, between-person individual differences) and Study 2 (experiment, within-person situational differences) were designed to test the involvement of WMC in objective, behavioral measures of quantity and quality of voice. In Study 3 (multi-source survey field study), we investigated voice quantity and quality towards both colleagues and supervisors to replicate the lab-results in an organizational sample.

Studies 1 and 2

Voice in the Social Context

To express voice is to challenge the status quo with the intent of improving the situation (LePine & Van Dyne, 1998). Employee voice is an informal, voluntary way of constructively communicating ideas, suggestions, concerns, information about problems or opinions on work-related issues. Voice is proactive and constructive in the sense that employees who voice try to anticipate future problems in the organization as opposed to merely criticizing the current state of affairs (Morrison, 2014). Scholars have argued that this type of dissenting behavior helps organizations to learn from their mistakes (Edmondson, 1996), to avoid crises like the explosions of NASA-space shuttles 'the Challenger' and 'the Columbia' by breaking with groupthink (Ferraris & Carveth, 2003), and to increase team-innovation and effectiveness (De Dreu, 2002).

However, voice is not always appreciated by the individuals that the 'voicer' attempts to influence. For example, research shows that employees who voice do not always get favorable performance evaluations (Grant, Parker, & Collins, 2009). Evaluations by others play a crucial role because voice is inherently social. It always involves a target. Employees can voice towards different targets including colleagues (speaking out) or supervisors (speaking up), depending upon whom they feel might be able to set the desired change in motion (Liu, Zhu, & Yang, 2010). However, even though voice behaviors are improvement- and socially oriented (Van Dyne & LePine, 1998), the challenging nature of voice makes it interpersonally risky (Burris, 2012). Since voice entails social risk and is not always effective in initiating change (Detert, Burris, Harrison, & Martin, 2013), one might assume that people think carefully before they speak out or up.

Voice Quantity

Although it seems logical that people 'think' before (or while) they voice, it is not that clear yet how the voice decision process develops in the mind. Until recently, the predominant focus in the empirical voice literature has been on situational and personality factors that influence the act of voicing. Early voice measures tended to focus on whether or not people voice ideas, problems, or suggestions in organizations (e.g., 'this employee communicates his / her opinion … even if others disagree', Van Dyne & LePine, 1998, p. 112). We refer to this as voice quantity since it assesses whether or not people speak up. More recent measures of voice do include more aspects pertaining to the content of voice, yet use items that possibly combine both quality and quantity thus making it difficult to disentangle the two (e.g., Liang et al., 2012; Mayne & Podsakoff, 2014). Studies show several contextual and trait variables to be related to voice, such as safety and self-esteem (LePine & Van Dyne, 1998; Morrison & Milliken, 2000), leadership (Detert & Burris, 2007; Liu, Zhu & Yang, 2010), personality (Crant, Kim, & Wang, 2011) and job autonomy (Tangirala & Ramanujam, 2008). Cognitive and experimental research on voice, however, is scarce and insight into the cognitive processes underlying voice decisions is limited to date.

Several theoretical ideas exist on the involvement of cognition in the voice process. For example, some authors assume that voice requires elaborate cognitive processing, because it is intentional, planned, and future focused (Chiaburu et al., 2008; Liang et al., 2012). Others argue that voice requires a risk-reward calculus: when judgements of efficacy and safety increase, people voice; when they decrease, voice involves risk, and thus people remain silent. Factors that influence evaluations of risk and efficacy include voice climate in groups, felt psychological safety and the perceived probability of success, organizational support, and trusting relationships with voice targets (Ashford, Rothbard, Piderit, & Dutton, 1998; Detert & Burris, 2007; Morrison, Wheeler-Smith, & Kamdar, 2011). However, even though there are many elements one could consider when deciding to voice ('how to voice, what to voice, will someone punish me, am I able to get the message across?'), that does not necessarily mean that everyone indeed always elaborately and consciously considers all those elements.

Extensive research in other fields has shown that risky decisions are often based on heuristics and biases, reflecting system 1, automatic cognitive processing (Kahneman & Tversky, 1979). Other studies show that people judge whether they feel safe or at risk based on affective properties (Loewenstein, Weber, Hsee, & Welch, 2001). Reliance on affect in risky decisions cognitively forms a much more efficient way to navigate in a complex, uncertain world than

elaborate processing, and people often remain unaware of their motivations for engaging in or refraining from risk taking (Mishra, 2014; Slovic et al., 2004; Slovic, Peters, Finucane, & MacGregor, 2005). Even complex decisions such as buying a house presumably depend largely on automatic processing (Dijksterhuis, Bos, Nordgren, & Van Baaren, 2006). So even though decisions seem highly complex, they are often taken based on automated social scripts (Dehaene, 2014).

'The decision to voice might thus in part be emotional or based on deeply rooted beliefs and schemas that operate below the level of conscious, rational decision making' (Morrison, 2011, p. 384). Similarly, other authors suggest that decisions to voice 'depend on general as opposed to specific effortful cognitive appraisals of context' (Dutton, Ashford, O'Neill, Hayes, & Wierba, 1997, p. 419). Also, affect and implicit theories about the effectiveness of voice were shown to predict whether people withhold voice that might be useful for management (Detert & Edmondson, 2011; Kish-Gephart et al., 2009; Milliken, Morrison, & Hewlin, 2003). Evaluations of perceived risks and benefits depend on individuals' general affective evaluation of an activity. If people like an activity, they tend to judge risks as low and benefits as high. It might thus be that people who voice often, enjoy or like doing so and therefore calculate risk differently than people who voice rarely. This implies that affective experiences with the behavior shape implicit efficacy, expectancy, and risk beliefs.

When people voice frequently, it is not efficient to use elaborative information processing every time one decides to voice. Individuals may often simply choose to engage in behavior that felt good in the past. Speaking up or staying silent may thus be the result of learned scripts for decisions under risk, which often involve little elaborate cognitive processing. In line with this, the only study that we know of that investigated the relationship between more general cognitive resources (GMA) and voice (Le Pine & Van Dyne, 2001) found no association between the two. This suggests that an ability to engage in complex thinking does not influence whether people engage in voice or not. Thus, we propose that the decision to engage in voice (voice quantity) is not the result of careful cognitive elaboration, but rather is made using fast and automatic cognitive processes.

Voice Quality

A more likely part of the voice process to involve elaborate cognitive processing, is the quality of voiced content. Although pioneering voice research has focused primarily on voice quantity (frequency), more recently, scholars have started to discriminate between types of voice on the basis of content. Voice content research has highlighted that different voice types have different antecedents and consequences. For example, people who feel obligated to change things at work, voice more *suggestions* (i.e. promotive voice) whereas people who feel safe, voice more potential *problems* (i.e. prohibitive voice) (Liang et al., 2012; Morrison, 2011). *Opinion*-focused voice, which is more focused on deviating from the status quo opinion, is hindered by self-monitoring (Morrison, 2012; Premeaux & Bedeian, 2003). Yet, we do not yet know what determines the quality of these different types of voice content.

We thus do not know what makes voiced information, whether it be a suggestion, a problem, or an opinion, of actual importance or use to the organization. Because even if people who voice intend to improve something, that does not mean that they always do. We expect voice quality and quantity to be distinct but inter-related components of voice behavior (e.g., frequent voicers may experience what is valued and thus learn to voice with higher quality content over time). While the early voice measures (Van Dyne & LePine, 1998) focus on frequency of voice, more recent content-specific measures such as promotive voice (Liang et al., 2012), constructive voice (Maynes & Podsakoff, 2014) or prosocial voice (Van Dyne, Ang, & Botero, 2003) presumably also capture quality to a certain extent. They fail however, to disentangle the two components of voice, which is, in our opinion, necessary for studying the role of cognitive elaboration.

We define voice quality as 'the discretionary constructive communication of suggestions, problems, or opinions that add novel and useful information to the organization'. This relates to creativity, which is the generation of original yet appropriate ideas in any domain (Amabile, 1996; Runco & Charles, 1993). Although in experimental creativity, measures often focus on original ideas, usefulness is critical for organizational change because original ideas that do not convey implemental value, are hard to implement. Within the voice quality construct, there is thus equal emphasis on whether voice entails novel information to a situation, and on whether the information valuable and useful to the organization. Here, we see voice as useful when a suggestion can be implemented, a problem is about an important issue, or an opinion changes the discussion in a meaningful way. Voice is adds novelty when a comment is challenging, refreshing, different and thus successful at changing the status quo opinion.

Creativity and voice quality share attributes. For example, originality or novelty plays a role in both concepts. One other way to conceptualize voice quality would thus be to refer to creative voice, or proactive creativity (e.g., Unsworth, 2001, see also Chapter 4). Specifically the way creativity is usually measured in organizations, with the use of supervisor ratings (e.g., Zhou & George, 2001; Zhou & Shalley, 2003) is similar to what we define as voice quality. However, here we label this voice quality for the purpose of contrasting the quantity and quality aspects of voice in this paper. Compared to organizational creativity measures, the voice quality concept has a broader focus. For example, besides proactively sharing solutions and suggestions, it is also about pointing out important or foreseen problems, and besides sharing novel ideas or challenging opinions, it also focuses on usefulness. Even though usefulness is in the definition of creativity, it is usually less well represented in creativity measures. Furthermore, in the currently available measures of creativity in organizations, there is no clear differentiation between proactive creativity (self-initiated), and reactive creativity (a response to a request from the supervisor). Since we are interested in the quality of voice as a proactive behavior, such a distinction is important.

The same proactive – reactive distinction applies for a clear differentiation of voice quality from creativity measures that are used in experimental research. Experimental research on the influence of cognition and attention on creativity uses tasks (Benedek, Jauk, Sommer, Arendasy, & Neubauer, 2014; De Dreu et al., 2012; Fink, Benedek, Grabner, Staudt, & Neubauer, 2007) that are reactive in nature: people are requested to generate creative ideas. They are not assumed to initiate their own creative responses and goals, and they do not socially interact with others. Investigating more proactive forms of creativity, in this case, the creative quality of voice, is thus important because highly creative people may generate great ideas in experiments, but not be inclined to share them in a social environment. We want to study the involvement of cognitive processes not only in the generation phase, as has been done in previous work, but also within the process of deciding what to share with other people. Voice quality is a proactive, extra-role behavior: it refers to a voluntarily offered opinion, idea, or solution to a self-discovered problem. Voice quality is thus more social, more proactive, and contextually broader than the creativity that is typically studied in experimental research.

While creativity and voice quality are thus different, we assume that they are related because both require the generation of novel information, and are thus facilitated by elaborative cognitive processing. Research suggests that Working Memory Capacity facilitates the idea generation process (Benedek, Jauk, Sommer, Arendasy, & Neubauer, 2014; De Dreu et al., 2012).

Here, we argue that WMC is likely to influence the quality of voluntarily voiced suggestions, problems, and opinions for two reasons. First, it allows for original idea generation, which has been studied in previous research. Second, WMC allows for developing, selecting, and communicating those suggestions, problems, and opinion that will matter to the organization. Both this generation as well as the development, selection, and communication process are reflected in the creative content of voice, which we refer to as voice quality.

WMC: Cognitive Elaboration Resource

'We constantly overestimate the power of consciousness in making decisions, but in truth, our capacity for conscious control is limited' (Dehaene, 2014: 47). The capacity for conscious control is reflected in the capacity of working memory (Barret et al., 2004), which is limited by the quantity of information it can contain. Imagine being in a secluded park with 3 children. Two of them are playing in the grass, but the third one attracts your attention because she gets in trouble climbing up a tree. Before you attend to the tree-climber, you glance at the other two, remembering their position. You keep this visual-spatial information in mind when you climb up the tree to get the third one, which allows you to quickly locate and check on the others while you are in the tree. Now imagine the same scenario, but in a petting zoo with 8 children during high-season. Most people would fail to remember the location of all remaining 7 children, especially considering the distraction of animals and other kids. The amount of children to be remembered (storage capacity) and the ability to rule out irrelevant children (distractor interference), varies greatly between people: there is a capacity limit to the memory-system. Working memory holds limited information 'online' to serve cognition (Cowan et al., 2005). How much we can keep attentively online at a time (Working Memory Capacity or WMC) ultimately defines the possible depth of our thoughts as well as our capacity for conscious control (Barret et al., 2004).

Since WMC is central to effortful and elaborate cognitive processing (Evans, 2008) and attention control (Kane, Bleckley, Conway, & Engle, 2001; Kane & Engle, 2002, 2003), it is important for performing any task that requires focused and elaborate thinking, such as planning, reasoning, and persistent future goal pursuit. More specifically, the number of items (storage capacity) one can retain in the visual working memory is assumed to be equal to the number of interrelationships between elements that can be kept active while reasoning (Halford, Cowan, & Andrews, 2007). The storage component of (visual) working memory is thus a key limiting factor in our ability to understand abstract relationships between novel items (Fukuda et al., 2010). This means that WMC is related to fluid intelligence (Cowan et al., 2005; Johnson et al., 2013; Vogel

& Machizawa, 2004), but is nevertheless a different construct (Ackerman, Beier, & Boyle, 2005; Conway et al., 2002). WMC is a more basic, specific measure of elaborative processing capacity, which is not distorted by domain-specific, cultural, or knowledge-dependent skills. Visual working memory tasks are only about the number of items one can retain within the visual attention scope, not about reading ability, mathematical ability, or knowledge from long-term memory (crystallized intelligence).

Another way to measure the involvement of WMC in any behavior that specifically focusses on the part of WMC that controls attention, is to put load on working memory such that it cannot be used to execute other tasks (Baddeley, 2003). Because WMC is limited, once it is 'full', it is occupied and cannot be used to cognitively elaborate on other issues. In our studies, we therefore use both visual WMC measures as well as attentional load manipulations to study the involvement of elaborative processing in the quantity and quality of voice. We thus investigate WMC's involvement in voice both in terms of individual differences in evolutionary basic, visual WMC, and in terms of causality. As argued above, we expect that with regard to the quantity of voice, there is no elaborate cognitive processing involved, and we therefore propose the following hypothesis:

H1 - WMC is unrelated to voice quantity.

In contrast to voice quantity, we propose that the role of WMC is more important for the quality of the voiced message. Voicing with the intention to improve does not necessarily mean that the communicated message is original and useful, that is, of high quality. In support of a link between elaborate cognitive processing and idea development, experimental research has shown that elaborate processing is important for the generation of original ideas and the execution of original musical improvisation. De Dreu and colleagues (2012) showed that WMC facilitates idea generation because it allows for a persistent and perseverant focus of attention on the creative task. People high on WMC are able to stay focused on the generation process for longer periods of time and generate original ideas because they consider more possible alternatives within contextual categories. Similarly, Benedek and colleagues (2014) found effects of both WM storage capacity and WM distractor interference on creative performance, indicating that idea generation is fostered by the ability to filter out distracting information and the amount of items one can retain in working memory. If thus, elaborate processing facilitates the generation of original ideas, it may also be important for the evaluation, selection, and communication of high quality ideas, problems, and opinions. Being able to assess whether a message contains novel information presumably requires understanding of the status quo and a

thorough thought process to check whether indeed, the idea, problem, or opinion is not a mere repetition of issues that were previously raised by others.

In addition to fostering the generation and communication of original ideas, we propose that cognitive processing is likely to help people select and communicate those ideas that matter in their specific context (usefulness). Sawyer (2008) describes the importance of understanding and mastering 'the context' in order for group improvisation to lead to innovations, instead of mere chaos. According to Sawyer, the innovation process is about selecting those ideas with potential, and making incremental changes in multiple rounds of improvisations. This incremental, implementation focused, usefulness element is important for voice because voice is social and needs to help the organization, as opposed to disrupting organizational functioning. Selection and communication of ideas, problems, and opinions that are not only original, novel, and challenging, but also useful, valuable, and implementable, requires understanding and shaping of the content. This makes the ability to keep a large quantity and variety of information active in the mind (WM storage capacity) important. Furthermore, as voice is social, the ability to filter out distracting environmental noise (WM distractor interference) while thinking about what to say and how to say it might be needed for selecting the best idea for communication.

The arguments above suggest that WMC is relevant to voice quality because the generation, selection, and communication of messages that are both novel and useful requires elaborate cognitive processing. We thus hypothesize that:

H2 - WMC is positively related to voice quality.

Study 1 tests our hypotheses by investigating individual differences in WMC whereas in Study 2, we manipulated WMC through distracting people during the selection of voice-messages.

Study 1

Method

Design and Sample

This between-subjects lab study tested whether individual differences in cognitive resources (visual WMC) predict whether people voice (voice quantity, *H1*), and whether the content of people's voice is useful and takes new information into account (voice quality, *H2*). Participants were 72 businesses students (57,7% male, 42,3% female) in all years of enrollment with an average age of 21.07 (*SD* = .21, *range* = 18-26) and a part-time job of 11.84 hours a week

on average (*SD* = 7.39). They were tested for visual WMC and worked in a dyad on a fictional business case together with a team-leader. Participants had the chance, but were not required or requested to voice opinions and suggestions (voice quantity) to solve the case. The quality of the solution reached served as a measure of voice quality.

Procedure, Tasks, and Measures

Independent variable WMC. The independent variable WMC was assessed by means of a delayed serial recognition task (see e.g., De Dreu et al., 2012; Rossion & Pourtois, 2004; Sligte, Vandenbroucke, Scholte & Lamme, 2010). Participants performed a series of 96 trials. On each trial, participants were presented with eight (8) pictures, appearing sequentially in the center of a laptop screen. Each stimulus remained on screen for 250 milliseconds (ms), extending the complete trial over a period of 2000 ms. After a series of eight stimuli, the screen went blank for 1000 ms during which participants had to keep all information in memory. Capacity of working memory was computed with the K formula: K = (% correct – chance)* *n* stimuli (1/0.875), resulting in an estimation of the maximum number of items individuals can retain in the working memory (Cowan, 2001). The amount of items participants could retain in working memory ranged from 4.8 to 7.3 (*M* = 6.46, *SD* = .50).

Dependent variables voice quality and quantity. Following this test, participants were introduced to their team-leader with whom they performed a filler task to get acquainted. Leaders were confederates and specifically instructed and trained for the study (namely a male and a female faculty employee who were blind to the study's hypotheses and not involved as authors). Gender of the leaders was counterbalanced between groups. To measure voice, we provided the team (participant and leader) with an information sharing task adapted from Stasser and Titus (1985). This task is specifically useful to measure voice and initiative behaviors in the social environment, because team-members need to voice in order to get to the best solution. We specifically created a leader-follower situation because we wanted any voice from participants to be upward, discretionary, risky, challenging and extra-role: the responsibility for the task-execution was completely in the hands of the leader, and leaders had the power to distribute payment at the end of the experiment (or so we told the participants). Participants had the chance to voice, but were never specifically requested for their opinion or help during the task.

The team-leaders task was to find the best new dean for the faculty. There were three candidates (A, B, and C) who all had different properties, which were selected via a pre-test of 283 students on favorable and unfavorable dean-attributes. The candidate profiles were

composed in such a way that based on all available information, C would be the best candidate for the job, and A and B would both be unfavorable. However, the information that was provided to the individual team-members was (as it often is in practical situations of decision making), not identical. Based on only the *leaders'* information, B would be the best option, and based on the *participants'* information, A would be best. The team thus needed to share and integrate all information to get to the optimal decision, C (high quality).

After carefully reading all information on the sheet, the leader said: 'based on my information here, it is quite obvious that we should go for option B. Here is my information, confirming my decision'. If, at that point, the participant had proactively tried to find the best candidate for the job, s/he would have found out that from his/her perspective, A was the best choice. If the participant noticed this and wanted to mention it, s/he needed to challenge the leader and voice another option. The participant could now choose *(1)* not to voice and comply with the leader, or *(2)* oppose the leader and suggest another option (voice). Whether participants voiced or not, was our measure of *voice quantity*. *Voice quality* was assessed by the relative quality of the option participants voiced. As explained previously, the participant could either choose the less optimal option A, thus staying with his or her previous preference, or derive a new perspective from the leaders' information and voice option C, the best option from the combined viewpoints. The outcome difference between these suggestions, is assumed to be the result of the evaluation and selection process for the voice message that integrates novel information, and is most valuable to the organization (or in this case the team). Voice quality was thus measured as a dichotomous variable with low (option A) and high (option C) quality.

Results

Our data thus consisted of two groups: participants who voiced, and participants who did not voice. Because we hypothesized that WMC is unrelated to voice quantity *(H1)*, we expected no WMC differences between participants who voiced and who did not voice. Indeed, we found no WMC difference between these groups, $F(71) = .83$, $p = .367$, $\eta^2 = .012$. Within the group who voiced, there were participants who voiced low and high quality. Because we hypothesized a positive relationship between WMC and voice quality *(H2)*, we expected that WMC would be highest in the group who voiced high quality. As predicted, WMC was higher in the group who voiced high quality ($N = 22$, $M = 6.66$, $se = .10$, $CI_{95} = [6.46, 6.85]$) than in the group who voiced low quality ($N = 27$, $M = 6.37$, $se = .09$, $CI_{95} = [6.18, 6.56]$), $F(49) = 4.92$, $p = .031$, $\eta^2 = .095$. To

visualize these effects, we split the sample into a Low- and High WMC group (using the median). The Low WMC group did not voice more than the High WMC group (Figure 1, $\chi^2 = .58$, $p = .448$), whereas the High WMC group voiced more high than low quality solutions, and Low WMC group voiced more low than high quality solutions (Figure 2, $\chi^2 = 6.20$, $p = .01$). This supports the idea that WMC is related to voice quality *(H2)*, but not to voice quantity *(H1)*.

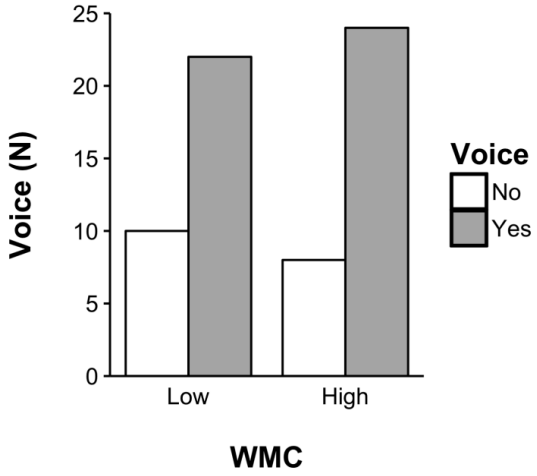


Figure 1. Voice Quantity (*N* participants who voiced / did not voice) by WMC.

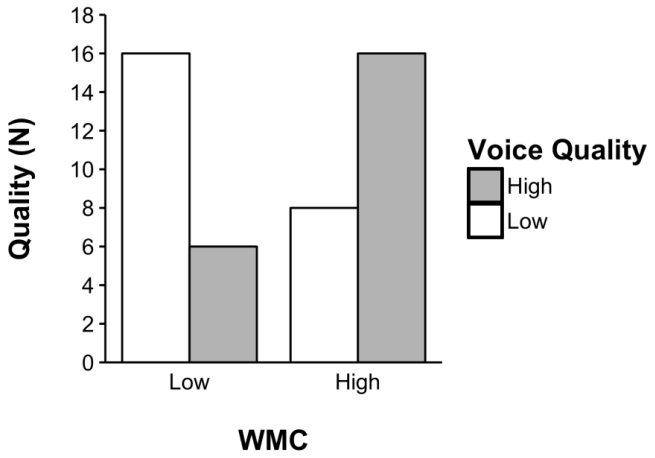


Figure 2. Voice Quality (*N* participants who voiced High/Low Quality) by WMC.

Study 2

Method

Design and Sample

In order to show that our findings are not limited to between-person differences, but that they are similar within-persons when elaborate cognitive processing is either possible or limited, we designed another experiment using a within-participant design. One of the ways to study causal effects of WMC, is to put load on working memory. Taxing working memory by another activity (such as, for example, counting backwards), reduces its capacity to be used by another activity (for example, voice). We thus designed two within- person conditions in this experiment, one with, and one without distraction of working memory. All participants got the opportunity to voice in both conditions. Further, to assess voice quality, after the experiment, all voice was rated by three raters in terms of whether or not voice provided novel solutions or useful implementations superior to the status quo.

Participants were 77 (we aimed for 80, but lost 2 participants due to incomplete data, and 1 because average idea generation was more than 2.5 *SD* below the mean[2]) primarily business (55%) and psychology (36%) students (67% female, Age $M = 21.20$, $SD = 3.08$) who participated in exchange for money. They were welcomed by the experiment leader and seated behind a computer. The experimenter explained that payment depended on task performance and that performance would be monitored and evaluated at distinct moments in the experiment.

Procedure, Manipulations, Tasks, and Measures

Participants could engage in two types of payment dependent behaviors. Their primary job was the working memory load task (counting backwards), always resulting in a €2,50 salary if performed correctly. Secondary to this task, there were (extra-role) opportunities to voice, which could result in €1,- bonus (for high quality) or €1,- loss (for low quality) for every voiced suggestion, problem, or opinion depending on the leaders evaluation of voice quality. The experiment started with an exercise of the working memory-load task (counting backwards from 100, in steps of 2) followed by performance feedback. We explained that this task would be

[2] Removing this participant did not affect our results.

repeated several times during the experiment, and that this would always be their primary task with a standard reward of €2,50.

Idea Generation Phase. Our main aim was to find out whether WMC is only important in the idea generation phase (creativity, as previously found by De Dreu et. al, 2012), or also important in the 'selection for communication' phase of voice. To make sure participants would have a pool of messages to choose from, they first anonymously generated 10 problems, opinions, or suggestions for improvement of their faculty (adopted from De Dreu, Baas, & Nijstad, 2008) in a period of 10 minutes (for the remainder of the text, we call these: ideas). We told them explicitly that these ideas would not be evaluated or used for analysis, but that this was just an anonymous practice round. We needed 10 ideas to be able to fill both conditions (No WMC Load – High WMC Load) with 5 of the participants' own ideas to potentially voice. During generation, the experimenter digitally classified the ideas (low/high quality). The computer used these classifications for random-weighted message distribution across the WMC Load conditions so both conditions contained an equal amount of high and low quality messages.

Practice phase with simultaneous load manipulation. The generation phase was followed by two combined load and selection practice tasks. We designed two tasks (one simple, one more complex) in which participants needed to select items from a pool of 10 words (the 3 largest animals) or 10 sentences (5 true statements about animals) while they performed a working memory load task (counting backwards). The purpose of these tasks was to familiarize participants with the combination of counting while selecting messages for voice, limiting possibilities for technical confusion during the real opportunity for voice.

Communication (voice) phase and simultaneous load manipulation. Following the practice phase, participants got the instructions that they would get to see a random selection of their own ideas, as well as a random selection of other peoples' ideas. We added 5 ideas from a database of relevant ideas to each Load condition because voice takes place in a social context. In the social environment, the evaluation of the quality of one's own ideas also depends on the evaluation of the ideas of others. These other-ideas were kept constant between participants: each Load condition contained the full quality (low – high) range of ideas as coded by two independent judges. During the 'window for voice', participants thus saw 10 messages from which they could select those ideas they found 'worthy' to voice: 5 of their own, and 5 generated by others.

We told them that they would get the opportunity to voice any idea to the experiment-leader, who would evaluate it and pay them accordingly. Voice (as opposed to the generation phase) was thus no longer anonymous and moreover, financially risky: voicing a good idea would result in a €1,- gain, voicing a bad idea in a €1,- loss. Participants were not pushed to voice any ideas, because their primary and most profitable task was to count backwards, either from 80 in steps of 2 (High Load) or from 100 in steps of 0, thus repeating the same number vocally (No Load). Participants performed two trials with 10 messages each and a random order of High vs. No Load. Thus, participants had the opportunity to voice their previously generated ideas, *while* performing a WMC-load task. This is a very important distinction from what is usually done in creativity research which is focused on idea generation. This task is particularly geared at finding out what happens *after* idea generation, thus during the evaluation, selection and communication of ideas. Voicing ideas was done digitally, by selecting and sending the message to the experimenter, who would evaluate the idea and calculate payment accordingly.

Dependent variables voice quality and quantity. *Voice quantity* was measured by counting the number of voiced ideas in each Load condition. Specifically, we counted how many suggestions, problems, or opinions participants sent to the experimenter (quantity) to be evaluated. Across conditions, participants voiced 2.87 ideas on average (*range* = 0 - 10, *SD* = 2.29). Further, whereas Study 1 measured voice quality as an objective operationalization of value and insight, we now used expert ratings of voice quality. After the experiment, all ideas from the generation phase were evaluated by three independent judges, who rated whether the ideas provided novel solutions or useful implementations superior to the status quo, on a scale from 0 (not at all) to 6 (highly) (adopted from De Dreu, Nijstad, & Baas, 2011). Inter-rater reliability was reasonable for the generated quality (*ICC =.659*). Voice quality was the average quality of those ideas that were voiced by the participants, which was higher (M_{voiced} = 3.06, se = .036, ${}_{within}CI_{95}$ = [2.99,3.13]) than generated quality ($M_{\text{generated}}$ = 2.86, se = .036, ${}_{within}CI_{95}$ = [2.78,2.93]), F (1,64) = 7.76, p = .007, η^2 = .108, Greenhouse-Geisser corrected. Within-participant confidence intervals were calculated using the method developed by Loftus and Masson (1994), as revised by Cousineau (2005). The same method will be used to report all within subjects 95% confidence intervals throughout the rest of the paper.

Results

We ran all main analyses using 2-level (No-Load vs. High-Load) repeated measures ANCOVA's, controlling for the order of the load tasks (No-Load or High-Load first). Furthermore, as both parts of voice are intertwined (voice quality cannot be evaluated without voice quantity), we

controlled for voice quality which we entered as a standardized[3] continuous covariate when testing for load effects on voice quantity *(H1)*. Similarly, we controlled for voice quantity, entered as a continuous covariate, when testing for load effects on voice quality *(H2)*. Both voice quality and voice quantity were thus entered as continuous covariates. We expected that load would not influence voice quantity, and thus that average voice quantity would be the same across the Load conditions. Indeed, we found little difference in voice quantity between the Load conditions. In the No Load condition, participants voiced slightly more (M_{No} = 1.54, *se* = .082, $_{within}CI_{95}$ = [1.38, 1.71]) than in the High Load condition (M_{High} = 1.34, *se* = .082, $_{within}CI_{95}$ = [1.18, 1.51]), but this effect was not significant[4], F (1,61) = .270, p = .61, η^2 = .004, Greenhouse-Geisser corrected. To increase power[5], we repeated the analysis using average generated quality (instead of average voice quality) as a covariate. This did not change the outcome of the results, (M_{No} = 1.53, *se* = .069, $_{within}CI_{95}$ = [1.39, 1.67]), (M_{High} = 1.36, *se* = .069, $_{within}CI_{95}$ = [1.22, 1.50]), F (1,72) = .61, p = .438, η^2 = .008, Greenhouse-Geisser corrected. Similar to Study 1, this suggests that the involvement WMC in deciding whether to voice and how often to voice, is limited.

In contrast, we did expect that load would influence voice quality, and thus anticipated a difference in voice quality between Load conditions. We expected higher quality of voiced ideas in the No Load condition compared to the High Load condition, because load on working memory should impair elaborate processing and should thus impair effective selection of high quality ideas. As expected, we found the predicted load effect on voice quality, but only when controlling for voice quantity. Participants voiced lower quality when under High Load (M_{High} = 3.03, *se* = .054, $_{within}CI_{95}$ = [2.92, 3.14]), compared to when under No Load (M_{No} = 3.19, *se* = .054, $_{within}CI_{95}$ = [3.08, 3.30]), F (1,41) = 8.87, p = .005, η^2 = .178, Greenhouse-Geisser corrected. Similar to Study 1, this suggests that WMC is important for deciding *what* to voice. However, the fact that the main effect was only significant when controlling for quantity, suggested that there might be an interaction effect.

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[3] Any covariate used in these analyses was Z-standardized because unstandardized covariates can severely change main effects, especially in repeated measures ANOVA's (e.g., Thomas et al., 2009).

[4] Please note that since some participants never voiced, we could not compute their voice quality, which is modeled as a covariate. This influences the degrees of freedom.

[5] We repeated the same procedure with the average quality scores from the generation phase as a covariate. In this analysis, all participants are taken into account, increasing power to detect a Load effect on voice quantity.

Interestingly, we found a significant interaction[6] between load and overall voice quantity on voice quality, F (1,41) = 6.88, p = .012, η^2 = .144, Greenhouse-Geisser corrected. To shed light on the direction of this effect, we split (based on the median: 3) our sample into participants who voiced little (3 times or less, N = 21) and participants who voiced a lot (4 times or more, N = 24). We observed that there was no effect of load ($M\llcorner_{NO\text{-}High}$ = .09) in the group who voiced a lot, F (1,23) = .52, p = .480, η^2 = .022. Frequent voicers showed equal voice quality under High Load (M_{High} = 3.16, se = .075, ${}_{within}CI_{95}$ = [3.00, 3.31]) and No Load (M_{No} = 3.06, se = .075, ${}_{within}CI_{95}$ = [2.91, 3.21]). In contrast, participants who voiced little showed impaired voice quality due to load ($M\llcorner_{NO\text{-}High}$ = .44), F (1,20) = 6.05, p = .023, η^2 = .232. For infrequent voicers, voice quality was significantly lower in the High Load condition (M_{High} = 2.89, se = .080, ${}_{within}CI_{95}$ = [2.73, 3.05]) than in the No Load condition (M_{No} = 3.33, se = .080, ${}_{within}CI_{95}$ = [3.17, 3.49]). It thus appears that WMC is particularly important for voice quality of those who voice little (Fig. 3).

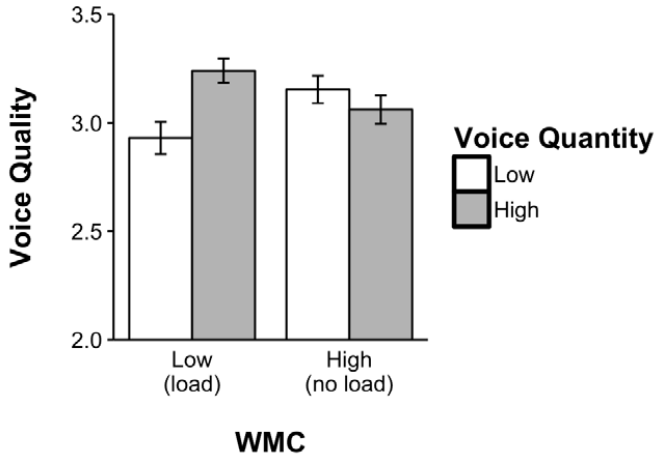


Figure 3. Within Participant (Study 2) Interaction load * voice quantity on voice quality.

The results of this within-participant experiment support the idea that WMC is uninvolved in voice quantity *(H1)*, but is involved in voice quality *(H2)*. The findings suggest that WMC is not only related to voice quality because it fosters idea generation (as found in previous research), but also because WMC helps individuals to select the best ideas, solutions, problems, and opinions to voice. The interaction effect between voice quantity and working memory load suggests that there might be differences in the involvement of WMC between people who voice

[6] Because we used voice quantity as a continuous covariate, the interaction is based on continuous data, not on a sample split, we merely divided the sample for interpretation and visualization purposes.

A2

often and people who voice little. Presumably, people who voice often, do so more automatically and frequently in general. They might be more familiarized with cognitively evaluating and selecting ideas due to practice and therefore need less WMC to do so. In contrast, people who do not voice often, are not experienced at the evaluation and selection process, and therefore need more space in working memory to do so. In the third study, we set out to replicate our findings in a field setting and to test the idea that the role of WMC differs for those who voice often and those who voice rarely.

Study 3

Our next step in investigating (WMC) differences between voice quantity and quality, was to test our hypotheses in a field setting. The first challenge was to create a survey measure that would clearly distinguish between voice quantity and quality. While voice quantity and quality are likely related in organizations, we argued previously that someone who voices often does not necessarily always voice the best ideas or opinions. Although scholars do assume that voice has qualitative and innovative properties (e.g., Van Dyne and Le Pine, 1998; Van Dyne, Ang and Botero, 2003), voice measures typically do not incorporate these properties[7]. Voice measures such as the often used one developed by Van Dyne and Le Pine (1998), thus seem to tap more into the frequency of voice, than its quality. We tested this assumption in a pilot study among 53 employees and their supervisors, by comparing the voice measure by Van Dyne and LePine (1998) to several newly developed voice quantity and quality items. We found that the traditional voice scale was only significantly related to voice quantity but not to voice quality (please see the Supplementary Materials for a full report on this pilot study).

Since our pilot study showed that the traditional voice measure was indeed unrelated to items tapping voice quality (but related to items focusing on voice quantity), our next step was to develop these new measures further in order to be able to clearly differentiate between voice quality and quantity in the field. We propose that this distinction is relevant because these two components are (in part) driven by different antecedents, and in particular show differential relationships with WMC. We also explored the relationships of voice quality and quantity with other proactivity constructs, such as proactive personality (Bateman & Crant, 1993), personal

[7] i.e., 'This particular co-worker develops and makes recommendations concerning issues that affect this work group' (Van Dyne & Le Pine 1998: 112).

initiative (Frese et al., 1996) and taking charge (Morrison & Phelps, 1999), and more generally performance. The results of this multi-source pilot field study are shown in the appendix (Table A4) which presents the nomological network of voice quality and quantity. In summary, the results indicate that voice quality is more strongly related to performance (rated by managers), personal initiative (rated by colleagues), and taking charge (rated by managers) than voice quantity. Further, our Studies 1 and 2 already confirmed the relevance of this distinction for more objective measures of voice quantity and quality specifically concerning WMC. The first goal of our field study (Study 3) was therefore to replicate those findings in organizations with our further developed voice quantity and quality scales using evaluations of supervisors and coworkers.

Our second goal was to investigate whether the reliance on WMC and thus the involvement of cognitive processing in voice quality, might differ between people. Our previous study (Study 2) showed that infrequent voicers were more dependent on WMC to reach high quality voice than those who voiced a lot. There could thus be a difference in the way people cognitively approach the act of speaking up. Some people may think elaborately before they voice, organizing thoughts beforehand, only to speak up after elaboration with the best comments. Others may be more prone to speak while they think, improvising on the way. Presumably, people get better at selecting and communicating good ideas as they practice. If practice indeed decreases the involvement of WMC in voice quality, we should be able to find similar effects in real organizations comparing people who typically voice frequently to those who do not.

To support the idea that practice may decrease WMC involvement in high quality voice, we draw on examples from literature on creativity in musical improvisation. De Dreu and colleagues (2012, Study 3) showed that WMC is beneficial to creativity of improvisational musical performance of undergraduates in classical music performance who were not trained at improvisation. In contrast, Beaty, Smeekens, Silvia, Hodges, and Kane (2013) found that in a sample of jazz undergraduates who *were* skilled at improvisation (jazz musicians practice improvisation, classical musicians do not), WMC was not related to creativity of the improvisational performance. This indicates that WMC might serve to overcome a lack of experience in improvising, by increasing creative quality of the improvisation through cognitive elaboration. In the same study, Beaty et al. (2013) found a strong effect between WMC and an idea generation task, something that the jazz musicians where presumably less trained at; this confirms the idea that practice reduces the role of WMC in creative performance.

There is more musical evidence to support this line of thinking. Bengtsson, Csíkszentmihályi and Ullén (2014) showed that the right dorsolateral prefrontal cortex, which has been linked to working memory processes in earlier research (Crone, Wendelken, Donohue, van Leijenhorst, & Bunge, 2006; Curtis & D'Esposito, 2003; Jolles, Kleibeuker, Rombouts, & Crone, 2011), was activated during improvisations of professional concert pianists. Again, these classically educated pianists are highly skilled in musical performance, but not at improvisation. Limb and Braun (2008) find the opposite pattern for jazz-experts (who are experienced in improvising). They showed decreased activity in brain-areas that are associated with consciously monitoring goal-directed behaviors. Extensive training in a creative domain thus seems to be associated with different patterns of brain activation (Sawyer, 2011). In sum, creating novel musical patterns may either be achieved through persistent cognitive elaboration (supported by WMC), or by more relaxed flexible and intuitive cognitive processing (supported by improvisational practice). We propose that these findings generalize also to other behaviors, and voicing works in a similar vein: those who voice often learn to improvise, whereas those who voice rarely need to think before they speak up. Both can reach high quality, but through different cognitive pathways.

There are three factors that seem important when considering how we cognitively prepare to voice in the workplace: feedback, task-novelty, and time-on task. Time-on task is important because of the distractor interference function of WMC. Unexperienced high WMC musicians only became more creative over time, presumably because they were better able to focus their attention on the creative task (De Dreu et al., 2012). Similarly, employees who do not voice often might thus think about voice and how others might react to it longer and more elaborately before they share their thoughts. This could lead to an advantage for high WMC employees because they are better able to control attention and thus elaborate on the content of voice without being distracted by other environmental demands. Frequent voicers might be better able to anticipate reactions of others due to previous experience, and may therefore act more intuitively during conversations, making the advantages of WMC less important.

Task-novelty is important because of the storage capacity function of WMC. People who voice often may not need the same degree of WMC to form complex connections between concepts, because these already exist in long term memory and automatized patterns. Because they have experience with voice (and thus thinking about what to say), they can chunk more information, making it easier to keep track of previously mentioned information, maintaining quality over time. People who voice little however, cannot rely on long term memory because to

them, message evaluation and selection is novel, and thus their storage capacity determines whether or not they are able to voice high quality. The last way to learn what is novel and valued, is by receiving formal or informal feedback. Voicing often might help people efficiently organize and store information that is novel, relevant, and appreciated in a given context because voice evokes reactions from others. By voicing more often, employees are exposed to these reactions, which teaches them what quality is in their organizational context. Feedback may also help to apply previously voiced ideas to other subject areas, which, in turn, decreases dependency on WMC to organize novel information.

Thus, people who typically voice often may be less reliant on their cognitive resources to reach high quality voice as they may have learned how to voice well and usefully in a given context. Those who do not voice often or who have little experience in a given context need to organize all information in their mind before they speak up to be able to come up with a good comment, and they need WMC to do that. This implies that in practice, there may be two routes to voice quality: A cognitive elaboration route facilitated by WMC, and an intuitive improvisation route that is paved by voice experience (and independent of WMC). We thus hypothesize:

H3 - Voice quantity moderates the positive relationship between WMC and voice quality such that the relationship between WMC and voice quality is strongest if employees voice rarely.

Method

Design and Sample

Participants were 158 employees ranging in age between 16 and 61 (M = 33.57, SD = 12.33) and their 79 supervisors who were 41.92 old on average (*range* = 20 – 65, SD = 11.81). The participants worked in a variety of organizations such as SMES (39.7%), consultancy (17.8%), retail (15.8%), governmental institutions (4.8%), non-profit (6.8%), education (6.8), healthcare (8.2%). Gender was equally distributed in the employee sample (50/50), the majority of supervisors were male (62/38). Average employee tenure was 6.7 years (SD = 8.62), for supervisors, it was a little longer (M = 11.2, SD =10.5).

Procedure, Tasks, Measures

We collected data from 158 employees in 79 teams of unique matched triads (two employees and their supervisor). Each employee was tested for visual WMC, after which they

completed a questionnaire to rate one of their colleagues' voice quantity and quality (and the colleague did the same about the focal employee). The team-supervisor (N = 79) rated both employees on voice quantity and quality. All tests and questionnaires were administered with a researcher present. Researchers made an appointment with each team, personally explained and distributed all measures, and left after all data were collected.

Independent variable WMC. Participants first took a visual WMC test (in Presentation version 17.3) which was a combination of change localization and storage tasks (adopted from Luck & Vogel, 1997; Conway et al., 2002). There were three different basic tasks: change localization, serial spatial memory, and simultaneous spatial memory. All basic tasks were executed with pure storage attributes as well as distractor interference resulting in 8 different types of trials. In all trial-types, participants had to store objects (circles and rectangles) in their working memory (remember them). During this target phase, objects were displayed for 250 ms in a 5x5 grid.[8] After a 500 ms delay (objects disappeared), participants either had to recall the location of all circles or localize one rectangle that changed (see Fig. 4. for an example). The test started easy (1 object), adding objects gradually over trials, and only ended when the individual capacity limit within all trial-types was reached. The test was reliable (a =.73). WMC was calculated using the same K –formula presented in Study 1 (Cowan, 2001).

Dependent variables voice quality and quantity. Colleagues and supervisors rated focal employee voice quantity (15 items) and quality (15 items) with a questionnaire (see appendix Tables A4a and A4b for details of the development of the scales). To control whether raters understood the behavior we intended to measure was *a)* discretionary, proactive, and constructive and *b)* distinct in the sense that quantity does not imply quality and vice versa, we first explained this followed by control questions. Voice quality was meant to reflect novelty and usefulness of voiced information (suggestions, problems, and opinions). Voice quantity was reflected in the frequency of voiced information (suggestions, problems, and opinions). One voice quantity item was deleted due to poor factor loadings. Cronbach's' alphas were high for colleague ($\alpha_{quality}$ = .93, $\alpha_{quantity}$ = .89) and supervisor ratings ($\alpha_{quality}$ = .96, $\alpha_{quantity}$ = .91).

[8] The location of all objects should be remembered during a delay period of 500 ms after which they disappeared. Objects were green (targets) and yellow (distractors) rectangles (120x40 pixels, 0.89 visual degree) and circles (diameter 120 pixels, 2.68 visual degree) that were presented at a distance of 57 cm on a Dell laptop screen (vertical length = 17.2 cm, 1366 x 768 resolution, one visual degree = 44.65 pixels).

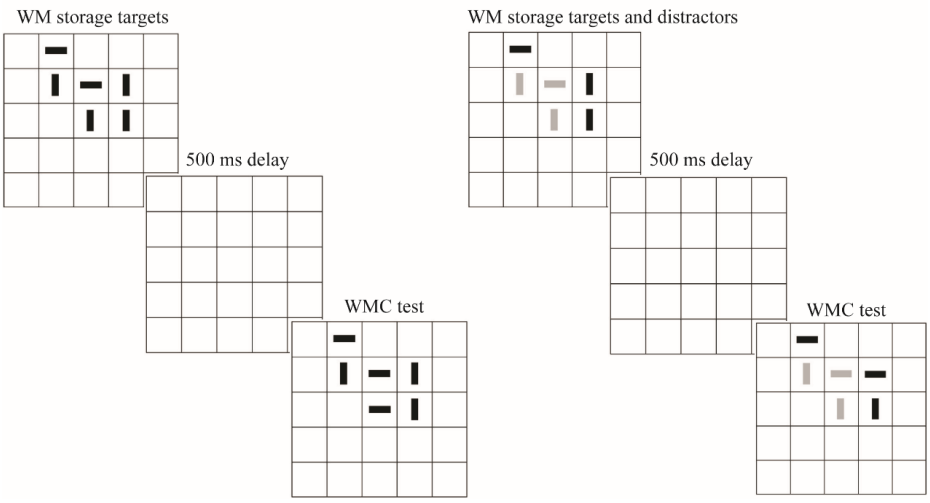


Figure 4. Change localization without and with distractors: one rectangle changed directions.

Measurement model. Our first aim was to replicate our pilot-study findings (Appendix table A1) that voice quality and quantity are separate constructs. If voice quality and quantity are indeed distinct, a 4-factor (2 sources x 2 types) measurement model should fit the data better than a 2-factor (2 sources) model which represents voice as one construct. We tested this with a CFA in Mplus. As expected, the 4-factor model with a separation of quantity and quality provided a good fit (χ^2 = 167.07, *df* = 101, *N*=144, $p < .001$, CFI = .97, TLI .96, RMSEA =.07, 90% CI [.05 , .08], AIC = 4055, BIC = 4206). We compared this model to a 2 factor-model, with quantity and quality as one factor, and the source (colleague vs. supervisor) as separate factors, which showed a significantly poorer fit ($\Delta\chi^2$ = 397.53, *df* =2 , $p < .001$), (χ^2 = 564.60, *df* = 103, *N*=144, $p < .001$, CFI = .78, TLI = .74, RMSEA = .18, 90% CI [.16 , .19] , AIC = 4448, BIC = 4594). This again suggests that voice quality and quantity are distinct constructs, not only when rated by supervisors, but also by colleagues. More details such as such as factor loadings (range .74 – .95) and items, as well as the in depth analyses can be found in the supplementary materials.

Results

In the previous studies, we showed that WMC predicts the quality of voice *(H2)*, but not the quantity of voice *(H1)*. Although our hypotheses are at the individual level, our study has a two-level data structure, with employees nested in 3-person teams with one supervisor. Employees rated each other, whereas supervisors rated both employees. To take between-group and within-group variance into account when using combined ratings of colleagues and supervisors, we applied multilevel structural equation modeling (MPlus) to control for team-level variance. Since our measurement model indicated that colleague and supervisor ratings are distinct factors and the literature implies the same, we first tested our hypotheses in separate multiple regressions. However, we expected to find the same pattern of results in voice towards colleagues and supervisors.

The regression analysis of our first model (colleague ratings) showed no significant effect of WMC on the quantity of voice ($\beta_{controlled\ for\ quality}$ = .02, p = .832, se = .07, $\beta_{simple\ effect}$ = .10, p = .225, se = .08) whereas the effect of WMC on voice quality was positive ($\beta_{controlled\ for\ quantity}$ = .14, p = .04, se = .07, $\beta_{simple\ effect}$ = .18, p = .016, se = .08). Employees with high WMC thus voiced better suggestions, opinions, and problems to their colleagues than employees with low WMC *(H2)*. However, they did not voice more often *(H1)*. As expected, we found the same pattern of results for supervisor ratings. Employee WMC did not significantly predict voice quantity ($\beta_{controlled\ for\ quality}$ = -.03, p = .622, se = .05, $\beta_{simple\ effect}$ = .12, p = .095, se = .07), but did positively predict voice quality towards supervisors ($\beta_{controlled\ for\ quantity}$ = .13, p = .033, se = .06, $\beta_{simple\ effect}$ = .21, p = .011, se = .08). Results for the combined sources are depicted in Figure 6 and show the same pattern: WMC is unrelated to voice quantity ($\beta_{controlled\ for\ quality}$ = -.04, p = .418, se = .05) and positively related to voice quality ($\beta_{controlled\ for\ quantity}$ = .15, p = .005, se = .05). The capacity of working memory thus seems to be important for generation, selection, and communication of high quality voice, regardless of the voice target.

We hypothesized that due to practice, people who typically voice often rely less on WMC than people who tend to voice rarely *(H3)*. Consequently, we expected negative interactions between voice quantity and WMC when predicting voice quality: WMC should have the strongest positive effect on voice quality when voice quantity is low. We first tested this assumption concerning all ratings of voice (supervisor and colleague ratings combined) in MPlus using a robust maximum likelihood estimator. We started with the total model (both sources), and continued with robustness tests with any possible combination of sources in the model. If practice indeed increases automaticity of voice and in turn decreases the influence of cognitive resources

(WMC), this pattern should exist in every model, regardless of the source rating quantity and quality. As expected, we found a negative interaction[9] effect (β = -.17, p = .003, se =.06). Simple slope analysis (based on a split through the mean) showed that the relationship between WMC and voice quality was positive in the group who voices little ($Low_{Quantity}$: β = .40, t = 3.33, p = .001) and non-significant in the group who voices often ($High_{Quantity}$: β = .15, t = 1.30, p = .199). This interaction (see Fig. 5) is in line with our findings in Study 2 (Fig. 3), that WMC load affected voice quality only for participants who voiced little. Next, we proceeded with the same analyses for every possible combination of sources. We consistently found the same pattern of results in all models, which can be seen in Table 1, all descriptives and zero-correlations can be found in Table 2.

A2

To summarize all results of Study 3, in Figure 6, we provide a visual overview of all direct and interaction effects in the model (aggregating both sources into the moderating variable voice quantity and the dependent voice quality). This model shows that WMC predicts voice quality (*H2*), but not voice quantity (*H1*), and that quantity of voice (which is positively related to quality), moderates the relationship between WMC and voice quality *(H3)*.

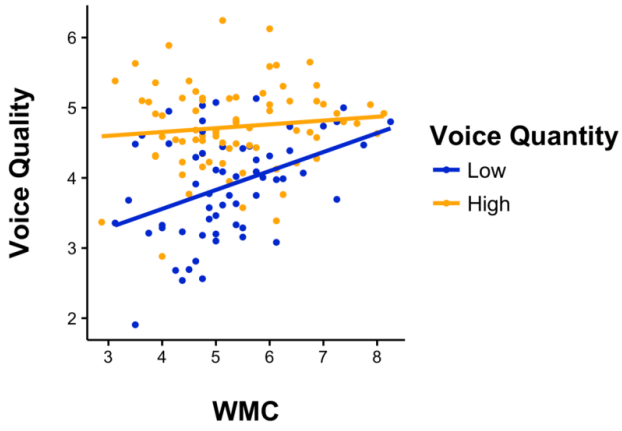


Figure 5. Interaction WMC * Voice Quantity on Voice Quality.

[9] Since experience in the company might be a confounding variable here, we also ran the interaction controlling for tenure. This did not change the results.

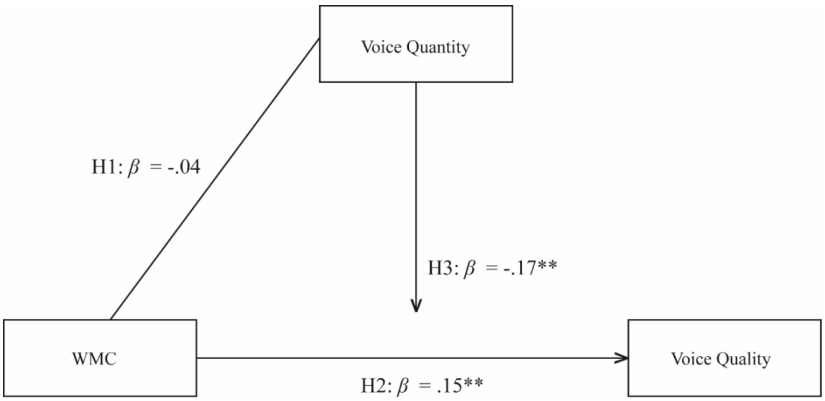


Figure 6. Model summary of all hypothesized effects.

TABLE 1

Model Summaries for all Interaction Models with Dependent Variable Voice Quality

DV Voice Quality	Independents	*β*	*se*	*p*
	Voice Quantity Total	.65**	.06	.000
Total	WMC	.17**	.05	.001
	Quantity*WMC	-.17**	.06	.003
	Voice Quantity to Supervisors	.66**	.05	.000
Supervisor Ratings	WMC	.14**	.05	.008
	Quantity*WMC	-.14**	.05	.007
	Voice Quantity to Colleagues	.44**	.09	.000
Colleague Ratings	WMC	.15*	.07	.029
	Quantity*WMC	-.23**	.07	.001
	Voice Quantity to Supervisors	.33**	.09	.000
Colleagues Ratings	WMC	.17*	.07	.017
	Quantity*WMC	-.22*	.10	.040
	Voice Quantity Colleagues	.30**	.07	.000
Supervisor Ratings	WMC	.18*	.08	.018
	Quantity*WMC	-.12†	.06	.055

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

TABLE 2 Descriptives and zero order correlations between all (sub)-factors of voice quantity, quality and WMC, Cronbach's alphas on the diagonal.

					1	2	3	4	5	6	7
	Variable	Rating	*Mean*	*SD*	**WMC**	**VQT**	**VQT Col**	**VQT Sup**	**VQL**	**VQL Col**	**VQL Sup**
1	**WMC**	Test	5.26	1.18	(.73)						
2	**Voice Quantity**	Total	3.18	.55	.13	x					
3		Colleagues	3.2	.63	.10	.80**	(.90)				
4		Supervisors	3.15	.71	.12	.84**	.34**	(.91)			
5	**Voice Quality**	Total	4.35	.78	.24**	.71**	.48**	.68**	x		
6		Colleagues	4.36	.84	.18*	.52**	.48**	.38**	.76**	(.91)	
7		Supervisors	4.34	1.08	.21*	.63**	.33**	.69**	.86**	.33**	(.95)

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

General Discussion

This paper aimed to incorporate knowledge from experimental psychology, cognitive science and decision making under risk to further our understanding of the cognitive processes underlying voice behavior (speaking up with suggestions, problems, and opinions to help the organization). Some previous conceptual work emphasized that voice is a function of elaborative cognitive processes (Chiaburu, Marinova, & Van Dyne, 2008), while several empirical studies suggested that decisions not to voice are often implicit and affect-driven and might therefore be more automatic (Detert & Edmondson, 2011; Kish-Gephart et al., 2009). Here, we aimed to provide further insight in which parts of voicing are more and which parts are less driven by elaborate cognitive processing. We proposed and found that voice quality and quantity differ in that respect. As hypothesized, the results show that voice behavior in and of itself (i.e., voice quantity or frequency) does not necessarily require either the ability (WMC) or the opportunity (no load on working memory) to engage in elaborative thinking. Generating, selecting, and communicating high quality messages to voice (voice quality), however, does require the cognitive resources to think thoroughly. Studies 2 and 3 highlight that this is especially likely to be the case when the person who voices has little voice experience in a given context.

Based on the relationship between WMC and creativity (Benedek, et al 2014; De Dreu et al., 2012), we hypothesized that WMC plays a role in reaching high quality voice content through facilitating persistent, elaborate thought. The more information one can actively retain in awareness (storage capacity), and the better one's capacity to control attentional resources (distractor interference), the more elaborate and complex thinking is possible. This should increase chances to come up with new and useful ideas, problems, and opinions, but should also help to evaluate, select and communicate the best information (voice quality). Indeed, we found positive relationships between the cognitive resource WMC and objective (Study 1) and multi-source perceptual measures (Study 3) of voice quality. Further, hindering elaborate systematic thinking (through WMC-load, Study 2), impaired the selection of high-quality ideas for voice. People presumably need space in their working memory for voice, but mostly when they generate information and when they try to select high-quality messages to convey.

Further, our results showed that voice quantity (in contrast to quality) requires less cognitive resources. Voice is socially risky behavior, and previous research has shown that assessment of risk is often not rational, but rather based on affect and heuristics (Finucane, Alhakami, Slovic, & Johnson, 2000; Grossberg & Gutowski, 1987; Slovic et al., 2005). When

people decide to voice, they might just do what felt good in the past, relying on social schema's and affect and thereby leaving cognitive elaboration unnecessary to decide whether to voice or not.

Furthermore, even though voice is a proactive behavior, and proactive behavior is assumed to be discretionary and agentic, the existence of constructs like proactive personality (Bateman & Crant, 1993) and personal initiative (Frese et al., 1996) indicate that there is a trait-like, automatized component to proactivity that is relatively stable across situations. If people are consistently proactive (or un-proactive), they might not always carefully deliberate whether they want to be proactive or not. Our findings indicate that when it comes to proactive *voice* behavior, this might indeed be the case as in all three studies we found no evidence for the engagement of WMC in decisions to voice. Whether and how often people voice opinions, problems, or suggestions to colleagues or to supervisors was independent of individual differences in cognitive resources (Study 1 and 3) but also independent of within-person changes in cognitive resources (Study 2).

Our findings add to previous indications of automaticity in voice behavior which showed that silence is often not the result of carefully elaborated decisions but of fast, implicit, and affective reactions (Detert & Edmondson, 2011; Kish-Gephart et al., 2009). However, silence is not the opposite of voice (Van Dyne, Ang, & Botero, 2003): where silence means that the employee knowingly withholds information, not voicing might imply that there simply is no information to share. People high in WMC may pick up more information and therefore theoretically may have more to share, ultimately resulting in more voice. On the other hand, our first lab-study in which participants had to detect and voice information inconsistencies, showed that WMC was equal between the group who voiced and the group who did not voice. So even if high WMC increases the capacity to detect and solve problems and inconsistencies, this does not mean that this capacity is always used, and it does not increase the likelihood that people will voice. Our results thus add more nuance, indicating that not only the decision to remain silent, but also the decision to voice might be automatic rather than elaborate and cognitively complex.

The results also point at individual differences in using elaborate cognitive processing for voice behavior. It is too simplistic to state that elaborative processing is not involved when engaging in voice. For one, it plays a clear role in voice quality in all three studies. Additionally, the involvement of cognitive resources in voice does seem to differ between people who voice often and people who voice little. We argued that voicing often in a given context would result in experience with evaluation and selection of messages and with typical reactions, and that

therefore people who are consistently more proactive than others (i.e., people who voice often but presumably also people high on proactive personality and personal initiative) decrease their reliance on cognitive resources for high quality voice. Indeed, the data indicates that the involvement of WMC is strong for people who voice little, but nonexistent for people who voice often. Cognitive elaboration thus seems to play less of a role for people who voice often, and a significant role for people who voice less, especially with regard to the quality of what they voice.

If not through elaborative thinking, how do frequent voicers reach high quality? Our findings point in two directions with similar implications, *(1)* a proactive trait direction, and *(2)* a cognitive processing direction. The latter implies that there are two cognitive routes to voice quality, an elaborate one (aided by WMC) and an improvisational one – (aided by voice-experience). Perhaps a certain amount of experience and automaticity (voicing in that specific organizational context) is important to reach novel and useful voice. Practicing how to voice one's messages more effectively presumably increases the likelihood that the receiver will value future voice. Previous experiences may shape the way messages are communicated and evaluated. Those who never voice may less easily learn what type of voice is valued and what type is not. If such experience is lacking, cognitive resources become important. This means that high quality voice can be trained (independent of cognitive resources) and shaped through practice.

The other, more trait-like interpretation of our results, indicates that there are two types of people: Those who 'have to say something' and those who 'have something to say'. We started our introduction with Plato's words on this: -*"**Wise men** talk because they have something to say; **fools,** because they have to say something"* - Perhaps, people do not (only) differ in their use of working memory resources because of experience, but also because of personality. For example, introverts voice less than extraverts (Tornau & Frese, 2013), but they are not necessarily less creative (Feist, 1998). It could be that people who voice rarely only speak up when they feel sure they have something important to say, while people with high WMC have higher chances of having something novel and useful to say, resulting in the strong relationship between WMC and voice quality in this particular group. The other group just 'has to say something', meaning they will voice more automatically and regardless of their outcome expectancies because of their personality. Contradicting Plato, however, our results suggest that these people are not necessarily fools: they also get high quality ratings for voice. They reach quality either by practice over time, as described in the 'cognitive processing'-explanation), or by a 'quantity breeds quality'- principle: if one voices a lot of ideas, the chances that one message will be of high

quality increase. Our results leave both of these explanations open for debate. However, it does seem to be the case that there are dual pathways to voice quality, whether it be dual cognitive pathways, or dual personality pathways.

Regarding the influence of voice quantity on others, Parnes and Noller (1972) already pointed out that if people are exposed to a variety of challenging ideas, their individual idea generation also increases. Presumably, this also increases voice quality through vicarious learning (Manz & Sims, 1981): when people observe other people voice often, they learn what is appreciated by others, and they learn what to select and communicate for voice. Voice quantity might thus fuel innovation in groups through facilitating voice quality in individuals, but also in team-mates. Other research on the effects of dissenting opinions and suggestions by minorities in groups (De Dreu & West, 2002; Van Dyne & Saavedra, 1996) shows that team-innovation is facilitated by exposure to deviating comments of others. Voice quantity might thus not only be important for the individual who voices, but also for others who can use their messages to enhance their own generation, selection and communication process.

Strengths and Limitations, and Future Research

We tested our core assumptions about the relationship between WMC and voice quality and quantity in three different designs: a between-subjects lab design, a within-subjects experimental design, and a multi-source field study. The proposed (un)involvement of WMC in quantity and quality of voice was found and replicated in all three studies. Study design[10] only allowed us to test (and confirm) the negative interaction between WMC and voice quantity in Studies 2 and 3. It would be interesting to replicate and extend this using multiple indicators of experience and personality. Investigating differences in WMC involvement during voice for employees whose core task involves innovation and from other (non-innovation trained) departments, between teams who had proactivity training or not (Scott, Leritz, & Mumford, 2004), between individuals from teams with differing climates for voice (Morrison et al., 2011), or people high and low in personal initiative, would increase in-depth insight into this interaction.

One point of note, is that the correlation between supervisor-ratings of voice quantity and quality was rather high (higher than for colleague ratings). This could indicate that

[10] Study 1 was designed to study only the decision process (do people voice, or not) of one voice action, as such, we could not compare quality between the group who voiced and did not voice (there was no quality in this group).

supervisors are less able or inclined to separate the two. However, it could also imply that if employees choose to voice they may be more selective in what they voice to supervisors compared to what they voice towards colleagues. First, if the employee feels that s/he has something valuable or useful to say, the likelihood of voice to a supervisor presumably increases. Second, if voice quality towards supervisors is low, negative feedback might influence quantity of voice more severely than in the case of voice towards colleagues. Furthermore, even though the relationship between supervisor rated quantity and quality of voice was relatively strong, WMC was still only related to voice quality, not to voice quantity. So even though voice towards supervisors might be more risky than voice towards colleagues, WMC does not influence voice quantity to supervisors more than to colleagues. This is in line with our idea that deciding to voice is not necessarily elaborated because risky decisions rely on automaticity rather than on cognitive elaboration.

Another limitation concerns the relatively high levels of WMC in our studies samples. Whereas Cowan (2010) argues that WMC in adults is limited to 3-5 items on average, mean WMC-scores in our student and field sample were 6.5 and 5.3 respectively. This means that we have no insight yet into how people with WMC below the population mean reach high quality voice. Lastly, one could argue that since the results from Studies 1 and 3 are correlational, we cannot conclude that elaborate systematic thinking is or is not involved in quantity and quality of voice. The results only point in such a direction, but are strengthened by the experimental design in Study 2 where impairment of cognitive resources harmed only voice quality, as well as the negative interaction effects we found between voice quantity and WMC. Replication of this experiment and longitudinal studies are necessary to further strengthen our assumptions and add nuance. Presumably, for people who voice very little, WMC is also important for voice quantity, but this relationship might be mediated by creativity. Those high in WMC may generate more ideas that are original than those low in WMC, which means they have a larger pool of good ideas to choose from, increasing their voice quantity.

Implications for Practice

The findings of our studies offer important implications for practice. Cognitive neuroscience has shown that visual WMC might be a fundamental basis for complex thinking (Fukuda et al., 2010; Vogel, McCollough, & Machizawa, 2005). Visual working memory tests are faster, cheaper, evolutionarily more basic and less culturally biased than the more general mental ability tests that are common in management literature and selection procedures. They do not require domain specific knowledge and thus does not obstruct people with for example, dyslexia

or other language (due to being from a different culture) disadvantages. In terms of enhancing diversity in organizations, this might thus be a better way to assess whether people are able to engage in effortful complex thinking.

Regarding our dual pathways to voice quality, there are two important issues to consider for managers (if they wish to enhance quality voice). First, some people (infrequent voicers) need cognitive resources to voice high quality. Measuring WMC before hiring people may thus be a way to select those. However, these people also elaborate to reach high quality voice, and elaboration takes time and effort. Merely hiring high WMC people is thus not enough, there needs to be time and space to elaborate. Second, some people (frequent voicers) need to be able to practice voice in order to learn how to improvise. Since quantity of voice seems to be more automatic (not well elaborated), trying to influence this process with rational arguments might not be very effective. People either voice often because it is in their personality, or because in their team, there is an implicit feeling that voice is safe. If people in a team generally voice rarely, it may be more useful to try to enhance voice by focusing on the implicit cues the team leader is sending, than explicitly telling people they can always share their concerns.

Theoretical Contributions

The first contribution of this study is the distinction between voice quality and quantity. It opens up new avenues for studying the multidimensionality of voice behavior and emphasizes the difference between a decision to say something and the quality of what is said. This focus on content relates to both the work on creativity, such as the combination of originality and usefulness for truly innovative ideas (Woodman, Sawyer, & Griffin, 1993a) , and to voice research, such as the (complexity) differences between suggestions, opinions, and problems (Morrison, 2011), and the differences between promotive versus prohibitive voice (Liang et al., 2012). This study strengthens the claims of those studies that it is important to consider the content of voice if we want to know more about how effective voice is generated, selected and communicated.

Our second contribution is the investigation of the involvement of cognitive resources in voice behavior. Morrison (2011) called for more research in the cognitive elaboration versus automaticity area, which we answered by challenging the idea that voice behavior in and of itself is the result of a complex cognitive calculation. We attempted to sharpen the hypotheses about the involvement of elaborate cognitive processing in voice by showing that the arguments of Chiaburu and colleagues (2008) about cognitive elaboration hold, but only for the quality of

voice and especially when employees don't voice often. Our results are also in line with the idea that choosing (not to) voice depends on affect and implicit theories about voice (Detert & Edmondson, 2011; Kish-Gephart et al., 2009). Our findings thus reconcile both views by showing that indeed, voice quality (sometimes) requires elaborate processing, whereas voice quantity relies on automatic processing. The results of this study emphasize the importance of a cognitive-processes stream in the voice literature. Automaticity in a self-initiated, discretionary proactive behavior such as voice may seem like a paradox, but often, cognitive elaboration is less important than we might think.

Third, we contributed new designs for testing causal relations in proactive voice behavior. Although we did not use our first lab-setting for causal purposes, the design does offer that possibility (which we use in Chapter 3). In the present paper, we used two different designs (within- and between subjects), which makes a wide range of causal research questions about individual differences as well as situational differences about voice and initiative possible. Since experimental research in voice and proactivity literature is still scarce, we hope that this helps other researchers to tackle causal research questions concerning proactive behavior.

Supplementary Materials and Appendix

Pilot Studies Voice Quantity and Quality Scale development

Before we designed study 3, we gathered data to test and support the idea that the original voice measure that is often used in voice research, taps into how frequent people voice, not how creative, novel, useful, or innovative voice is. We further wanted to test whether quantity and quality were separate constructs before conducting a large field study to connect them to WMC. We thus formulated and tested the following assumptions:

A1 - Voice quantity and quality are distinct but related aspects of voice.

A2 - The commonly used measure of voice is more strongly related to how often employees voice (quantity), than to the content of their messages (quality).

Design pilot 1

We conducted a multi-source pilot study with unique dyads composed of 53 supervisors (M_{age} = 39.9, SD_{age} = 8.69, 34% male) and 53 subordinates (M_{age} = 36.5, SD_{age} = 15.12, 30% male) in a variety of companies (largest groups: 45% retail, 20% banking, 20% healthcare). We compared the measure that is most often used in voice research (Van Dyne & LePine, 1998) to our pilot items of voice quantity and quality (see Appendix, Table A1 for all items). Like in Study 3, digital questionnaires were distributed on location, where participants completed them in the presence of a researcher. We measured self-ratings of voice (Van Dyne & LePine, 1998, 5 items, a = .71) at employee level, and asked supervisors to rate the quantity (3 items, a = .73) and quality (4 items, a = .89) of their subordinates' voice.

Results

Since we assumed that voice quantity and quality are distinct but related *(A1)* concepts, we performed an exploratory factor analysis (EFA) with oblimin rotation on the supervisor ratings of quantity and quality. The EFA (*KMO* =.79, 75% of variance, p <.001) showed two factors: Quality (*KMO* = .79, 54% variance, Eigenvalue = 3.81) and Quantity (*KMO* = .67, 21% variance, Eigenvalue = 1.50). Factor loadings can be found in table A1). As expected, we found a positive correlation between the two concepts (r = .37, p = .002). This suggests that supervisors

identify voice quality and quantity as distinct constructs, yet they tend to rate voice of employees who speak up often as more novel and useful than voice of employees who voice rarely.

TABLE A1 - Pilot items for Voice Quantity and Quality

Items	Factor Loadings	
	Quality	**Quantity**
	54%	**21%**
If my colleague presents a new product or method, it is carefully thought through	**.93**	-.03
When my subordinate shares an idea, he or she has considered how it should be implemented	**.94**	-.17
If my subordinate shares an idea, it is usually original	**.78**	.13
My subordinate shares ideas that are useful in practice	**.8**	.11
My subordinate regularly communicates ideas that are meant to help the organization develop	.43	**.59**
How many improvement oriented ideas has your subordinate communicated in the past month?	.13	**.83**
How often did you subordinate constructively share his or her opinion with you over the past month?	-.18	**.94**

Secondly *(A2*), we expected that although the classical voice measure presumably incorporates both quantity and quality of voice, the relationship with quantity is stronger. To test this, we related supervisor-rated quantity and quality of voice to employees' self-ratings of voice (see Table A2 for descriptives and correlations). Results from a linear regression analysis showed that the self-rated voice scale was positively related to supervisor-rated voice quantity (β = .32, t = 2.16, p = .04 se = .06), but not voice quality (β = .08, t = .60, p = .58, se = .10). Thus, the scale developed by Van Dyne and Le Pine (1998) seems to capture how often people voice, but might be less geared towards predicting whether voice adds novel and useful value to the organization.

TABLE A2 - Descriptives and zero-order correlations between voice constructs

				1	2	3
		Mean	*SD*	**Voice**	**Quantity**	**Quality**
1	**Voice** (self-rated)	5.14	.82	(.71)		
2	**Voice Quantity** (supervisor-rated)	2.99	2.2	.36**	(.73)	
3	**Voice Quality** (supervisor-rated)	3.93	1.28	.24†	.52**	(.89)

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

Design pilot 2

Next, we gathered multi-source field study data using the exact same design as Study 3. Supervisors and colleagues rated voice quality and quantity of 168 employees. All items we later used in the voice quantity and quality scales of Study 3 are also present in the measures of this pilot study. The purpose of this second pilot was to compare our measures to other measure of proactivity that are often used in the field, and thus to map the ontological network. We compared our voice quality and quantity measures to performance: the supervisors evaluation of the employees on his/ her last performance evaluation on the following dimensions: (1) quality of work, (2) achieving work goals, (3) ability to maintain social relations, (4) ability to work in a team-context, (5) ability to get work done in a timely fashion. Other proactive concept scales were derived from validated studies on personal initiative (Frese, Kring, Soose, & Zempel, 1997), taking charge (Morrison & Phelps, 1999) and proactive personality (Bateman & Crant, 1993). The results can be found in Table A3.

TABLE A3. Voice Quality and Quantity, Nomological Network

Source		Manager						Colleague					Self		
			Voice				Taking Charge	Voice				Personal Initiative	Personal Initiative	Taking Charge	Proactive Person.
	Correlations	Perform.	Quality	Quantity	Novel	Useful		Quality	Quantity	Novel.	Useful				
Manager	Performance	(.83)													
	Voice Quality	.56***	(.97)												
	Voice Quantity	.12	.44***	(.91)											
	Voice Novelty	.48***	.95***	.40**	(.96)										
	Voice Usefulness	.59***	.94***	.42**	.78***	(.95)									
	Taking Charge	.42***	.76***	.51**	.69***	.75**	(.94)								
Colleague	Voice Quality	.18*	.35***	.25**	.32***	.35**	.25**	(.95)							
	Voice Quantity	.06	.31***	.40**	.32***	.26**	.27**	.38***	(.88)						
	Voice Novelty	.12	.32***	.19*	.31***	.28***	.20*	.92***	.40***	(.92)					
	Voice Usefulness	.20*	.32***	.28***	.26**	.35***	.27**	.92***	.30***	.69***	(.95)				
	Personal Initiative	.20*	.40***	.37***	.33***	.41***	.32***	.75***	.42**	.62***	.76**	(.87)			
Self	Personal Initiative	.12	.15	.12	.12	.16*	.08	.23**	.16*	.26**	.16*	.31**	(.77)		
	Taking Charge	.00	.06	.11	.07	.05	.11	.24**	.22**	.24**	.20*	.25**	.49***	(.88)	
	Proactive Personality	.04	.13	.01	.15	.10	.05	.18*	.10	.22**	.11	.19*	.64***	.56***	(.84)

Note. * $p < .05$, ** $p < .01$, *** $p < .001$. This Zero-Order correlation table is based on a scale-development Field study of 168 employees and their colleagues and managers. All items in the voice quantity / quality scales are also present in the measures of Study 3. Performance items are the managers evaluation of the employee on his / her last performance evaluation on the following dimensions: (1) quality of work, (2) achieving work goals, (3) ability to maintain social relations, (4) ability to work in a team-context, (5) ability to get work done in a timely fashion. Other proactive concept scales are derived from validated studies on personal initiative (Frese, Kring, Soose, & Zempel, 1997) , taking charge (Morrison & Phelps, 1999) and proactive personality (Bateman & Crant, 1993).

Study 3 Measurement Model of voice Quality and Quantity

This section contains a more detailed description of our assessment of the measurement model of voice quality and quantity in Study 3. We expected voice quality and quantity to be related but distinct constructs. To assess the construct validity of our measures in Study 3, we thus performed a CFA (in Mplus) for voice quantity and quality, while controlling for common method source-bias by indicating the source as a higher order latent factor[11]. This resulted in a 4 factor model (2 sources, 2 types). If voice quality and quantity are indeed separable constructs (instead of one voice construct), this a measurement model with a separation of the two types (quality and quantity) should fit the data best.[12] As expected, the 4-factor model provided a good fit (χ^2 = 167.07, *df* = 101, *N*=144, $p < .001$, CFI = .97, TLI = .96, RMSEA = .07, 90% CI [.05 , .08], AIC = 4055, BIC = 4206). We compared this model to a 2 factor-model, voice type (quantity and quality) as one factor, and the source (colleague vs. supervisor) as separate factors, which showed a poor fit to the data (χ^2 = 564.60, *df* = 103, *N*=144, $p < .001$, CFI = .78, TLI = .74, RMSEA = .18, 90% CI [.16 , .19] , AIC = 4448, BIC = 4594). A Chi-square difference test showed that both four factor models with a distinction in voice type (quantity and quality), showed a significantly better fit to the data than the model with only a distinction in source (colleague and supervisor). Both 4-factor models (either with Voice Type, $\Delta\chi^2 = 368.66$, $df = 2$, $p < .001$) or with Source ($\Delta\chi^2 = 397.53$, $df = 2$, $p < .001$) as the higher order latent factor, showed a better fit to the data than a 2-factor model with only the source to separate the measures. This suggests that voice quality and quantity are distinct constructs both for colleague and supervisor ratings. All factor loadings (range .74 – .95) can be found in the table A4a for voice quantity, and table A4b for voice quality, along with scale items, and parcel allocations.

A2

[11] We also fitted a 4-factor model with Type (Voice Quality vs. Quantity) as the higher order construct, which resulted in an equally acceptable fit (χ^2 = 195.94, *df* = 101, *N*=144, $p < .001$, CFI = 0.95, TLI 0.95, RMSEA =.08, 90% CI [.06 , .09], AIC = 4084, BIC = 4235). This model was also significantly better than the 2-factor source model ($\Delta\chi^2 = 368.66$, $df = 2$, $p < .001$).

[12] We randomly parceled the items of quantity and quality to decrease the number of parameters in our model (Bagozzi & Edwards, 1998; Nasser-Abu Alhija & Wisenbaker, 2006). To make sure all parcels were similar in content, we used the following restrictions: each quantity-parcel contained at least one suggestion, one opinion and one problem focused item and in the case of voice quality an equal distribution of novelty and usefulness items. We simply used the item numbers to further distribute items across parcels, to avoid bias in allocating the items. This procedure resulted in 4 parcels per factor.

TABLE A4a - All Voice Quantity Items and Parcel Loadings of the 4 Factor- Model

Rater	Parcel	Loadings	Items	Category
			On a scale indicating 1. Never 2. Rarely 3. Sometimes 4. Regularly. 5. Frequently	
			How often does your colleague/supervisor proactively and constructively communicate:	
Colleague	1	.85	Suggestions for improvement	Suggestion
			His or her opinion, even if it is different from the view of others	Opinion
			Remarks that highlight problems in the organization	Problem
	2	.85	Solutions for problems in the organization	Suggestion
			Advice that deviates from the norm	Opinion
			His or her opinion regarding issues within the organization	Opinion
			Observations of misconduct	Problem
	3	.78	New ideas	Suggestion
			Personal advice	Opinion
			Concerns about processes that are not functioning optimally	Problem
	4	.85	Plans to change procedures or processes	Suggestion
			Spontaneous suggestions	Suggestion
			His or her opinion about the status quo within the organization	Opinion
			Attention towards inefficiencies in the workplace	Problem
Supervisor	1	.88	Solutions for problems in the organization	Suggestion
			His or her opinion about the status quo within the organization	Opinion
			Observations of misconduct	Problem
	2	.88	New ideas	Suggestion
			His or her opinion regarding issues within the organization	Opinion
			Advice that deviates from the norm	Opinion
			Remarks that highlight problems in the organization	Problem
	3	.85	Plans to change procedures or processes	Suggestion
			Spontaneous suggestions	Suggestion
			Personal advice	Opinion
			Attention towards inefficiencies in the workplace	Problem
	4	.86	Suggestions for improvement	Suggestion
			His or her opinion, even if it is different from the view of others	Opinion
			Concerns about processes that are not functioning optimally	Problem

Note. One item 'My colleague / subordinate offers technical tips' was deleted from the 15- item quantity scale because it showed poor factor loadings and reduced reliability of the scale.

TABLE A4b - All Voice Quality Items and Parcel Loadings of the 4 Factor- Model

Rater	Parcel	Loadings	Items	Category
Please indicate on a scale from 1 (completely disagree) to 7 (completely agree), to what extend you agree with the following statements regarding your colleagues/subordinates proactive and constructive comments.				
Colleague	1	.91	If my colleague shares an idea, it is original	Novelty
			My colleague voices original advice	
			My colleague thinks about how his/her ideas should be implemented	Usefulness
			When my colleague shares his/her concerns about dysfunctional processes, it is valuable	
	2	.82	*My colleagues advice is hardly innovative.(CB)	Novelty
			When my colleague offers me advice, it is usually refreshing.	
			If my colleague presents a new product or method, it is carefully thought through.	Usefulness
			When someone else voices an idea, my colleague comes up with useful additions.	
	3	.74	My colleague has a refreshing opinion.	Novelty
			My colleagues' opinion is original.	
			My colleagues' ideas have high implementation value.	Usefulness
			*In practice, my colleagues ideas do not work. (CB)	
	4	.91	My colleagues' suggestions are original.	Novelty
			If my colleague shares a suggestion, it is usually innovatory.	
			Advice my colleague offers is useful to me.	Usefulness
Supervisor	1	.89	If my subordinate shares a suggestion, it is usually innovatory.	Novelty
			*My subordinates advice is hardly innovative.(CB)	
			My subordinates ideas have high implementation value.	Usefulness
			If my subordinate presents a new product or method, it is carefully worked out.	
	2	.95	My subordinates opinion is original.	Novelty
			When my subordinate offers me advice, it is usually refreshing.	
			My subordinate thinks about how his/her ideas should be implemented	Usefulness
			Advice my subordinate offers is useful to me.	
	3	.93	My subordinate has a refreshing opinion.	Novelty
			My subordinate voices original advice.	
			*In practice, my subordinates ideas do not work. (CB)	Usefulness
			When my subordinate shares his/her concerns about dysfunctional processes, it is valuable	
	4	.92	If my subordinate shares an idea, it is original	Novelty
			My subordinates' suggestions are original.	
			When someone else voices an idea, my subordinate comes up with useful additions.	Usefulness

All blocks of (randomized) quality items were preceded by control questions. Examples of control questions are: 'The questions I will answer next are about a) the quantity of ideas, suggestions, opinions or advice my employee voices b) 'The quality of … my employee voices' c) The practical use of …..' – or- 'The questions I will answer next are about comments that are a) intended to constructively change and improve work processes in the organization, b) intended to ventilate ones' personal opinion'. Only raters who were able to identify self-initiated constructive intent and the distinct aspects of quality and quantity were allowed to rate the quality and quantity scales.

CHAPTER 3

Affect

Affective Processes

Do You Feel Like Being Proactive Today?

-Trait-Proactivity Moderates Affective Causes and Consequences of Proactive Behavior-

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Submitted for publication

Author Contributions

Theory and the experiment were designed by I. Wolsink, with input from all authors and with specific help from S. Oosterwijk regarding the manipulation and measurement of affect and physiology. All authors contributed with valuable comments during theory development, study design, and analysis. I. Wolsink acted as lead author, with all authors contributing to the writing by providing valuable comments and input to the text of the manuscript.

Abstract

Proactive people take initiative when others do not and persist in improving their environment or themselves. Although scholars assume that how we feel influences how proactive we are, there is no experimental research yet to support this. This experiment therefore tests whether positive and negative affect influence proactive behavior and additionally investigates whether engaging in proactivity also has affective consequences. While current theory proposes that positive affect enhances proactivity by stimulating broad-flexible thinking, we argue that negative affect should make people proactive through stimulating systematic-persistent thinking. Furthermore, we propose that proactivity increases subsequent positive affect rather than positive affect increasing proactivity. Last, we hypothesize that affective causes and consequences of proactivity are different for people who are rarely proactive (trait-passive-reactive individuals) and people who are often proactive (trait-proactive individuals). We pre-tested 180 participants on trait-proactivity. In the lab, we manipulated affect (negative/positive/neutral), measured proactive behavior in a team interaction task, and repeatedly measured participants' affective experiences and physiological activation. Results showed that the link between affect and proactive behavior differed depending on participants' trait-proactivity. First, positive affect made trait-proactive individuals less proactive, whereas negative affect made passive-reactive individuals more proactive. Second, passive-reactive individuals reported decreased negative affect after engaging in proactivity, whereas proactive individuals reported increased positive affect. We propose a motivational explanation for these trait-based differences in affective regulation: proactive individuals are proactive to *enhance future* positive affect, passive-reactive individuals are proactive to *reduce current* negative affect.

"The best way to not feel hopeless is to get up and do something. Don't wait for good things to happen to you. If you go out and make some good things happen, you will fill the world with hope, you will fill yourself with hope."

Barack Obama

Proactive individuals 'get up and do something'. They do not merely react to instructions or situational demands, but instead initiate anticipatory action to change processes, tackle problems, and persist in trying to improve things even when they encounter obstacles along the way (Grant & Ashford, 2008; Frese & Fay, 2001). Proactive behavior is thus self-starting, challenging, future focused, and persistent in the face of setbacks (Frese, Kring, Soose, & Zempel, 1996; Parker, Williams, & Turner, 2006). Proactive behavior influences change in individuals, groups, and organizations and is linked to a number of positive outcomes ranging from individual performance and well-being, to group effectiveness and innovation (Crant, 2000; Tims, Bakker, & Derks, 2013; Tornau & Frese, 2013). Developing a good understanding of what drives individuals to be proactive is therefore important. Barack Obama's quote implies that proactivity and affect (feeling bad or good) are intertwined. To date however, there is no compelling evidence indicating whether affect causes proactive behavior, or whether proactive behavior influences subsequent affect, and whether the role of affect in proactivity is similar for everyone or differs between individuals. This experimental study therefore investigates whether there are individual differences in the extent to which people become proactive due to affective states, and the extent to which proactive behavior regulates positive and negative affect.

Individual proactive behavior may not only enhance performance and well-being of employees in organizations, it may also facilitate positive changes in other areas, such as improving the individuals' health. For example, Ironson and colleagues (2005) found that HIV patients who felt positive (optimistic) about their prospects, showed a delayed development of the disease due to proactive behaviors such as seeking information and social support, or making life-style changes. Besides pointing at health benefits of proactivity, this study indicates that positive affect makes people proactive. Similarly, organizational psychology suggests (albeit not in experimental studies) that positive affect relates to increased proactivity (Bindl et al., 2012; Den Hartog & Belschak, 2007; Parker et al., 2010).

The role of negative affect is less straightforward. On the one hand, theorists assume that specific affective states that are linked to a goal can motivate proactive behavior through

activating the goal to relieve the negative feeling. For example, frustration about an inefficient method may motivate someone to relieve frustration through proactivity: by initiating a better method (Grant, 2013). This idea is empirically supported by longitudinal studies which show that job stressors and situational constraints at work increase proactivity (Fay & Sonnentag, 2002; Fritz & Sonnentag, 2009). On the other hand, studies suggest that more general negative affect states (not linked to a specific goal) only relate to thinking about proactivity, not to implementing proactive behavior (Bindl et al., 2012; Den Hartog & Belschak, 2007; Sonnentag & Starzyk, 2015). There thus seems to be a difference between quite specific, goal directed affective triggers and more general, core negative affect.

Currently, the proactivity literature does not yet differentiate between unspecific core affect (feeling good or bad overall), and more work specific emotions that are often tied to a target or a goal, such as being excited about a new office, enthusiastic about a new project, or frustrated about inefficient procedures. In affect and emotion literature, these specific states are labeled as goal directed emotions, whereas core-affect is less specific, does not need a target or goal, and reflects a blend of pleasantness and activation (Russell & Barrett, 1999). This distinction between specific emotions and unspecific affect is important as the reason why 'feeling good' influences proactivity might differ from the reason why 'feeling optimistic due to a promotion' influences proactivity. Work related optimism might influence proactivity because feeling optimistic increases the expectation of successfully showing effortful behavior (self-efficacy), thus representing a motivational pathway to proactivity. In contrast, generally feeling good likely influences our cognitive processes through broadening our attention focus (Gasper & Clore, 2002), thus representing a cognitive pathway to proactivity. It is important to differentiate between core affect and work specific emotions if we wish to understand whether it is the motivational or the cognitive pathway through which affect enhances proactivity. In this study, we focus on the cognitive affective pathway by studying how core affect influences proactivity. We apply the mood-as-information theory (Schwarz & Clore, 2003) to test whether positive affect may enhance proactive behavior through enhancing broad and flexible cognition or whether negative affect may enhance it through enhancing more narrow and systematic cognition.

There are several other reasons why it is currently not yet clear whether affect causes proactivity, and if so, how. First, the relationship between affect and proactivity is supported by mostly cross-sectional and a few longitudinal studies. Proactivity scholars thus call for

experimental research (Bindl, Parker, Totterdell, & Hagger-Johnson, 2012; Grant, 2013). Second, the reversed link (does proactivity change affect?) has hardly been examined (see Sonnentag & Starzyk, 2015 for an exception). Finally, most studies use self-rated proactivity measures to investigate the relationship between affect and proactive behavior. However, those measures were originally developed to assess the trait-aspect of proactivity (Fay & Frese, 2001). Particularly in the study of affect and proactivity, we think it is important to clearly distinguish between state- and trait-proactivity. Performing proactive behavior often (being a trait-proactive person), might influence the affective experience of the behavior (liking the behavior), and thus can play a role in what type of affect is a cause or a consequence of the behavior. In our study, we thus developed a new laboratory measure to assess proactive behavior, and used an existing trait measure to investigate trait-proactivity as a moderator in the affect- proactive behavior relationship.

The conceptual model below (Fig. 1a) shows the structure of our paper. In the first part of this mixed experimental study, we investigated the causal effects of both positive *(1a)* and negative affect *(1b)* on proactive behavior between participants, and the moderating effect of trait-proactivity on the potential affective causes of proactive behavior *(1c)*. In the second part, we investigated the effect of proactive behavior on subsequent positive *(2a)* and negative *(2b)* affective changes within participants, and the moderating effect of trait-proactivity on the potential consequences of proactive behavior *(2c)*.

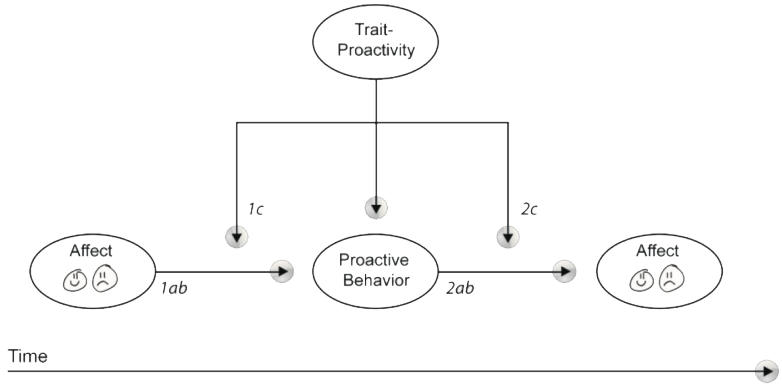


Figure 1a. Conceptual Model

Theoretical Framework

1. Affective Influence on Proactive Behavior

The first aim of this experiment was to study whether and how affect influences proactive behavior. Core positive and negative activating affect stimulate behaviors through different cognitive pathways (Baumeister, Vohs, DeWall, & Zhang, 2007). Whereas positive states facilitate global processing and broad, flexible thinking (Gasper, 2004; Isen, 2001), negative affect stimulates systematic localized information processing efforts (Gasper, 2004; Gasper & Clore, 2002; Lassiter, Koenig, & Apple, 1996). Both these affective-cognitive pathways might influence change oriented behaviors such as proactivity. For example, creativity (the generation of novel yet appropriate ideas, e.g., Amabile, Barsade, Mueller, & Staw, 2005), and problem solving, are, like proactivity, both behaviors highly focused on novelty, change, and overcoming setbacks. Previous research has shown that creativity and problem solving are facilitated by positive affect through broad, flexible thinking, *and* by negative affect through focused attention and persistence (De Dreu, Baas, & Nijstad, 2008). In proactivity literature however, the primary assumption is that positive affect and broad thinking enhance proactivity, not that negative affect enhances proactivity through focused attention and persistence (e.g., Parker, Bindl, & Strauss, 2010).

Positive activating affect (as opposed to deactivating affect, which we do not study here) is theoretically assumed to facilitate proactivity for two reasons. First, because it enhances energy and self-efficacy (i.e., confidence that once can successfully execute the proactive behavior). Second, because it facilitates broad and flexible thinking (Bindl et al., 2012; Den Hartog & Belschak, 2007; Foo, Uy, & Baron, 2009; Fritz & Sonnentag, 2009; Parker et al., 2010). Broad thinking should aid proactive behavior because it diversifies thought-action patterns (Fredrickson, 2001), which makes change oriented behaviors more likely (Bindl et al., 2012). However, studies on proactivity and affect to date usually measure specific positive emotions at work that seem predominantly confidence-focused (i.e., feeling proud, optimistic, enthusiastic, or inspired) and that will often relate to specific events. Far fewer studies focus on core positive affect that is more clearly separated from self-efficacy. The reason why in this study, we focus solely on core positive affect, is that we wish to test only the assumption that positive affect enhances proactive behavior through broad thinking, not the assumption that positive affect

enhances proactive behavior through impacting self-efficacy. In this paper, we thus focus on the affective-cognitive pathway towards proactivity.

We take the same approach with regard to negative affect. Like proactivity's link with positive affect, the proposed and studied relationships between negative affect and proactivity to date are also primarily based on target- and task specific negative emotions. Negative affect regarding stressors at work is assumed to influence proactivity because such feelings activate people to change the status quo (Den Hartog & Belschak, 2007; Fritz & Sonnentag, 2009; Fay & Sonnentag, 2002; Sonnentag & Starzyk, 2015). When people are frustrated about constraints, for example, an inefficient filing system at their work, they can proactively prevent the future reoccurrence of this frustration by inventing a new system. Under these circumstances, proactivity thus directly targets the source of a negative emotion. What is currently still missing for negative affect as well, is research on core affect (instead of specific emotions) as this might allow for drawing further conclusions about the cognitive processes underlying the influence of affect on proactive behavior.

Although proactivity scholars typically propose that positive affect influences proactivity through broad-flexible thinking (e.g., Parker et al., 2010), we argue here that negative affect likely fosters proactivity through enhancing focused attention, systematic thinking, and persistence. On the one hand, proactive people are open to experience (advocating for the broad-flexible route), on the other hand, they are conscientious, which links more to a systematic-persistent approach (Major, Turner, & Fletcher, 2006; Tornau & Frese, 2013). Proactive behavior is anticipatory, planned, goal directed, and persistent in the face of setbacks. Detailed, systematic-persistent thought stimulated by negative affect, might thus enhance proactivity. Previous work on creativity has shown that negative affect can enhance creativity through cognitive persistence (De Dreu et al., 2008). Furthermore, although both creativity and proactive behavior are change oriented (Rank, Pace, & Frese, 2004), proactive behavior likely requires even more persistence than creativity. Proactivity goes much beyond the generation of an idea. It also involves planning action, implementing action, and reflecting upon the action (Bindl et al., 2012). Cognitive persistence thus seems important to sustain proactive behavior beyond the mere generation of an idea to change something.

In this study, we test the causal effects of both core positive and negative activating affect on proactive behavior, in order to unravel which type of cognitive processing might be (most) important for proactivity. The literature implies that positive affect should make people more proactive because positive affect facilitates broad thinking. We propose that negative affect should make people more proactive because negative affect enhances systematic and persistent thinking. We thus test two hypotheses:

H1a- Positive affect enhances proactive behavior

H1b- Negative affect enhances proactive behavior

Affect may influence proactive behavior differently in individuals who are often proactive (trait-proactive individuals) and people who are rarely proactive (trait passive-reactive individuals). If proactivity is predominantly facilitated by one cognitive mental pathway, trait-proactive people should naturally think more in that specific way. For example, if systematic-persistent thinking enhances proactivity, trait-proactive individuals should be proactive in negative and neutral affective circumstances. Proactive people may not need negative affect because they are able to focus their attention systematically and persist under neutral circumstances, whereas passive-reactive people should be proactive only when experiencing negative affect because they need the persistent-systematic activation. If broad-flexible thinking is most important, proactive individuals should be most proactive in positive and neutral affective circumstances (as they are naturally in the preferred broad-flexible state), whereas passive-reactive individuals should be proactive only when experiencing positive affect (needing broad-flexible activation). If either of these two cognitive-affective pathways enhances proactive behavior more than the other, that effect should be amplified passive-reactive individuals. The affect-type (positive or negative) that increases proactivity of passive-reactive individuals should thus indicate which cognitive pathway most likely facilitates proactive behavior. Because we have proposed that both positive affect *(H1a)* and negative affect *(H1b)* may enhance proactive behavior, we have not predefined the direction of our moderation hypothesis. We thus test the following hypothesis:

H1c- Trait-proactivity moderates the influence of affect on proactive behavior.

2. Affective Consequences of Proactive Behavior

The second aim of this experiment was to investigate affect regulation effects of proactivity, by assessing how people feel after showing proactive behavior. In a diary study, Sonnentag and Starzyk (2015) found that people report to feel positive after engaging in proactive behavior. Perhaps the positive relationships between positive affective states and proactive behavior that are usually found in the literature can be (at least partly) explained by the idea that proactive behavior makes people feel good, instead of the other way around. Although current theory points at positive affect as the cause of proactivity, we argue that positive affect also forms a possible consequence of proactivity. Proactive behavior is about influencing and changing one's environment: a type of control likely to enhance positive feelings and energy levels and decrease negative feelings when exercised. In this sense, proactive behavior could play an important role in affect regulation (the extent to which people are able to 'manage' their feelings, see Gross, 2002). We thus test the following hypotheses:

H2a- Proactive behavior enhances positive affect.

H2b- Proactive behavior diminishes negative affect.

The Emotions as Feedback Theory (Baumeister et al., 2007) proposes that behavior is executed to pursue future (positive) affective states that were previously linked to such behavior. If proactive behavior enhances positive affect, as proposed in *H2a,* those individuals who have experienced this may (either explicitly or implicitly) use proactive behavior to enhance positive affect. Since trait-proactive individuals are likely more familiar with the affective consequences of proactivity, for them, anticipated positive affect could be a motivator for proactive behavior. This may result in decreased proactive behavior in this group when they are already feeling good (for example, when positive affect is induced) as there is no need for increasing positive feelings. Another consequence of trait-proactivity is that because people perform proactive behavior often, they presumably enjoy it more than passive-reactive individuals and hence, experience a stronger increase in positive affect after they engage in proactive behavior. We thus test the following hypothesis:

H2c - Trait-proactivity moderates the relationship between proactive behavior and subsequent changes in affect, such that trait-proactive individuals report stronger increases after executing proactive behavior than trait passive-reactive individuals.

3. The Influence of Trait Proactivity on Affective Sensitivity

Finally, we explored another potential affective difference between proactive and passive-reactive individuals. If, as proposed above, particularly trait-proactive individuals use proactive behavior to enhance positive affect, there should be an affective reason why they need to enhance positive feelings. One reason could be that proactive individuals are affectively more sensitive than passive-reactive individuals and that proactive behavior, to them, is a way to cope with their affective sensitivity. Trait-proactivity is related to creativity (Kim, Hon, & Lee, 2010), which relates to negative affective vulnerability, self-reflective thought, and cognitive elaboration (e.g., Akinola & Mendes, 2008; Verhaeghen, Joorman, & Khan, 2005). We test whether something similar is the case for trait-proactive individuals. If they are sensitive to negative affective stimuli, they may have learned to deal with their sensitivity by up-regulating positive affect through engaging in proactive behaviors, thus 'managing' their affective states by taking control in another area (in which one is proactive). We propose that proactive individuals are generally more sensitive to negative affective stimulation than passive-reactive individuals, and that proactive behavior, to them, is a way to cope with their affective sensitivity. We explore this possibility of a differential trait-proactivity related sensitivity to affective stimulation by measuring both reported affect and physiological activation in response to our affective manipulations and relating these affective responses to trait-proactivity. We thus test the following hypothesis:

H3 - Proactive individuals show stronger affective and physiological reactions to negative affective stimuli than passive-reactive individuals.

Present Research

We conducted an experimental study on proactive behavior testing both the effect of positive and negative affect on proactivity. We randomly assigned participants to one of three conditions (negative , neutral, or positive), in which we manipulated core affect through a combination of pictures and music. We measured self-reported affect and physiological measures

of arousal to assess sensitivity to those manipulations. We designed a lab measure of proactive behavior to assess which type of affect influenced proactivity. We further tested whether proactive behavior in the lab predicted changes in positive and negative affect over time, using repeated measures of positive and negative affect before and after participants showed (or did not show, as proactivity was voluntary) proactive behavior. Trait-proactivity was measured three weeks prior to the experiment to make sure the measurement of the moderator was clearly separated from all other measures in the experiment. In summary, we expected trait-proactivity to moderate *1)* which type of affect influences proactivity, *2)* what type of affect results from proactivity, and *3)* how people affectively respond to the negative affect manipulation.

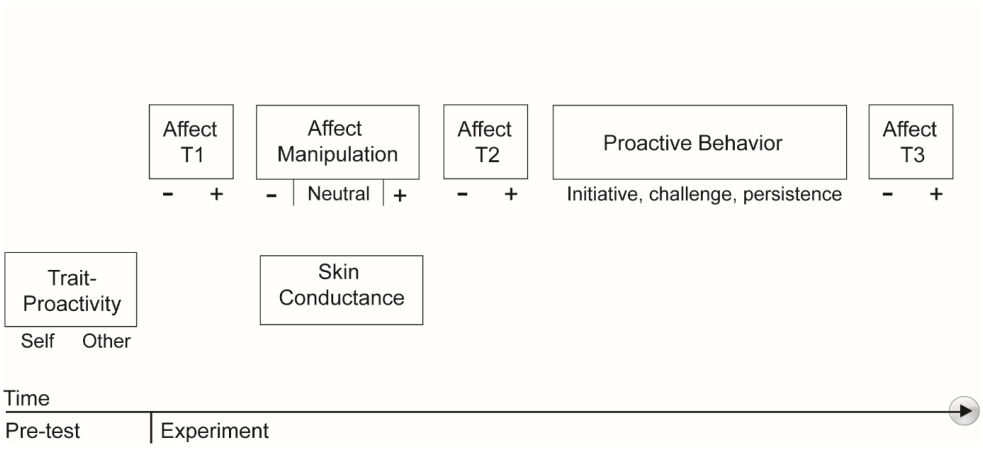


Figure 1b. Study Design.

Method

Design and Procedure

To address the first part (*H1abc*) of our study, we used a 3 (*negative* / *neutral* / *positive* affect condition) * 2 (*high* / *low* trait-proactivity) between-participant design with proactive behavior as the dependent variable. For the second part *(H2abc),* we used a 2 (trait-proactivity) * 2 (*high* / *low* proactive behavior) mixed design, comparing within-participant changes in reported positive and negative affect (difference between affect before and after the proactivity task) as the dependent variables. For the third part *(H3)*, we used a 2 (trait-proactivity) * 3 (*negative* / *neutral* / *positive* affect condition) mixed design with both changes in reported affect (difference between affect before and after the manipulation) as well as physiological reactions (skin conductance) during the manipulation as dependent variables.

Three weeks before the experiment started, students completed an online survey (in Qualtrics) in the classroom measuring trait-proactivity and they sent a duplicate trait-questionnaire link to their best friend or significant other. They could win a raffle reward of €100,- for participating in this pre-test. Later, upon arrival in the lab, students were welcomed by the experimenters in pairs because they needed to believe they were interacting with each other. Both participants gave written informed consent and were then installed in separate cubicles, where they played two memory games on an iPad to mask the purpose of the study (the title of the study was 'Memory Games'). Next, participants were attached to the skin conductance device and positioned in front of the computer screen with headphones. We measured baseline affect (T1), followed by the 5 minute affect manipulation, the affect manipulation check (T2), and on-screen instructions about the leader-follower structure of the proactive task. Next they were disconnected from the skin conductance device and experimenters brought printed information for the proactivity task. On average, the task lasted 8.18 minutes (*SD* = 2.23). The proactivity task was followed by the final affect measurement (T3) and an exit interview, where we checked whether participants were naïve to the study purpose and design. Afterwards, participants were debriefed, thanked and paid (€10,-).

Sample

Students recruited in the classroom were pre-tested on trait-proactivity (*N* = 580) and asked to voluntarily participate in the experimental study called 'Memory Games' (32% participated).

Students (N = 180, M_{age} = 22.39, SD_{age} = 5.30, 67% female, largest groups: 29% business and economics, 25% psychology) in different years of enrolment (M = 2.19, SD = 1.30) participated in the experiment for a monetary reward (€10,-). We targeted 180 participants (see stopping-rule in results section) because we wanted approximately 30 participants in each affect condition (3) * trait (2) group. Participants were randomly distributed across affect conditions ($N_{negative}$ = 58, $N_{control}$ = 60, $N_{positive}$ = 62).

Manipulations, Measures, and Tasks

Affect Manipulation. Activating positive, negative, and neutral (control) affect was induced between groups. We used simultaneous visual and auditory stimulation since Baumgartner, Esslen, and Jäncke (2006) showed that emotional experience evoked by affective pictures is enhanced through music. Three different musical excerpts were played through headphones: John Adam's 'Common tones in simple time' in the neutral affect (control) condition, Clint Mansell's movie soundtrack 'Requiem for a dream' in the negative affect condition, and a compilation of Shostakovich's 1st and 2nd ballet and jazz suites in the positive affect condition (see supplementary materials for details). Visual material was selected from the well-validated NAPS (Marchewka, Żurawski, Jednoróg, & Grabowska, 2013) and IAPS (Lang, Bradley, & Cuthbert, 2008; Lang, Bradley, & Cuthbert, 1997) picture databases. We selected 20 pictures per condition based on equal valence and arousal for men and women. Pictures in the positive (i.e., 3 puppies, a snowboarder with lush mountains in the background), neutral (a woman with neutral facial expression, a bag of potatoes), and negative condition (a car- crash, a child with an amputated leg) differed in terms of valence (all p <.001). Social- versus object-type pictures were evenly distributed across conditions. Pictures were presented for 5000 milliseconds (ms), followed by jittered inter-stimulus intervals, ranging between 5500 and 7500 ms before the next stimulus presentation.

Independent Variable and Moderator: Trait-proactivity. To ensure that trait-proactivity – behavior relationships in the experiment would not be confounded by temporal 'activation' of proactivity, we measured the trait three weeks prior to the experiment. Trait-proactivity was measured with self-ratings (a = .752) and ratings by romantic partners or best

friends (a = .813) of the European personal initiative scale[13] (Frese, Fay, Hilburger, Leng, & Tag, 1997; see also Fay & Frese, 2001). Both scales consisted of 8 items (1-7 Likert), examples are: 'I/My partner take(s) initiative immediately even when others do not' and 'I/My partner actively attack(s) problems'. Self- and other ratings were correlated, r (161) = .432, p < .001. In comparison, Fay and Frese (2001) report a correlation of r (220) = .350, p <.01. In line with earlier work from these authors, self- and other ratings were averaged into one variable, trait-proactivity (a = .838).

Reported Positive and Negative Affect. We measured activating positive and negative affect 3 times: before the affect manipulation (T1), after the manipulation (T2), and after the proactivity task (T3). Affect changes during the manipulation were reflected in individual changes from T1 to T2, affect changes during the proactive task were reflected in individual changes from T2 to T3. We used 20 items adopted from Hess and Blairy (2001) that were designed to capture the valence ('I feel bad') and activation ('I feel tense') aspects of negative affect, as well as the valence ('I feel pleasant') and activation ('I feel energized') aspects of positive affect. Affect items were displayed in the middle of the computer screen. Participants indicated to what extent the items reflected their current state on a continuous slider ranging from 0 (not at all) to 100 (strongly). The positive affective scale was highly reliable across all 3 time points (9 items, a^{T1} = .904, a^{T2} = .943, a^{T3} = .912) as was the negative activating affective scale (11 items, a^{T1} = .851, a^{T2} = .927, a^{T3} = .889). All items and factor loadings can be found in the supplementary materials (Table S1).

Skin Conductance Response to Manipulation. As an index of physiological reactivity in response to the affect manipulations we measured event related electrodermal activity (see also Lang, Greenwald, Bradley, & Hamm, 1993). This measure has been used previously to study the relationship between personality characteristics and physiological reactivity to affective stimuli (e.g., Norris, Larsen, & Cacioppo, 2007). We attached two 20 mm by 16 mm Ag/AgCl electrodes to the medial phalanges of the third and fourth fingers of the participant's left hand. The electrodes were connected to an input device with a sine shaped excitation voltage of 1 Vpp at 50 Hz (derived from the mains frequency). A signal-conditioning amplifier converted the signal into a linear output range of 0 uS to 100 uS (measured as a range of –10 to þ10 V). The

[13] More information about this scale compared to the American proactive personality scale (Bateman & Crant, 1993) and reasoning behind our choice can be found in the supplementary materials.

analogue output was then digitized at 250 samples per second by a 16-bit AD-converter (Keithley Instruments KPCI-3107). Skin conductance responses (SCR) were calculated during the full duration of each picture (5000 ms) by searching for troughs and peaks in the signal, with a minimum amplitude of 0.05 uS and a minimum trough-to-peak length of 100 ms. In order to reduce the impact of extreme values and for normalization purposes, all data was square root transformed. Analyses were performed on the square root SCR amplitude averaged across the different pictures presented during the manipulation.

Proactive Behavior. Following the manipulation check, we assessed participants' proactive behavior during a team task (based on Wolsink, Den Hartog, Belschak & Sligte, Chapter 2; and Stasser & Titus, 1987). All teams were composed of one follower (the participant) and one leader. We emphasized that the leader was expected to be proactive, take the lead, start the conversation, solve the problem and justify his/her choices after the task, whereas the follower had the opportunity to be proactive, but was not explicitly expected to do so. We told all participants that they were randomly assigned to the follower role and that the other participant was assigned to the leader role. Participants thus thought they were communicating with the other participant (the one elected team leader), while in fact the leader was simulated by the computer.

The leader's goal was to choose the best new dean for the faculty from three different candidates. In order to select the best dean, both the participant and the leader received hard-copy information about three dean-candidates (A, B, and C). The information about these candidates, however, was not identical for the leader and the participant and should result in a leader preference for candidate B and a participant preference for candidate A or C (a pilot study showed 100% initial participant preference for A or C, i.e., no participant preferred B). This information conflict served as an opportunity for the participant to become proactive and take initiative to try to change the leader's wrong decision for the benefit of the team, even though he/she was not required to do so.

We designed the task to reflect persistent initiative and challenging behavior, i.e. proactive behavior. The initiative component was measured first. When the participants received the candidate profiles, they had 6 minutes to read it and take the initiative to start a conversation with the leader, even though they were not responsible for the decision. All initiatives from participants were textually recorded, and later coded by three independent raters (*ICC* =.749): 0 = no initiative, 1 = initiative but without extensive content (example: 'what candidate do you

prefer?'), 2 = initiative with extensive content (example: 'I advise to go for candidate A since this person is most passionate about the connection with the labor market and is trying to make sure that knowledge and demand adjoin one another.'). Ratings (range 0 – 2) of all judges were summed up (range 0 – 6).

Next, we measured challenging behavior. After 6 minutes, regardless of whether the participant had taken initiative or not, the (computer-simulated) leader 'took the lead', and said: 'Based on my information here, it is obvious that we should go for option B'. To solve the information conflict (participants' information suggested A or C was best), the participant could now either comply with the leader or challenge the decision of the leader. The degree of challenge was again rated by 3 judges (*ICC* = .912): 0 = no challenge, 1 = challenge without extensive content (example: 'Our information differs a little, but A is still the best'), 2 = challenge with extensive content (example: 'C and A are comparable, but C seems more ready to cooperate and listen to other people than A. B had the most negative attributes as well as the most extreme. C is my choice, because he has least negative attributes and is willing to listen to student councils'). Ratings (range 0 – 2) of all judges were again added up (range 0 – 6).

To reflect persistent, goal directed proactive behavior across time, we created our dependent variable 'proactive behavior' as the sum score of the initiative ratings and challenge ratings of all three judges (range 0 – 12). Those who were thus most persistent in their proactivity throughout the experiment showed both extensive initiative and extensively challenged the leader, thereby changing the outcomes for the team.

Analyses

All three proposed interaction effects were tested with ANCOVA's, where trait-proactivity was modelled as a continuous variable to ensure robustness of the effects. Any covariate used in these analyses was Z-standardized because unstandardized covariates can severely change main effects, especially in repeated measures ANOVA's (e.g., Thomas et al., 2009). We report significant results at a =.05 level. Only for explanatory purposes and graphical representation, we created two groups of participants using a mean-split for trait-proactivity (interaction-effects of continuous *and* group- variables are summarized in the supplementary materials, Table S2). We report separate results for proactive individuals (those who score above the trait-proactivity mean) and passive-reactive individuals (those who score below the trait-proactivity mean) to specify the directions of the interaction affects.

Results

Participants, Stopping Rule, and Exclusion Criteria

Since to our knowledge this is the first experiment on affect and proactive behavior, there was no prior data for a power analysis, and so we set our stopping rule at 180 participants to approach a number of 30 participants per cell (VanVoorhis & Morgan, 2007) in our 3 (affect) * 2 (trait) design. Eighteen participants were excluded from analyses. We lost most participants (N = 10) due to technical problems with the skin conductance device or because participants in the negative condition terminated the experiment because they were too affected by the stimuli. We purposely removed the other eight (N = 8) participants. Some (N = 3) because they were aware of the purpose of the experiment: in the open question at the end, these three mentioned proactive behavior/taking initiative as the dependent variable of the study and indicated a relationship with mood/emotions/affect. Others were extreme outliers (N = 2) on age (> 8 *SD* above the mean) and physiological response to the neutral stimuli (> 5 *SD* above the mean). Three people (N = 3) were excluded because we could not reliably measure their proactivity: one was not native and responded in English to Dutch language stimuli, one could not type during the initiative phase, and one did not understand the instructions. Complete data of the remaining 162 participants were spread relatively equally over the three affect conditions (see Descriptives Table 1). There were no differences between affect conditions on trait-proactivity, baseline negative affect, baseline positive affect, and age (all F's < 1, all p's >.250) and gender was equally represented in all conditions χ^2 (2, N = 162) = 1.93, p > .250).

Table 1. Participants and Descriptives

Affect Condition		Trait-proactivity		Baseline Negative Affect		Baseline Positive Affect		Age		Gender	
	N	*M*	*se*	*M*	*se*	*M*	*se*	*M*	*se*	Female	Male
Negative	**54**	5.08	.08	21.15	1.82	68.59	1.76	22.36	0.87	36	18
Control	**50**	4.93	.10	19.45	1.80	66.42	2.32	22.39	0.48	34	16
Positive	**58**	5.05	.09	21.07	1.50	66.56	1.89	22.21	0.33	45	13
Total	**162**	5.02	.05	20.59	.98	67.19	1.14	22.31	0.34	115	47

Manipulation Checks

We used a 3 (condition) * 2 level (baseline affect - affect after the manipulation) repeated measures ANOVA to test whether participants showed positive and negative affect changes due to the manipulation. As expected, affect condition influenced within person changes (ΔT1 – T2) in negative affect, F (2, 159) = 80.19, p < .001, η^2 =.502, and positive affect, F (2,159) = 40.99, p < .001, η^2 =.340. Participants felt worse in the negative condition. Compared to the neutral condition ($M_{\Delta\ negative\ affect}$ = -1.05 , se = .97, CI_{95} = [-3.19 , 0.85], $M_{\Delta\ positive\ affect}$ = -2.07 , se = 1.12, CI_{95} = [-4.39 , 0.13],), participants in the negative condition reported increased negative affect ($M_{\Delta\ negative\ affect}$ = 17.08, se = 1.89, CI_{95} = [13.43, 20.93]), F (1, 102) = 69.99, p < .001, η^2 =.407, and decreased positive affect ($M_{\Delta\ positive\ affect}$ = -14.72, se = 1.95 , CI_{95} = [-18.49, -11.06]), F (1,102) = 30.99, p < .001, η^2 =.233. In the positive condition, participants reported decreased negative affect ($M_{\Delta\ negative\ affect}$ = -4.25, se = .76, CI_{95} = [-5.72 , -2.72]), F (1,106) = 6.85, p = .01, η^2 =.061, and increased positive affect ($M_{\Delta\ positive\ affect}$ = 3.41, se = 1.24, CI_{95} = [0.98, 5.77]), F (1,106) = 10.96, p = .001, η^2 =.094, as compared to the neutral condition. We thus conclude that our affect manipulations worked: the positive affect condition enhanced positive affect, and the negative affect condition enhanced negative affect.

The physiological data showed that the reaction to the negative condition was stronger than the reaction to the positive and neutral condition. Participants demonstrated a higher response amplitude (SCR) to the images in the negative condition ($M_{amplitude}$ = .22, se = .02 , CI_{95} = [0.15, 0.24]) than in the neutral condition ($M_{amplitude}$ = .12 , se = .02, CI_{95} = [0.09, 0.16]), F (1,102) = 5.86, p = .017, η^2 =.054, but between the positive ($M_{amplitude}$ = .13, se = .02, CI_{95} = [0.10, 0.16]) and neutral condition, there was no amplitude difference, F (1,106) = 0.03, p > .250, η^2 < .001.

Main Results

1: When Affect Influences Proactive Behavior. Our first aim was to test whether our affect manipulation influenced proactive behavior, and whether these effects differed for proactive individuals versus passive-reactive individuals. We tested this with a 3 (affect condition) * continuous (trait-proactivity) between subjects ANCOVA with proactive behavior as the dependent variable. Regarding hypotheses *1a* (positive affect influences proactive behavior) and *1b* (negative affect influences proactive behavior), we did not find a main effect of affect condition on proactive behavior, F (2, 161) = 2.04, p = .13, η^2 = .025. Proactive behavior in the negative ($M_{proactive\ behavior}$ = 6.91, se = .42, CI_{95} = [6.06, 7.74]) and positive ($M_{proactive\ behavior}$ = 5.76,

se = .41, CI_{95} = [4.96, 6.57]) affect condition did not significantly differ from the control condition ($M_{proactive\ behavior}$ = 5.86, se = .44, CI_{95} = [4.99, 6.73]), Bonferroni corrected. However, proactive behavior was highest in the negative affect condition (M = 6.91), and when comparing the negative to the combined neutral and positive conditions ($M_{proactive\ behavior}$ = 5.81, se = .30, CI_{95} = [5.22, 6.40]), the difference was significant, F (1, 161) = 4.20, p = .042, η^2 = .026. These results thus show more support for the hypothesis that negative affect enhances proactive behavior (*H1b*), than for the hypothesis that positive affect enhances proactive behavior (*H1a*).

Next, we hypothesized that trait-proactivity would moderate the influence of affect on proactive behavior (*H1c*). We found the expected interaction between trait-proactivity and affect condition, F (2, 161) = 3.13, p = .047, η^2 =.039. Figure 2 shows that passive-reactive individuals were significantly more proactive in the negative affect condition ($M_{proactive\ behavior}$ = 7.15, *se* = .59, CI_{95} = [5.99, 8.31]) than in the neutral condition ($M_{proactive\ behavior}$ = 4.38, *se* = .61, CI_{95} = [3.11, 5.64]), F (1, 76) = 11.871, p = .001, η^2 =.135. In contrast, proactive individuals were not. They were equally proactive in the negative affect condition ($M_{proactive\ behavior}$ = 6.67, *se* = .59, CI_{95} = [5.51, 7.83]) and the neutral condition ($M_{proactive\ behavior}$ = 7.42 , *se* = .57, CI_{95} = [6.24, 8.61]), F (1, 79) = .527, p = .470, η^2 =.007. This indicates that for passive-reactive individuals, a persistence-stimulating negative affective state stimulates proactivity, whereas for proactive people, a negative affective state is not necessary for proactivity.

A3

Table 2. Main and interaction effects of Affect Condition * Trait-proactivity on Proactive Behavior

		Affect Condition					
Dependent	Moderator	Negative		Neutral (control)		Positive	
Proactive Behavior	**Trait-proactivity**	*M*	*se*	*M*	*se*	*M*	*se*
Interaction	Proactive	6.67	0.57	7.42	0.57	6.09*	0.57
(*H1c*)	Passive-reactive	7.15**	0.59	4.38	0.61	5.24	0.59
Main effects (*H1ab*)	Total	6.91	0.41	5.96	0.47	5.72	0.42

Note. * p < .05, ** p < .01. Significant compared to control condition

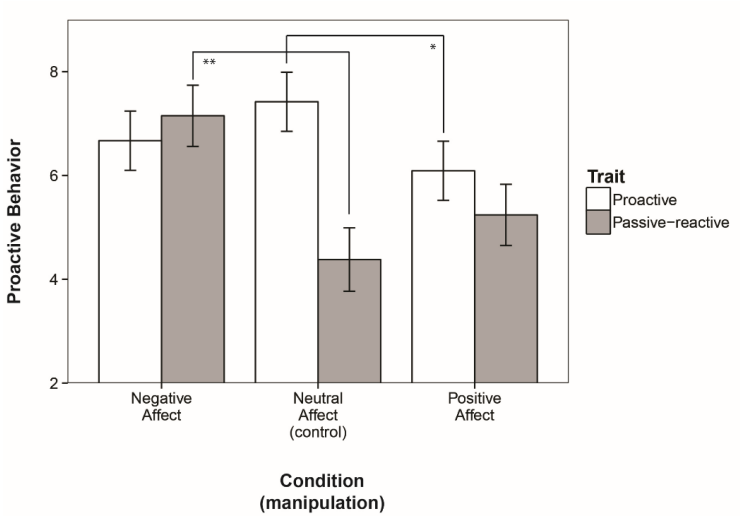


Figure 2. Effects of affect conditions on proactive behavior, moderated by trait-proactivity.

Interestingly, passive-reactive individuals did not only show more proactive behavior in a negative state, proactive individuals also showed less proactive behavior in a positive state. When comparing the positive affective states to neutral states for both trait groups, in the positive affect condition ($M_{proactive\ behavior}$ = 6.09, *se* = .53, CI_{95} = [5.04, 7.14]), proactive participants behaved less proactively than in the neutral condition (M = 7.42), F (1, 83) = 5.42, p = .022, η^2 =.062. This implies that broad and flexible thinking, which is stimulated by positive affect, does not necessarily enhance proactive behavior, especially not in trait-proactive people. Passive-reactive participants were equally (un)proactive in neutral (M = 4.38) and positive affective states ($M_{proactive\ behavior}$ = 5.24, *se* = .61, CI_{95} = [4.03, 6.45]), F (1, 81) = 3.19, p = .078, η^2 =.039.

In summary, the results show that proactive individuals show less proactive behavior when they are in a positive affective state than in a neutral state, whereas passive-reactive individuals show more proactive behavior when they are in a negative affective state than in a neutral state. These results do not support *H1a*, which stated that positive affect enhances proactive behavior. Rather, they support *H1c*, stating that affects' influence on proactive behavior depends on trait-proactivity, and *H1b*, that negative affect enhances proactive behavior, albeit only in passive-reactive individuals. This supports the idea that negative affect and

persistent-systematic thought are more important for proactive behavior than positive affect and broad-flexible thought.

2: When Proactive Behavior Influences Affect. Our second aim was to investigate the effect of proactive behavior on subsequent affect (*H2ab*), and assess the difference between trait-proactive individuals and passive-reactive individuals in this respect (*H2c*). We used a repeated measures ANCOVA with continuous independents[14] proactive behavior * trait-proactivity, and 2 levels of positive and negative affect (affect before- and after the proactivity task) as dependent variables. We controlled for affect condition because the condition showed to influence both proactive behavior and affect, and for time on the proactive task because being proactive takes time, and therefore, time could have regulated affect automatically, thus confounding our results. First, we hypothesized that proactive behavior enhances positive affect (*H2a*). As expected, there was a main effect of proactive behavior on positive affect, F (1,154) = 7.91, p = .008, η^2 =.045, indicating that proactive behavior makes people feel better. We did not however, find a significant main effect of proactive behavior on negative affect F (1,154) = .460, p = .499, η^2 =.003. This supports the hypothesis that proactive behavior enhances positive affect (*H2a*), but not the hypothesis that proactive behavior diminishes negative affect (*H2b*).

Next, we hypothesized that trait-proactivity would moderate the regulatory effects of proactive behavior on affect *(H2c).* In line with hypothesis *H2c*, we found a trait * proactive behavior interaction for individual positive affect increases (Δ T2 – T3), F (1, 154) = 5.49, p = .021 η^2 =.034. Figure 3 and table 3 show that proactive individuals who showed highly proactive behavior reported stronger positive affect increases ($M_{\perp positive\ affect}$ = 9.75 , se = 2.05, CI_{95} = [5.68 , 13.83],) than proactive individuals who showed little proactivity ($M_{\perp positive\ affect}$ = 2.19 , se = 2.00, CI_{95} = [-1.79 , 6.17]), F (1, 83) = 6.82, p = .011 η^2 =.076. In the passive-reactive group, the pattern was similar but the difference in positive affect increases between those who were highly and those who were little proactive was not significant, F (1,72) = 1.48, p = .23, η^2 = .020. Summarizing the results for positive affect after proactive behavior: participants generally felt better after proactive behavior, but positive affect increases due to proactivity were stronger for trait-proactive participants. This pattern of results was expected and hypothesized. However, we also found something unexpected when looking at changes in negative affect.

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[14] All covariates were Z-standardized because unstandardized between-participant covariates can substantially affect within- participant main effects (e.g., Thomas et al., 2009).

Similar to the previous analysis, we also found an interaction effect between trait-proactivity and proactive behavior (*H2c*) for negative affect decreases (Δ T2 – T3), F (1, 154) = 5.01, p = .027 η^2 =.032, but the pattern was reversed. Only the passive-reactive group showed a negative affect decrease due to proactive behavior. Passive-reactive individuals who were proactive ($M_{\perp \text{ negative affect}}$ = -7.26 , se = 2.08, CI_{95} = [-10.03 , -2.42]) showed stronger decreases in negative affect than passive-reactive individuals who were not proactive ($M_{\perp \text{ negative affect}}$ = -2.11 , se = 1.21, CI_{95} = [-4.52 , 0.30]), $F_{median\text{-split}}$ (1, 80) = 5.609, p = .020, η^2 =.066, $F_{mean\text{-split}}$ (1, 74) = 3.20, p = .078, η^2 =.043. Although the effect is not robust across group-splits (mean vs. median), indicating it is small, the significant interaction between the continuous measures of proactive behavior and trait-proactivity does suggest that proactive behavior down-regulated negative affect most for passive-reactive individuals.

Table 3. Main effects and Trait-proactivity * Proactive Behavior Interactions on Changes in Affect from before (T2) to after (T3) the Proactive Task

		Proactive behavior			
Dependent	Moderator	Low		High	
Affective Changes	**Trait Proactivity**	*M*	*se*	*M*	*se*
Negative Affect	Proactive	-4.65	2.03	-7.26	2.08
	Passive-reactive	-2.11	1.21	-6.22*	1.91
	Total (main effect)	-3.47	1.09	-6.80	1.52
Positive Affect	Proactive	2.19	2.00	9.75**	2.05
	Passive-reactive	1.87	1.37	5.00	2.16
	Total (main effect)	1.82	1.14	8.57***	1.55

Note. * p < .05, ** p < .01, low proactive behavior compared to high proactive behavior. '- ' reflects affective decreases, otherwise: affective increases. Reported values are the average individual differences between T2 and T3 affect.

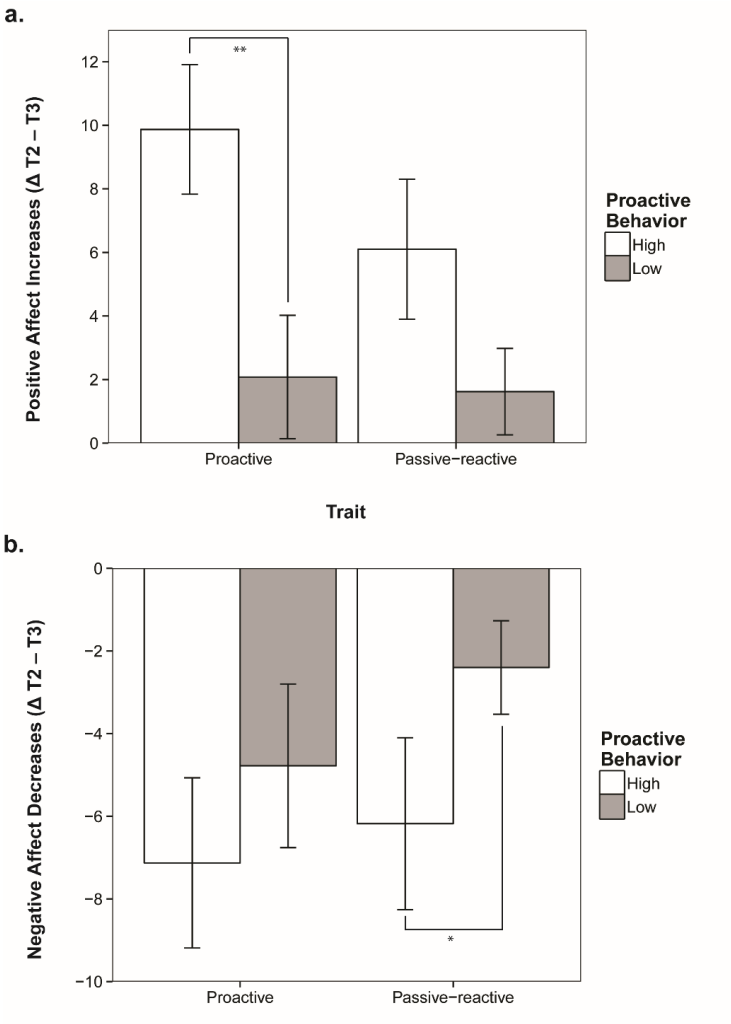


Figure 3. Interaction of proactive behavior and trait-proactivity. Groups (Trait and Behavior high / low) are based on mean-splits. Dependent variables are **(a)** positive affect increases after the proactivity task (difference between T2 and T3) and **(b)** negative affect decreases after the proactivity task (difference between T2 and T3).

3. The Influence of Trait Proactivity on Affective Sensitivity. Since we expected trait-proactivity to moderate the relationship between affect and proactive behavior, we implicitly assumed that proactive individuals might react differently to affective triggers than their passive-reactive counterparts *(H3)*. Moreover, as proactive individuals tend to be more 'active' than passive reactive individuals, we wanted to explore whether they are more easily 'activated' than passive-reactive individuals in terms of physiology. Specifically, based on the aforementioned work on creativity (e.g., Akinola & Mendes, 2008; Verhaeghen et al., 2005), we suggested that trait-proactive individuals may react more strongly to negative affective triggers. We thus explored whether proactive and passive-reactive individuals showed different reactions to our affect-manipulations. To test this, we used a repeated measures ANCOVA with affect-condition (factor) * trait-proactivity (covariate) as independents, and 2 levels of positive and negative affect (baseline affect – affect after manipulation) as dependent variables. All means and standard errors are reported in Table 3 and Figure 3.

In support of *H3*, we found an interaction between affect condition and trait-proactivity on reported negative affect changes, F (2, 161) = 4.31, p = .015, η^2 =.052, and positive affect changes after the manipulation, F (2, 161) = 5.20, p = .006, η^2 =.063. Although both trait-groups reported increased negative affect and decreased positive affect in the negative condition (compared to neutral, all F's > 15.85, all p's <.001), proactive individuals showed the strongest affective reactions to the negative condition. Proactive individuals reported stronger negative affect increases ($M_{\Delta negative\ affect}$ = 22.60, se = 2.88, CI_{95} = [16.69, 28.51]) than passive-reactives ($M_{\Delta negative\ affect}$ = 11.56 ,se = 1.94 , CI_{95} = [7.58, 15.54]), F (1, 52) = 10.152, p = .002, η^2 =.163, as well as stronger decreases in positive affect ($M_{\Delta positive\ affect}$ = -20.08, se = 3.31, CI_{95} = [-26.89., -13.26]) compared to trait-passive-reactive individuals ($M_{\Delta positive\ affect}$ = -9.36, se = 1.45, CI_{95} = [-12.33, -6.39]), F (1, 52) = 8.78, p = .005, η^2 =.145. There were no significant trait-differences in responses to the positive condition.

Trait-proactivity thus moderated reported affective responses to the negative affect manipulation, but not to the positive affect manipulation. A similar pattern occurred for the physiological reactions. In the proactive group, participants responded stronger to the negative stimuli ($M_{amplitude}$ = 0.23, se = .03, CI_{95} = [0.17, 0.30]) than to the neutral ($M_{amplitude}$ = 0.14, se = .03, CI_{95} = [0.08, 0.19]) and positive stimuli, ($M_{amplitude}$ = 0.13, se = .02, CI_{95} = [0.09, 0.17]), F (1, 85) = 7.849, p = .006, η^2 =.085. In the passive-reactive group, this difference was not significant, F (1, 75) = 2.276, p = .136, η^2 =.030. This indicates that proactive people show more arousal in

response to negative affective stimuli than passive-reactive ones, but do not show more arousal in response to positive affective stimuli.

Table 4. Interaction effects of Affect Condition * Trait-proactivity on Changes in Affect from baseline to after the Manipulation (Δ T1 – T2)

		Affect Condition					
Dependent	Moderator	Negative		Neutral (control)		Positive	
Affective Changes (Δ T1-T2)	**Trait-proactivity**	*M*	*se*	*M*	*se*	*M*	*se*
Negative Affect	Proactive	22.60**	2.88	-.66	1.63	-3.86	.87
	Passive-reactive	11.56	1.94	-1.49	1.06	-4.77	1.35
Positive Affect	Proactive	-20.08**	3.31	-1.53	1.78	2.54	1.39
	Passive-reactive	-9.36	1.45	-2.65	1.26	4.57	2.15
Response Amplitude (SCR)	Proactive	0.23**	.03	.14	.03	0.13	.02
	Passive-reactive	0.16	.03	.11	.02	0.12	.02

Note. * $p < .05$, ** $p < .01$, *** $p < .001$, Compared to control condition. ' - ' reflects affective decreases, otherwise, affective increases

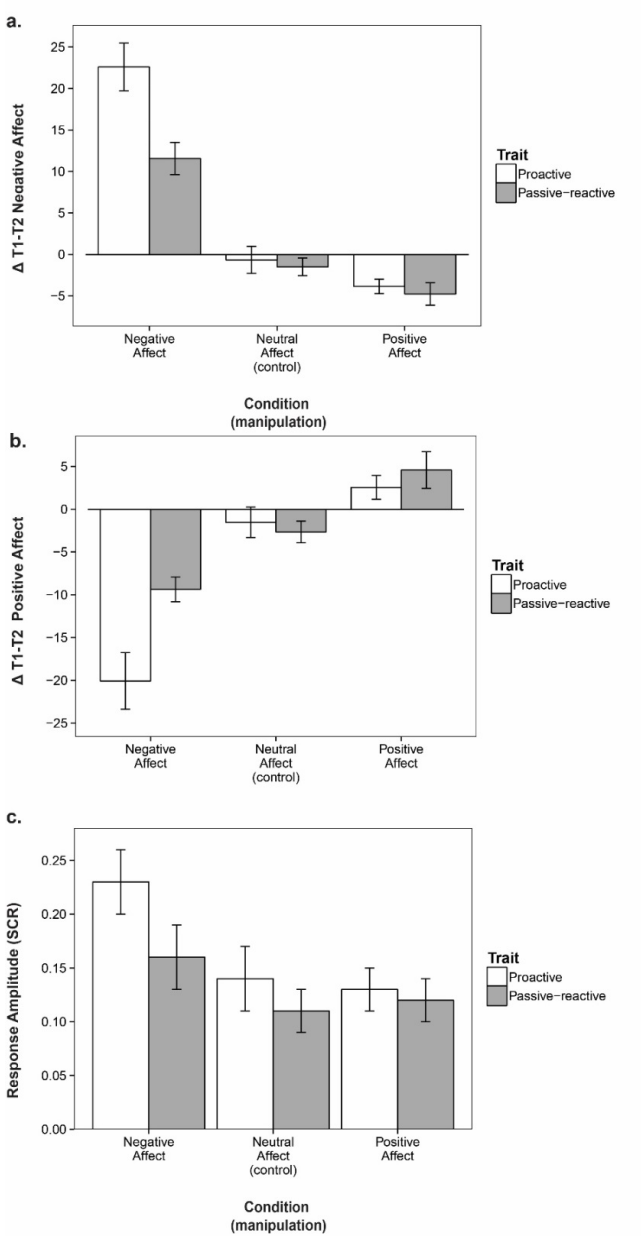


Figure 4. Affective responses to the affect manipulations for trait-proactive and passive-reactive participants. Dependent variables are **(a)** the increase between T1 and T2 in reported negative affect, **(b)** the decrease between T1 and T2 in reported positive affect, and **(c)** skin conductance response amplitude (SCR). Moderated by trait-proactivity (group is based on a mean-split).

Discussion

Proactive people do not wait for things to happen, they make things happen themselves. Although the importance of this trait and behavior have been emphasized strongly in different fields (e.g,Frese & Fay, 2001; Ironson et al., 2005; Seibert, Crant, & Kraimer, 1999), there is a lack of experimental research on what drives people to take initiative and be proactive. Research suggests that affect might play a role, but so far, evidence has been correlational. Therefore, we experimentally investigated whether positive and negative affective states drive proactive behavior, whether changes in affect also result from engaging in proactive behavior, and whether these effects differ for trait-proactive vs. passive-reactive individuals, and finally, we explored whether trait-proactive individuals are more sensitive to negative affective stimuli than passive-reactive individuals. Our results showed that trait-proactive and passive-reactive people indeed differed in 3 respects. First, compared to neutral affective states, positive affect made proactive individuals less proactive, whereas negative affect made passive-reactive individuals more proactive. Second, being proactive increased subsequent positive affect in proactive individuals, whereas it decreased subsequent negative affect in passive-reactive ones. And third, proactive individuals showed stronger self-reported and physiological reactions to negative affective stimulation than passive-reactive people.

A3

Theoretical Implications

There are several theoretical implications of our findings regarding the differences between trait-proactive versus passive-reactive people. The first implication is cognitive-affective. Since positive affect is often linked to broad thinking whereas negative affect is linked to more systematic and narrow thinking (De Dreu, Baas, & Nijstad, 2008; Fredrickson & Branigan, 2005; Gasper & Clore, 2002; Rowe, Hirsh, & Anderson, 2007), our results indicate that systematic, narrow and persistent thought may be more important for proactivity than broad and flexible thinking. This is supported by the finding that passive-reactive individuals were most proactive in the negative condition, whereas proactive individuals were equally proactive under negative and neutral affective circumstances. As proactive people tend to be goal directed, persistent, and active in general (Frese & Fay, 2001), they may need less situational (affectively stimulated) systematic and persistent mental activation as this is already their default mental approach. This is also suggested by the finding that positive affect decreased proactivity in proactive individuals. Perhaps it changed their otherwise systematic, localized, and persistent attention focus to a

broader, more flexible focus. This explanation conflicts with current proactivity theories, in which positive affect and broad-flexible cognitive processing are assumed to enhance proactive behavior (e.g., Bindl et al., 2012; Den Hartog & Belschak, 2007). Our results (and those of Sonnentag & Starzyck, 2015) suggest another reason why positive affect and proactivity are found to be related in extant research. Correlations between positive affect and proactivity may exist because proactive behavior makes people feel better, and not (just) because feeling good makes people proactive. This explanation is supported by the fact that the more proactive our participants behaved (and the higher their trait-proactivity), the more their positive affect increased.

Our results regarding negative affect as a driver and consequence in passive-reactive individuals do fit with previous research indicating that negative affective triggers such as job-stressors can enhance proactive behavior (Fritz & Sonnentag, 2009; Sonnentag & Starzyk, 2015), but extend these findings in three ways. First, the influence of core negative affect on proactivity supports the idea that systematic-persistent thought is important for executing proactivity. Second, we investigated core negative affect unrelated to the job-context. The fact that this core negative state increased proactivity and that proactive behavior made participants feel less negative and more positive, suggests that proactivity can act as an affect-focused coping mechanism (directly regulating affect) rather than a problem-focused coping mechanism (addressing the source of the negative affect and 'solving the problem'). Third, negative affective drivers and consequences are strongest for passive-reactive individuals, indicating that trait-proactivity needs to be included in studies on affect and proactivity.

Alternative Explanations

Although one way to look at the affect proactive behavior relationship is cognitive-affective, presumably, there are motivational mechanisms at play as well. We found several indications that proactive behavior can be (explicitly or implicitly) used to regulate affective experiences. The reasons for regulation however, as well as the type of affect (negative or positive) that is regulated, may differ between proactive and passive-reactive individuals. First, in the negative affect condition, passive-reactive individuals experienced less negative affect and activation than proactive individuals, while at the same time they showed stronger proactive behavior increases than proactive individuals. The negative affect manipulation thus strongly affected passive-reactive individuals' proactivity, but not their affect or their arousal, whereas for

proactive individuals, the manipulation strongly influenced affect and arousal, but not their proactivity. One explanation might be that passive-reactive individuals need stronger affective activation to become proactive *because* they are less sensitive to negative affective triggers than proactive individuals.

As noted, trait-proactivity is related to creativity. Genetic research implies that mentally healthy creative people share genetic variants with people with psychiatric mood-disorders (Keller & Visscher, 2015; Kéri, 2009; Power et al., 2015). This may also hold for proactive people. Trait-proactive people might be biologically predisposed for sensitivity to negative affective stimulation, and passive-reactive people might need more severe (negative) activation to become proactive as they are less sensitive to negative affective stimuli. At the same time, proactive people do not tend to be emotionally unstable: both proactive trait and behavior are unrelated to neuroticism (Tornau & Frese, 2013). Other research shows that particularly neuroticism is related to physiological responses to negative emotional stimulation (Norris et al., 2007). So even though proactive individuals show sensitivity to negative affective stimulation like neurotic individuals do, proactive people are not emotionally unstable (i.e. neurotic). One explanation could be that unlike neurotic people, proactive people have learned to use proactive behavior to regulate their affective states. In our study, proactive participants showed steep increases in positive affect and energy after they engaged in proactive behavior. At the same time, proactive individuals showed least proactive behavior when positive affect was already induced. This indicates that perhaps, proactive individuals are motivated to be proactive to enhance future positive affect. Following an affect-motivational approach, if proactive individuals are motivated to enhance future positive affect, being in a positive state already relieves the drive to be proactive.

While proactive individuals might be motivated to enhance (or approach) future positive affective experiences, our findings suggest that perhaps, passive-reactive individuals are motivated to show persistent initiative when they want to avoid or suppress current negative affective experiences. Passive-reactive individuals might only become proactive when there is a need to reduce or avoid negative feelings (i.e., when they experience strong negative affect). Taken into account that they may be less emotionally sensitive than proactive individuals, they need stronger negative activation to feel the need to reduce negative affect. The fact that passive-reactive individuals may become proactive through a negative affect or avoidance-motivational route is supported by the fact that passive-reactive people where most proactive when a negative

affective state was induced, and they showed decreases in negative affect after proactive behavior. This contrasts with the approach-motivational route (engaging in proactivity to enhance future positive affect) just described for proactive individuals, who showed decreased proactivity in a positive state, and increased positive affect after proactivity. This affect-motivational explanation fits with the general description of trait-proactivity: whereas proactive people take *anticipatory* action to change (goal to achieve or approach future positive affect), passive-reactive people *react* to situational demands (goal to reduce or avoid current negative affect).

Limitations and Future Research

Our study has methodological merit: separate measures of trait-proactivity and behavior, reported affective experiences over time, a physiological measure of activation, and an experimental design. However, it also has limitations. First and foremost, we just proposed that proactive individuals might be more focused on approaching future positive affect, whereas passive-reactive people might try to avoid current negative affect. However, this line of reasoning needs further investigation before any conclusions can be drawn. Future research could investigate trait-proactivity in relation to affective approach and avoidance motivation (Rutherford & Lindell, 2011) and time perspective (Beek, Zimbardo, Stolarski, & Fieulaine, 2014). The approach and avoidance motivational aspects of affect have also recently received attention in the cognition and affect literature. Recent research has indicated that there are specific positive approach oriented emotions (such as desire) that narrow the scope of attention, whereas there are also specific negative emotions (such as sadness) that broaden the scope of attention (Gable & Harmon-Jones, 2010; Gable & Harmon-Jones, 2010). More research on different types of affect, their effects on cognition, and behavior, is necessary to draw conclusions about the type of thinking involved in proactive behavior.

Next, we need to be careful about treating reported affect and physiological activation levels as two measures of the same variable (Cacioppo & Tassinary, 1990). Even though we do not claim they are, our results indicate that affect, physiological activation levels, and proactivity are intertwined. We need further research to disentangle whether we can separate affective valence and mere activation in relation to trait-proactivity and behavior. It may also be that affective sensitivity of trait-proactive individuals is merely activation based, and not so much

affect-based, or that proactive people are also more sensitive to positive emotional stimulation. Trait-proactivity is related to extraversion (Tornau & Frese, 2013), and extraversion is related to increased amygdala responses to positive emotional stimulation (Canli, Sivers, Whitfield, Gotlib, & Gabrieli, 2002). Here we reasoned and found that proactive people would be more sensitive to negative affective stimuli, but it might thus also be that proactive people are generally more emotionally sensitive. We did not find an effect for positive affect, but it may be that our positive affect manipulation was not strong enough to detect this. On the other hand, the positive affect manipulation was strong enough to decrease proactivity in proactive people, showing it was strong enough to influence behavior.

Another point of note is that we manipulated core positive affect in our experiment; results for more specifically confidence-related positive emotions such as optimism, pride, and enthusiasm are likely to differ from the results of core affect as different causal mechanisms then come into play (e.g., increased self-efficacy affecting proactivity). These confidence-related emotions may thus stimulate proactive behavior as currently theorized in the proactivity literature (Parker et al., 2010), but our results suggest that this might be primarily via other routes than broad and flexible thinking, such as through enhancing efficacy and outcome expectancies of proactive behavior. However, future research using other ways (besides affect) to influence or measure cognitive pathways are needed to further unravel which mental processes foster the execution of proactive behavior.

Contributions and Conclusion

This study integrates the organizational proactivity and the affect- and emotion-regulation literature. We introduce proactivity as a change and control oriented behavior with possible affect-regulating properties. We expand current theories of proactivity by showing that core positive affect may be a result of proactivity rather than an antecedent, whereas core negative affect might be a driver of proactivity that is new to the literature and thus needs further attention. We add nuance to current work on proactivity by differentiating between core affect, and more specific, goal directed emotions (e.g., hopelessness, pride, enthusiasm), thereby enhancing knowledge about possible cognitive mechanisms underlying the relationship between affect and proactivity. While the literature assumes that positive affect and broad and flexible thinking increase proactivity, this first experimental study shows more evidence for a negative

affect pathway through systematic and persistent thought. Last, we found some indications that proactive and passive-reactive individuals are affectively different from one another. As a consequence, they may have different affective reasons for proactive behavior. Whereas proactive individuals may show proactive behavior because they want to feel better in the future, passive-reactive individuals may only show proactive behavior when they feel bad now.

Supplementary Materials and Appendix Chapter 3

Selection of Musical Material

For auditory stimulation, we selected John Adam's 'Common tones in simple time' from Västfjäll (2002) for the neutral condition. As most of the excerpts from Västfjälls' review enhance very specific emotions such as only sadness (slow music) or fear (fast music), we created a panel of 4 music experts (including the first author) to select more generally positive and negative activating excerpts. These excerpts where discussed with 5 naïve students without musical knowledge. We unanimously chose a segment of Clint Mansell's movie soundtrack 'Requiem for a dream' for the Negative condition, as all panelists felt it evoked a cocktail of negative feelings but was activating nonetheless. In the Positive condition, we used a compilation of Shostakovich's 1st and 2nd ballet and jazz suites that were selected for their upbeat, happy and elated sound that fitted best with the selected pictures. The music excerpts were presented through headphones for the same duration as the picture presentation.

Proactive Behavior Measure Validity

Since this is the first attempt to capture proactive behavior in the lab, our first step was to validate the task by comparing it to our trait-proactivity construct. Here, we report the overall correlations between proactive measures (all affect conditions), as well as the correlations in the control condition separately. Overall, proactive behavior was positively related to the pre-test of trait-proactivity, $r\,(162) = .233$, $p = .003$. In the control condition, the relationship was stronger, than in the total sample, $r\,(50) = .456$, $p = .001$. This indicates that our behavioral measure is strongly related a well validated multi-source trait-proactivity scale, especially under neutral situational circumstances. We thus assume that we captured important aspects of proactivity in the lab.

Affect Factor analysis

We performed separate exploratory factor analyses (PCA, Varimax rotation) on the 10-item valence part of affect and on the 10 item physical activation part of the questionnaire for all 3 time-points to see whether we would find stable negative vs. positive factors for both valence and activation across time. All rotations converged within 3 iterations, with two stable factors reflecting positive and negative valence (KMO range .907 - .931) and two relatively stable factors reflecting negative tension and positive energy in the physical activation part (KMO range .741 -

.833). All items, factor loadings and reliabilities can be found in tables S1a and b. For scholars who are interested in focusing specifically on activation or valence, Table S3 reflects correlations between these separate factors and the proactivity constructs.

TABLE S1a. FACTOR LOADINGS FOR VALENCE

Time	1		2		3	
Factor	Positive	Negative	Positive	Negative	Positive	Negative
Explained variance	59%	14%	72%	10%	61%	16%
Items						
Pleasant	**.793**	-.283	**.791**	-.474	**.833**	-.386
Good	**.856**	-.285	**.812**	-.478	**.850**	-.379
Happy	**.785**	-.377	**.834**	-.453	**.866**	-.253
Good mood	**.703**	-.441	**.830**	-.431	**.826**	-.324
Cheerful	**.870**	-.085	**.902**	-.167	**.900**	-.086
Bleak	-.427	**.671**	-.464	**.772**	-.324	**.817**
Anxious	-.071	**.801**	-.220	**.856**	-.073	**.858**
Sad	-.203	**.823**	-.293	**.813**	-.250	**.809**
Reluctant	-.355	**.590**	-.383	**.737**	-.287	**.710**
Bad	-.485	**.705**	-.465	**.772**	-.416	**.765**

TABLE S1b. FACTOR LOADINGS FOR PHYSICAL ACTIVATION

Time	1		2		3	
Factor	Energy	Tension	Energy	Tension	Energy	Tension
Explained variance	38%	16%	19%	44%	18%	36%
Items						
Lively	**.811**	.017	**.847**	-.175	**.834**	-.001
Apathetic ©	**.763**	.200	**.752**	.335	**.651**	.305
Energized	**.856**	-.016	**.880**	-.171	**.880**	.040
Tired ©	**.737**	.141	**.785**	.019	**.593**	.144
Emotionally affected	.333	**.601**	.145	**.795**	-.271	**.735**
Tensed	.112	**.731**	.231	**.755**	-.272	**.654**
Increased heartbeat	-.136	**.819**	-.109	**.806**	-.007	**.713**
Cold	.359	.288	.250	**.613**	-.041	**.689**
Goosebumps	.387	**.151**	.192	**.684**	-.067	**.692**
Relaxed ©	.231	**.743**	.460	**.575**	.542	**.406**

© counterbalanced items

Table S2. All interaction effects involving Trait-Proactivity

				Trait-Proactivity	
				Mean-split	**Continuous**
Q 1	Dependent	Proactive Behavior	*F*	4.40*	3.13*
	Interaction	Affect Condition * Trait-Proactivity	*p*	.014	.047
			η^2	.053	.049
Q2a	Dependent	Positive affect increases during proactive behavior	*F*	6.55*	5.48*
	Interaction	Proactive Behavior * Trait-Proactivity	*p*	.011	.021
	Controls	Affect condition, Time	η^2	.041	.034
Q2b	Dependent	Negative affect decreases during proactive behavior	*F*	2.17	5.01*
	Interaction	Proactive Behavior * Trait-Proactivity	*p*	.140	.027
	Controls	Affect condition, Time	η^2	.013	.032
EQ	Dependent	Negative Affect Increases during manipulation	*F*	5.72**	4.31*
	Interaction	Affect Condition * Trait-Proactivity	*p*	.004	.015
			η^2	.068	.052

TABLE S3. Correlations between all affect factors and proactive constructs

			Proactive Constructs	
			Behavior	**Trait**
Affect after manipulation (Δ T1 and T2)	Negative	Total	.159*	.157*
		Valence	.135	.141
		Tension	.165*	.145
	Positive	Total	-.106	-.146
		Valence	-.081	-.168*
		Energy	-.117	-.080
Affect after proactive behavior (Δ T2 and T3)	Negative	Total	-.153	-.106
		Valence	-.187*	-.097
		Tension	-.080	-.090
	Positive	Total	.298***	.109
		Valence	.224**	.105
		Energy	.334**	.090

CHAPTER 4

Approach

Motivational Processes

Distraction: the Problem with Extrinsic Motivation and Creativity

- Competing Goals distract Reward Responsive Individuals -

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Submitted for publication

Author Contributions

Theory and studies were designed by I. Wolsink, with input from all authors. All authors contributed with valuable comments during theory development, study design, and analysis. I. Wolsink acted as lead author, with all authors contributing to the writing by providing valuable comments and input to the text of the manuscript.

Abstract

In organizations, creativity is often not an employees' primary task. Usually, employees have other tasks and goals that compete for attention. In this paper, we investigated whether reward saliency of competing goals moderate whether motivational traits (reward responsiveness) affect voluntarily initiated suggestions for organizational improvement (proactive creativity). Specifically, we expected that reward responsiveness decreases proactive creativity, but that this only occurs when other, more rewarding goals in the environment distract individuals' attention. A multisource field study supports this idea (Study 1). First, employee approach sensitivity negatively related to creativity shared with colleagues in the organization, who are low in reward power (i.e., competing goals likely render more rewards). Second, there was no such effect when creativity was the only task: creativity during an idea generation task (i.e., there was no competing goal) was not related to reward responsiveness. Third, for reward responsive employees, creativity shared with leaders who do have reward power, depended on reward likelihood for competing goals. Proactive creativity towards leaders decreased when rewards for competing goals were likely, and increased when they were unlikely. We replicated this interaction in an experimental design (Study 2), where reward likelihood for a competing goal was manipulated within-participants. Proactive creativity of reward responsive participants decreased when a competing goal reward was likely, and increased when it was unlikely. Our studies do not support the idea that responsiveness to extrinsic rewards is detrimental for creativity generally. Rather, they suggest that reward responsiveness plays an important role in contexts where multiple tasks compete for attention (i.e., in organizations) where it sometimes inhibits, but can also enhance proactive creativity.

"Passion is one great force that unleashes creativity, because if you're passionate about something, then you're more willing to take risks."

Yo-Yo Ma, cellist

Can creativity however, next to being motivated by a passionate force from within, also arise from a desire for external rewards, such as to win an award, financial gain, or social recognition? The creativity literature seems divided regarding this question. On the one hand, people who have a general desire to gain extrinsic rewards are less creative than those who are passionate and seek out tasks for enjoyment (Amabile, Hill, Hennessey, & Tighe, 1994). On the other hand, people who are extrinsically rewarded for their creativity show enhanced creative performance afterwards (Byron & Khazanchi, 2012). Thus, although situational extrinsic rewards seem to be creativity enhancing, a general desire for extrinsic rewards seems to be detrimental to creativity. We attempt to integrate both views by showing under which circumstances a tendency to desire extrinsic rewards indeed stifles creativity, and when such a desire might inspire and enhance creative performance.

In the organizational literature, to be creative is to generate new yet appropriate ideas, insights, or solutions to problems (Amabile, 1983; Runco & Jaeger, 2012; Woodman, Sawyer, & Griffin, 1993). Creative solutions are relevant in everyday life (Kaufman & Sternberg, 2007), but particularly in contexts that require change (Sawyer, 2008). Employees' creative ideas are thus highly relevant in changing organizations (Amabile, 1983; Amabile, Goldfarb, & Brackfield, 1990; Oldham & Cummings, 1996; Zhou, 1998). Currently, knowledge about how creative ideas are generated, comes from experimental or correlational studies in which participants are explicitly requested to be creative, and in which creativity is typically a participants' main task (e.g., Baas, De Dreu, & Nijstad, 2008; Byron, Khazanchi, & Nazarian, 2010; Davis, 2009; Kim, 2005). For the remainder of the paper, we will refer to this as *reactive* creativity, that is, creativity in response to a direct request to come up with ideas or solutions and as the only or the principal task individuals focus on. However, in organizations, creativity is often not the main task to focus on. There are many other goals that require employees' attention, and we know far less about when and why people initiate creativity when it is not explicitly requested, and while other goals in the environment compete for attention.

This unrequested, self-initiated type of creativity, which we will refer to as *proactive* creativity (e.g., Unsworth, 2001), is concerned with providing a voluntarily solution to a self-

discovered problem. Proactive creativity is discretionary and self-started and especially relevant in organizational contexts where being creative is typically not the employee's only task, but rather occurs in addition to other, more clearly defined core tasks. For example, employees may initiate change in the work place by voluntarily communicating ideas, problems, or opinions, which is defined as voice behavior (Van Dyne & LePine, 1998). Voice provides input for discovering and solving organizational problems and improving organizational processes (Morrison, 2011; Zhou & George, 2001). The creative quality of voice refers to how novel and useful voice is (e.g., Chapter 2), and is a particularly useful concept to contrast with reactive creativity (which is also about originality and usefulness, but not a voluntarily communicated solution to a self-discovered problem). In this paper, we thus focus specifically on these creative aspects of voice, as an observation of proactive creativity in organizations.

Our goal is to investigate the similarities and differences between antecedents of reactive and proactive creativity, with a particular focus on individuals' sensitivity to rewards. Approach sensitivity reflects an individuals' sensitivity to cues of impending rewards (Carver & White, 1994). Such sensitivity is associated with positive affect: people who are approach sensitive show larger increases in happiness in response to rewarding outcomes (Carver, 2006). Since positive affect enhances creativity (Baas et al., 2008). De Dreu, Nijstad, and Baas (2011) argued that approach sensitivity helps creativity via this mechanism. Their idea was supported by a series of studies that showed a positive association between approach sensitivity and (reactive) creativity. In this paper, we build on and extend these findings. More specifically, we study two underlying motivational routes of approach sensitivity: one intrinsic (finding creativity in itself rewarding and fun), and one extrinsic (hoping for tangible rewards after creativity). Depending on the route, and the context of the creative task, we propose that the relationship between approach sensitivity and creativity may vary.

First, whether approach sensitivity enhances proactive creativity the same way it enhances reactive creativity, to our knowledge, has not been investigated so far. We propose that it may not do so. Reactive creativity is the core task of participants, there is a clear request and instructions on what to do, and there are no distractions in the form of other (potentially rewarding) tasks. In contrast, proactive creativity is self-started, discretionary, and competes with other tasks that may be more rewarding. So while approach sensitivity may help when creativity is the main task (as shown by De Dreu et al., 2011), it may hinder it in an environment where rewards for competing tasks are available and where these rewards draw attention away from

creativity. We specifically investigate what the presence of such other tasks and goals does to the relationship between approach sensitivity and creativity.

Second, we investigate whether it matters to what source (colleague or leader) proactive creativity is communicated. Research on voice behavior suggests that there is a difference between 'speaking up' (to leaders) and 'speaking out' (to colleagues) in terms of differing costs and benefits depending on the target of the suggestion (Liu, Zhu, & Yan, 2010). Leaders have the resources to reward employees, and creativity-contingent rewards can enhance creative performance (Byron & Khazanchi, 2012). On the other hand, leaders also critically evaluate employee performance, and creativity studies show that evaluative contexts can decrease creative performance (Amabile, 1979; Amabile, Goldfarb, & Brackfield, 1990). Some employees may thus be reluctant to speak up to their leaders (Detert & Burris, 2007; Detert & Edmondson, 2011; Kish-Gephart, Detert, Treviño, & Edmondson, 2009). How approach sensitivity affects proactive creativity in organizations towards different targets, is thus not yet clear and will be explored in this study.

The research presented in this paper answers a call by scholars to integrate the fields of creativity and proactivity by studying when and why people in the workplace voluntarily engage in creative behaviors (Rank et al., 2004; Unsworth, 2001). It adds to the creativity literature by investigating similarities and differences between reactive and proactive creativity thereby indicating possible affective-motivational overlap and differences between the two. This has also practical merit because it is important to know which knowledge from (mostly experimental) reactive creativity literature applies to proactive creativity which is particularly important in organizational contexts. Last, we study the interaction between personal (approach sensitivity) and contextual aspects (reward structure) of motivation, an approach that is argued to be important in order to fully understand creativity (Shalley, Zhou, & Oldham, 2004; Zhou & Shalley, 2003).

We present two studies, one multi-source organizational field study in which employees completed a reactive creativity task, and their colleagues and leaders reported on the employees' proactive creativity shared with them. In the second study, a mixed experimental design, participants were able to proactively initiate creative suggestions that were either financially rewarded or punished (creativity contingent). However, while they could voluntarily engage in proactive creativity, they were once distracted by a competing core task that with strong financial

reward activation, and once by a core task that was only mildly financially activated. In both studies, approach motivational sensitivity was measured between participants.

Theoretical Framework

Creativity refers to ideas or products that are novel and fit the context (Amabile, Conti, Coon, Lazenby, & Herron, 1996; Runco & Jaeger, 2012; Woodman et al., 1993). Ideas, suggestions, or solutions are thus creative to the extent that they are original and useful. Most of what we know about the creative process originates from experiments that use idea generation tasks in which people are requested to come up with a variety of ideas (e.g., the alternate uses task, Guilford, 1967) or insight tasks in which people are supposed to search for one solution (e.g., the Remote Association Test Mednick, 1962). Participants either need to generate several ideas, or associate 3 words with one word that 'binds them all' (sky, pool, drunk – blue). The type of thinking that is most often associated with these reactive creative tasks, is broad and flexible thinking. Creative insight tasks benefit from short breaks from the creative task (incubation periods; Sio & Ormerod, 2009). Taking some time 'off' the problem temporarily broadens perspectives and overrides fixations on wrong solutions. Similarly, positive activating affect (such as happiness) is assumed to facilitate the generation of creative ideas because it enhances flexible and broad thinking (Baas et al., 2008). Since positive affect is more easily experienced by people high in approach motivational sensitivity (Gable, Reis, & Elliot, 2000), authors have argued that this approach sensitivity facilitates (reactive) creativity (De Dreu et al., 2011).

Approach sensitivity: Individual Differences

The behavioral approach system (Gray, 1990; Rutherford & Lindell, 2011) is a core emotional-motivational mechanism that is assumed to drive behavior through positive affective activation. People are either inhibited to show behaviors by avoiding punishment (the behavioral inhibition system, BIS), or activated to show behaviors by approaching rewards (the behavioral approach system, BAS). Traditionally, BIS is associated with avoiding negative affect, whereas BAS is associated with approaching positive affect (Carver & White, 1994; Heubeck, Wilkinson, & Cologon, 1998). Approach sensitivity (also defined as trait- behavioral activation) reflects individual differences in sensitivity to activation of the approach system (Amodio, Master, Yee, & Taylor, 2008; Carver, 2006; Gable, Reis, & Elliot, 2000). Approach sensitive individuals

experience more positive affect when cues of impending reward are present than individuals who are less approach sensitive. This positive affective activation stimulates them to engage in goal-directed behavior (Carver, 2006; Rutherford & Lindell, 2011).

Approach sensitivity may thus enhance creativity because approach sensitive individuals experience strong positive affect in anticipation of rewards, which enhances broad thinking and ultimately creativity (Baas et al., 2008). Indeed, previous experimental research on reactive creativity found that approach sensitivity[15] predicted creative performance, particularly when the creative task was broadly defined or a broad attention focus was induced (De Dreu et al., 2011). There is however, an alternative explanation to these findings. Approach sensitivity only enhances goal directed behavior when there are rewards to be anticipated (Carver, 2006). Approach sensitivity should thus motivate creative performance if there are cues that creativity renders rewards and hence, reward cues activate positive affect. While in the mentioned studies positive affect and broad thinking may have helped creative performance, participation in the creativity task was anonymous, there was no evaluation of performance, and there was no creativity contingent financial reward. So what type of reward, if not an evaluative or financial one, may have increased creative performance of approach sensitive individuals?

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Type of Approach sensitivity: Intrinsic or Extrinsic

As noted, approach motivational theory proposes that people start behavior because they anticipate rewards that will make them feel good (Gray, 1990; Rutherford & Lindell, 2011). We argue though that whether people anticipate that engaging in a certain behavior (in this case creativity) will make them feel good, depends on *what type of reward* makes them feel good. Some people feel good when they engage in tasks that are fun and exciting to them (which relates to intrinsic motivation), whereas others feel good when they do better than others or gain financial rewards (which is more related to extrinsic motivation). While extrinsic rewards refer to the positive consequences of a behavior, intrinsic rewards lie not in the anticipation of a desired outcome but in the behavior itself (Gagné & Deci, 2005; Ryan & Deci, 2000). Perhaps thus, there are some approach sensitive individuals who experience a reactive creativity task as an intrinsically rewarding experience.

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[15] In the study by De Dreu et al., (2011), approach sensitivity is labeled trait-behavioral activation, which is another label for the same concept, and the measures used to assess it are identical.

We argue that there are indeed approach sensitive individuals that specifically like creative tasks because they are novel. The distinction between a preference for intrinsic and extrinsic rewards can also be found in the BAS-scales that measure approach sensitivity (see Carver & White, 1994; Leone, Perugini, Bagozzi, Pierro, & Mannetti, 2001). These scales include *fun seeking* (activation by the prospect of engaging in fun and exciting activities) and *reward responsiveness* (activation by the prospect of gaining desired rewards or doing better than others). People high on fun seeking search for rewarding experiences themselves through engaging in novel tasks (intrinsically driven), while people high on reward responsiveness react to the occurrence of rewards in the environment (externally driven) (Carver & White, 1994). Next, we will argue why we think these intrinsic and extrinsic approach sensitivities may have differential effects on creativity, depending on the task context.

Approach Sensitivity and Reactive Creativity

One goal of this paper is to extend previous findings by De Dreu and colleagues (2011) through further investigating the relationship between general approach sensitivity and reactive creativity from a motivational perspective. While the work by De Dreu et al. (2011) studied the effects of approach sensitivity as a whole with a specific focus on thought processes (broad versus narrow thinking), we look at the separate fun seeking and reward responsiveness scales, as they may reflect two different motivational pathways: one extrinsic, and one intrinsic. Extant research shows that intrinsic motivation is positively related to creativity (e.g., Amabile, 1979; Amabile et al., 1994; Moneta & Siu, 2002), which implies that fun seeking might be related to creativity through an intrinsic motivational mechanism. Fun seeking individuals search for novel experiences and are open to experience (Smits & De Boeck, 2006), which relates positively to creativity (Dollinger, Urban, & James, 2004; Feist, 1998). Creativity is by definition about generating novel ideas and initiating novel behaviors, which means that individuals who feel rewarded by novel tasks should be more motivated to engage in creative behaviors. An intrinsic motivation to engage in novel behaviors might thus explain why approach sensitivity is related to reactive creativity: because of the fun seeking component.

In contrast, reward responsiveness is not related to openness to experience (Smits & De Boeck, 2006). Reward responsive individuals aim to maximize the likelihood and the amount of extrinsic rewards (Scheres & Sanfey, 2006). Reward responsiveness is thus unlikely to enhance positive feelings and reactive creativity if there is no creativity-contingent extrinsic reward such as an evaluation of one's performance relative to others, or creativity-dependent financial

compensation. We thus propose that earlier findings of a significant relationship between approach sensitivity and reactive creativity by De Dreu and colleagues (2011) might be mainly driven by the fun seeking rather than the reward responsiveness component. Hence we suggest the following hypothesis:

H1 - Fun seeking is positively related to reactive creativity, whereas reward responsiveness is not.

Fun Seeking and Proactive Creativity

A second goal of this paper was to study whether fun seeking and reward responsiveness have similar effects on proactive creativity, or whether, depending on the context, effects might be different. Since openness to experience is not only related to creativity, but also to proactive behaviors (Feist, 1998; Tornau & Frese, 2013), the same intrinsic motivational mechanism might underlie a relationship between fun seeking and proactive creativity. In our study however, we distinguish between proactive creativity shared with leaders and colleagues because, as mentioned previously, there are contextual differences between these two receivers of creative initiatives (e.g., in terms of reward and punishment power).

One contextual difference that could diminish intrinsic motivation, is evaluation. Leaders evaluate employees' performance and allocate resources whereas colleagues do not. This makes an evaluative context more salient when creativity is shared with leaders, compared to when it is shared with colleagues. Research shows that intrinsic motivation is decreased by evaluative contexts (Deci, Koestner, & Ryan, 1999). Furthermore, the expectancy of being critically evaluated can decrease creative performance (Amabile, 1979; Amabile, Goldfarb, & Brackfield, 1990). If the relationship between fun seeking and creativity is thus mainly driven by an intrinsic motivational mechanism, an evaluative context should diminish that relationship. We therefore propose that the effect of fun seeking on proactive creativity should be weakest when proactive creativity is shared with leaders who evaluate and are able to reward and punish employees. Because extrinsic reward circumstances undermine the intrinsic motivational mechanism, the link between fun seeking and proactive creativity should not be present when creativity is directed at leaders. When creativity is directed at colleagues and therefore less consequential, fun seeking should be positively linked to proactive creativity through increasing an intrinsic motivation to engage in novel behaviors (see above). We thus hypothesize:

H2 - Fun seeking is positively related to proactive creativity shared with colleagues, but not to proactive creativity shared with leaders.

Reward Responsiveness, Proactive Creativity, and Competing Goals

Although the importance of intrinsic motivation for creativity is empirically well supported, it is less clear how and when extrinsic motivation influences creativity (Shalley, Zhou, & Oldham, 2004). On the one hand, situational extrinsic triggers such as social evaluation and control decrease creative performance (e.g., Amabile, 1979) and dispositional extrinsic motivation is negatively related to creativity (Amabile et al., 1994; Prabhu, Sutton, & Sauser, 2008). On the other hand, extrinsic rewards contingent on creativity can enhance creative performance (Byron & Khazanchi, 2012). Extrinsic rewards can thus focus attention specifically on being creative, and individuals who are strongly extrinsically motivated, can show highly creative behaviors when rewards are creativity contingent (Choi, 2004). A disposition towards extrinsic motivation may therefore not need to be bad for creativity, as has been argued in previous work (e.g., Amabile et al., 1994). Rather, we propose that whether such a disposition (reward responsiveness) helps or hurts creativity, depends on the relative difference in reward likelihood for the creative task versus competing tasks.

The reward context in organizations is often different from the one in experimental settings. For example, because in most experimental research, creativity is the core task, participants do not need to divide their attention between different tasks and goals. In contrast, in organizations, employees need to juggle different competing tasks and goals. Furthermore, the achievement of some goals may be more extrinsically rewarding than others. If one is sensitive to extrinsic rewards, goals that likely result in high extrinsic rewards will thus lead the individual to focus on the attainment of these goals. Proactive creativity is voluntary and, in many organizations, discretionary or extra-role, which means that it is ambiguous whether it will render rewards. Reward responsiveness may therefore hinder proactive creativity because reward responsive individuals are easily distracted by competing goals for which extrinsic rewards probabilities may be clearer.

If other tasks are more likely to result in rewards than proactive creativity, there is a competing extrinsic goal activated in the environment. For the remainder of the paper, we will refer to this as *competing goal activation*. The most likely competing goal for reward responsive people in an organizational environment is core task performance. Core tasks are formally part

of the job and usually clearly and directly rewarded through performance evaluations, bonuses, or promotions. In contrast, rewards for proactive creativity are less clearly outlined and less certain than those for core tasks. Proactive creativity is self-initiated, not a formal job-requirement, and those who evaluate the creative input may not always be able to reward creative performance (e.g., colleagues). Reward responsive employees are thus likely to generally focus attention on core tasks because these are more clearly tied to rewards. We thus propose that reward activation of competing goals distracts attention away from proactive creativity, specifically for reward responsive individuals. Since attention is important for the generation of creative ideas (De Dreu, Nijstad, Baas, Wolsink, & Roskes, 2012), people who focus attention on competing goals, should show decreased creativity.

Whether or not reward responsive employees focus attention on competing goals, however, likely depends on the potential rewards for proactive creativity. Relative to colleagues, leaders have more reward power because they have more control over employees' outcomes in the organization (Fiske & Berdahl, 2007). Although colleagues may also compliment or criticize proactive initiatives, leaders' praise is more consequential as leaders may be able to provide resources to implement an idea and decide whom to give a bonus or promotion. Following this line of reasoning, reward responsive people should share less proactive creativity with colleagues than with leaders. As the extrinsic reward power of colleagues is lower than the one of leaders, competing goals like core task performance are likely to receive more attention because core task performance will always render more rewards than sharing ideas with colleagues. We thus propose:

H3 - Reward responsiveness is negatively related to proactive creativity shared with colleagues, but not to proactive creativity shared with leaders.

In contrast, proactive creativity shared with leaders may yield rewards or punishments depending on whether the leader appreciates the ideas or not (Morrison & Milliken, 2000). Reward responsive individuals may thus choose to proactively share creative suggestions with their leaders, depending on the relative strength of the rewards for creative proactivity compared to the ones of competing goals. To the extent that the reward likelihood for proactive creativity shared with leaders is higher than with colleagues, the competing goal needs to be more strongly activated to direct the attention of the reward responsive individual to the competing goal. The relationship between reward responsiveness and proactive creativity shared with leaders thus likely depends on reward saliency of competing goals in the organization.

Employees who are strongly career oriented try to achieve maximum performance on core tasks to ensure career success (e.g., Belschak & Den Hartog, 2010; Ellemers, de Gilder, & van den Heuvel, 1998). Career orientation thus enhances activation of a competing goal: to focus attention on core-tasks which are most prominent in the leader's evaluation of work performance. Reward responsive individuals high on career orientation will thus likely prioritize behaviors focused on improving core task performance over proactively engaging in creativity that is aimed at improving the organization. They are less likely to invest their attention and energy into unrequested pro-organizational proactive creative behaviors because for them, the competing goal (career advancement through high performance on core tasks) is strongly activated. In contrast, reward responsive employees who are low on career orientation do not experience a strong competing goal, and might also see extrinsic reward possibilities in proactive creativity to leaders because leaders may value and reward these contributions to the organization. We thus propose that the relationship between reward responsiveness and proactive creativity to leaders is moderated by the relative strength of competing goals in the organization, specifically, employees' career orientation.

H4 - The relationship between reward responsiveness and proactive creativity shared with leaders is moderated by competing goal activation. More specifically, reward responsive employees with a high career orientation will share less proactive creativity with their leaders than reward responsive employees with a low career orientation.

Field Study (Study 1)

Design, Sample, Procedure

We used a cross-sectional multi-source survey design to test how fun seeking and reward responsiveness were related to creativity on an ideation task (reactive creativity), and we measured proactive creativity at work as rated by team-colleagues and team-leaders in organizations. Participants (*N*=228) worked in 76 teams consisting of 2 employees (50% males, mean age = 33.6, *SD* = 12.33, mean tenure = 6.7, *SD* = 8.6) and 1 team-leader (62% males, mean age = 41.9, *SD* = 11.81, mean tenure = 11.2, *SD* = 10.5), all working together on a daily basis. Participants worked in a variety of Dutch organizations including consulting (17.8%),

retailing (15.8%), government (4.8%), non-profit (6.8%), education (6.8), healthcare (8.2%), and a variety of other small businesses (40%).

Subordinates completed a digital questionnaire, in which they were asked to generate ideas for the reactive creativity task, rated their own reward responsiveness and fun seeking using the BIS/BAS scales, and rated their colleagues' proactive creativity in the organization. Their colleague did the same (about them), and the leader rated both subordinates on their proactive creativity. All questionnaires were administered with a researcher present. Researchers made an appointment with each team, personally explained and distributed all measures, and left after all data were collected. Data collection covered a period of two months. Because some single team members missed the appointments (N = 6), not all triads are complete which means that the degrees of freedom for tests differ slightly depending on the measurement level of the dependent variables (colleague or leader ratings of proactive creativity).

Dependent Variables: Reactive and Proactive Creativity, to Colleagues or Leaders. We measured reactive creativity with a task that required people to generate ideas for possible usage of an object that is commonly used only for one purpose: a brick. This task was originally designed by Guilford, Christensen, Merrifield, and Wilson (1978) and has been used in many creativity studies (Fink, Benedek, Grabner, Staudt, & Neubauer, 2007). Participants had 6 minutes to generate ideas. Two independent raters indicated the creativity of each idea on a scale ranging from 1 (not at all, e.g., *'build a house'*) to 5 (highly, e.g., *'drill holes and use it as a pen tray'*). On average, participants generated 12.73 ideas (SD = 9.85), with an average creativity score [16] of 2.78 (SD = .54). Inter-rater reliability was good (ICC =.782, CI_{95} = [.764, .799]).

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We measured proactive creativity in the questionnaire using 15 items tapping the creative quality of voice behavior (Chapter 2). Colleagues and team leaders rated proactive creativity communicated towards them on a 7-point Likert scale ranging from 1 = 'completely disagree' to 7 = 'completely agree'. Items reflected both originality (8 items, e.g., '*If my colleague shares an idea with me, it is original*') and usefulness (7 items, e.g., *'When my colleague shows concerns about dysfunctional processes, it is valuable'*) of the shared suggestions, problems, and opinions. To ensure that

[16] We used the average originality score of participants to reflect their reactive creativity. Some studies use fluency (the number of ideas) as an indicator of creativity. We chose to focus on originality since the proactive creativity measures similarly focus on the content rather than the frequency of the creative behavior. However, we measured and tested the effects for fluency as well, and any direction of reported effects in our models regarding reactive creativity are the same for fluency.

participants understood the nature of proactive creativity (e.g., discretionary, proactive, and constructive as opposed to a response to a request, reactive behavior, or merely criticizing), all participants first needed to answer 3 control questions correctly before proceeding to the proactive creativity measures (e.g., *'The questions I will answer next are about suggestions that are a) a response to a request or question from me, b) discretionarily initiated by my colleague / subordinate*). The 15-item questionnaire was highly reliable ($a_{\text{colleagues}} = .93$, $a_{\text{leaders}} = .96$).

Independent and Control Variables and Measurement Model. Our hypotheses focus on the fun seeking and the reward responsiveness scales of BAS. There is a third BAS component, drive. Drive has less clear intrinsic or extrinsic properties, and therefore was not our focus. However, research on the behavioral approach and inhibition systems usually uses the full scales including drive, even if only as an additional control variable. In line with the current research practice, we therefore included the full 20-item BIS/BAS personality scale (Carver & White, 1994) to assess our independent variables fun seeking and reward responsiveness, while controlling for the drive factor and BIS, to ensure that findings can be attributed to these specific BAS components. All scales ranged from 1 ('does not apply to me at all') to 7 ('completely applies to me').

The BIS scale was comprised of 7 items, such as *'I worry about making mistakes'* ($M = 4.23$, $SD = 1.07$). The BAS scale consisted of 13 items ($M = 4.89$, $SD = .76$) and can be further split up in three subscales: drive, 4 items, '*When I go after something I want, I use a 'no holds barred' approach'* ($M = 4.45$, $SD = 1.14$), fun seeking, 4 items, '*I will often do things for no other reason than that they might be fun'* ($M = 4.76$, $SD = .99$), and reward responsiveness, 5 items, '*It would excite me to win a contest'* ($M = 5.59$, $SD = .75$). See below and Table 1 for the composite reliabilities. The proposed 4-factor structure has been supported across a variety of samples (Heubeck et al., 1998; Leone et al., 2001; Ross, Millis, Bonebright, & Bailley, 2002). However, reactive creativity has only been related to the total BAS scales so far (De Dreu et al., 2011). To be sure we could infer conclusions from separate fun seeking and reward responsiveness effects, we first performed a confirmatory factor analyses (CFA) in Mplus to confirm the 4-factor structure of the BIS/BAS scale in our data.

Parceling Procedure. First, we parceled items of the BIS/BAS factors the same way Leone and colleagues (2001) did in their extensive cross-cultural validation study of the scales. A parcel (as opposed to a single item) is an observed indicator in the latent factor model that is composed of several items representing a factor. We used parceling to achieve a satisfactory

indicator to sample ratio given our sample size. 'When thoughtfully composed, parcels provide efficient, reliable, and valid indicators of latent constructs' (Little, Rhemtulla, Gibson, & Schoemann, 2013, p. 285). To ensure thoughtful, unbiased, and balanced item distribution across parcels, we used the Item-to-Construct Balance technique (Little, Cunningham, Shahar, & Widaman, 2002). We first ran a 4-factor CFA with all items and used the highest factor loadings to anchor each parcel within a factor. Next, the lowest loadings were matched to the highest loadings, after which medium loadings were randomly distributed across parcels. We used the same amount of parcels per factor, and the same amount of items per parcel as Leone and colleagues (2001; p. 378) . Next, we compared the model fit for the 2-factor model (BIS, BAS) and the 4-factor model (BIS, drive, fun seeking, reward responsiveness).

As expected, the 4-factor model provided the best fit ($\chi^2 = 40.19$, $df = 21$, $N=146$, $p = .007$, CFI = .95, TLI = .92, RMSEA = .08, 90% CI [.04 , .12], AIC = 3687, BIC = 3786). We compared this model to the 2-factor-model, which had a fit ($\chi^2 = 98.87$, $df = 26$, $N=146$, $p < 0.001$, CFI = 0.82, TLI = 0.75, RMSEA = 0.14, 90% CI [.11 , .17], AIC = 3736, BIC = 3819) that was significantly worse than the one of the 4-factor model ($\Delta\chi^2 = 58.68$, $\Delta df = 5$, $p < .001$, ΔAIC = 49, ΔBIC = 33). These results confirm results of previous studies supporting the 4-factor structure of the BIS/BAS scales (Heubeck et al., 1998; Leone et al., 2001; Ross et al., 2002; Smits & De Boeck, 2006). In line with earlier studies using the BIS/BAS scales (e.g., Leone et al., 2001), reliabilities were computed from the 4-factor model standardized parameter estimates using the standardized factor loadings (λ) and the error variances (δ) in the calculation $\varrho = (\Sigma \lambda_1^2) / ((\Sigma \lambda_1^2) + (\Sigma \delta_1))$ (Bagozzi, 1994).[17] Reliabilities for BIS ($\varrho = .92$), drive ($\varrho = .91$), reward responsiveness ($\varrho = .95$) and fun seeking ($\varrho = .83$) were good. The factor analytical support for the 4-factor model of the BIS/BAS scales with satisfactory reliabilities allowed us to look at the independent effects of the BAS subscales fun seeking and reward responsiveness on creativity.

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[17] This formula for 'composite reliability' is similar to Cronbach's alpha, however, it takes the factor loadings into account instead of assuming that each indicator (item) is equally weighted in determining the composite (factor) (Leone, Perugini, Bagozzi, Pierro, & Mannetti, 2001, p. 383). One limitation of Cronbach's alpha is that it wrongly assumes that all items contribute equally to reliability (Bollen, 1989; Shook, Ketchen, Hult, & Kacmar, 2004). Composite reliability, which draws on the standardized loadings and measurement error for each item, is a better choice and overcomes bias especially when subscales have few items and a wide range of loadings (Bacon, Sauer, & Young, 1995, p. 400). This applies particularly to the BIS/BAS scales. A value of 0.70 is assumed to be an acceptable threshold for composite reliability (Fornell & Larcker, 1981).

Moderator Competing Goal. We measured the strength of a competing extrinsic goal in the organization, namely career orientation, with a scale that was originally designed to measure proactive behaviors focused on advancing personal career goals (Belschak & Den Hartog, 2010). We specifically chose a (proactivity) domain-specific career orientation scale that measure a person's tendency to attain personal (career) goals by using proactive behaviors. This scale thus reflects proactivity, but with a focus on improving core tasks and enhancing career relevant elements of job performance. We used all 4 items of the scale, and adapted the format from other-ratings to self-ratings. An example item is: *'I focus on finding new ways to execute my tasks so I can be more successful'*. The scale (M = 5.01, SD = 1.07, a = .79) ranged from 1 ('does not apply to me at all') to 7 (completely applies to me').

Results

We used multiple regression analysis (using Mplus with a robust maximum likelihood estimator) to test main effects of fun seeking and reward responsiveness on reactive creativity, proactive creativity to colleagues, and proactive creativity to leaders, and a moderation effect of competing goal activation on the relationship between reward responsiveness and proactive creativity shared with leaders. We controlled for drive and BIS in the model, as these scales are often used together, and creativity research has not yet used the different BAS sub-factors in empirical studies. The results are presented in Table 2 and Figure 1, descriptives and correlations can be found in Table1.

TABLE 1. Descriptives and Correlations

					1	2	3	4	5	6	7	8
			M	*SD*	Reactive Creativity	Proactive Creativity Colleagues	Proactive Creativity Leaders	Reward Responsive	Fun Seeking	Career Orientation	BIS	Drive
Creativity *Dependent*	Reactive	**1**	2.78	.54	(0.78)							
	Proactive Colleagues	**2**	4.31	.87	**.19***	(0.93)						
	Proactive Leaders	**3**	4.33	1.11	.13	**.35*****	(0.96)					
Approach sensitivity *Independent*	Reward Responsive *Extrinsic*	**4**	5.59	.75	-.02	**-.30*****	-.06	(0.95)				
	Fun Seeking *Intrinsic*	**5**	4.65	.99	.13	.00	.03	.39**	(0.83)			
Competing Goal *Moderator*	Career Orientation	**6**	5.01	1.07	-.09	**-.21****	**-.19***	**.35*****	.14	(0.79)		
Controls	BIS	**7**	4.23	1.07	.05	.08	-.07	.05	-.16	.02	(0.92)	
	Drive	**8**	4.45	1.14	-.16	**-.19***	.01	**.50*****	**.40*****	**.37*****	**-.23****	(0.91)

Note. * $p < .05$, ** $p < .01$, *** $p < .001$. Significant correlations are printed in **bold**

Hypothesis testing

First, we hypothesized that reactive creativity would be positively related to fun seeking but not to reward responsiveness *(H1)*. Indeed, fun seeking was related to reactive creativity (β = .24, *se* = .089, p = .007), replicating findings of experimental research that part of approach sensitivity relates to reactive creativity in a field study sample. Reward responsiveness was not significantly related to reactive creativity (β = .023, *se* = .098, p = .813). This is in line with hypothesis 1.

Second, we argued that fun seeking should enhance proactive creativity in a mild evaluative context (toward colleagues) rather than a strong evaluative context (toward leaders). We thus hypothesized that fun seeking should be positively related to proactive creativity shared with colleagues but not with when shared with leaders *(H2)*. The results showed a significant positive effect of fun seeking on proactive creativity shared with colleagues (β = .193, *se* = .091, p = .033), but not when shared with leaders (β = .031, *se* = .095, p = .748). This is in line with hypothesis 2.

Third, we argued that the relationship between reward responsiveness and proactive creativity depends on probability of gaining rewards through proactive creativity relative to the probability of gaining rewards through completing a competing goal. We thus hypothesized that reward responsiveness would be negatively related to proactive creativity when it is shared with colleagues but not when shared with leaders *(H3)*. Indeed, reward responsiveness was only negatively related to proactive creativity shared with colleagues (β = -.34, *se* = .093, p < .001), not to proactive creativity shared with leaders (β = -.07, *se* = .010, p = .484), supporting Hypothesis 3.

Finally, we hypothesized that competing goal activation would moderate the relationship between reward responsiveness and proactive creativity shared with leaders *(H4)*. As expected, the relationship between reward responsiveness and proactive creativity shared with leaders was moderated by the strength of a competing extrinsic goal, namely career orientation, supporting Hypothesis 4. The interaction between reward responsiveness and career orientation was significant for proactive creativity shared with leaders, (β = -.204, *se* = .079, t = -2.67, p = .01). The plot of the significant interaction effect (Figure 1) shows, in line with *H4*, that employees

high on reward responsiveness share less proactive creativity with their leader if their career orientation is high, and more when career orientation is low.

Table. 2. Multiple Regression Model results

	Dependent variables								
	Reactive Creativity					Proactive Creativity			
	Expert Raters *(H1)*			Colleagues *(H2) (H3)*			Leaders *(H2) (H3) (H4)*		
Predictors	*β*	*se*	*p*	*β*	*se*	*p*	*β*	*se*	*p*
Fun Seeking	**.24****	.09	.007	**.19***	.09	.033	**.03**	.10	.748
Reward Responsiveness	**.023**	.10	.813	**-.34*****	.09	.000	**-.07**	.10	.484
Drive	-.27**	.10	.006	-.07	.10	.474	-.02	.10	.846
BIS	.03	.09	.717	.10	.08	.216	-.04	.09	.643
RR * Competing Goal				-.06	.07	.449	**-.20****	.08	.010

Note. * $p < .05$, ** $p < .01$, *** $p < .001$. Hypothesized effects are printed in **bold**.

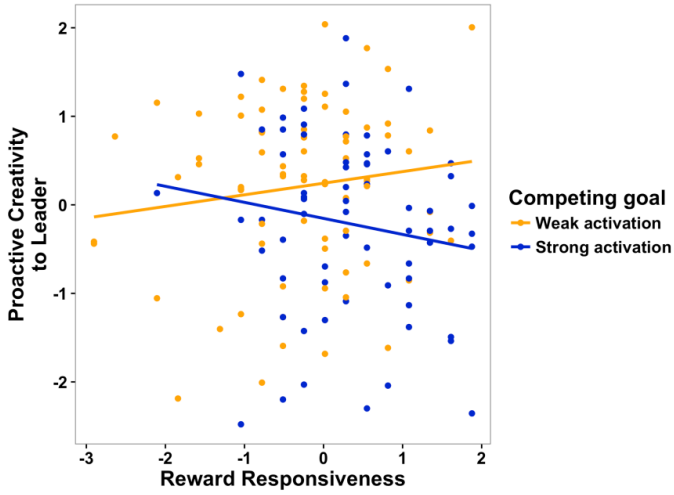


Figure 1. Reward responsiveness * Competing Goal interaction on Proactive Creativity to Leaders. Competing goal activation groups are created with a mean-split (of career orientation). Simple interaction effect, β = -.220, *se* = .073, t = -2.665, p = .009 (no control variables, variables are Z-standardized).

Experimental Study (Study 2)

The results of the multi-source field study presented above indicate that it is important to distinguish between the extrinsic and intrinsic aspect of approach sensitivity when investigating its effect on creativity. Fun seeking seems to enhance creativity in non-evaluative contexts, whereas reward responsiveness decreases proactive creativity, but only when there is a competing goal that is more likely to result in extrinsic rewards than creativity. The goal of our next study was to replicate the results regarding reward responsiveness and proactive creativity. In this replication, we addressed two issues of our first survey study. First, the lack of explicit activation of competing extrinsic goals and second, the unclear direction of causality. Although we assume that a strong career orientation activates competing extrinsic goals, which distracts from proactive creativity shared with leaders, we cannot be sure that reward responsive individuals are truly distracted by the reward salience of competing goals as we did not manipulate reward salience with financial rewards. In order to establish the direction of causality, we therefore conducted a laboratory experiment in which we manipulated reward salience of a competing core

task within participants. If it is indeed the likelihood of an extrinsic reward for a competing goal completion that distracts reward responsive individuals' attention from proactive creative behaviors, making a competing tasks' reward more salient (extrinsically activating a competing goal) should negatively influence proactive creativity of reward responsive individuals.

Design

In this mixed 2 (reward responsiveness, between) * 2 (competing goal activation, within) experiment, we investigated whether the reward activation of a competing goal decreased proactive creativity in reward responsive individuals. On two occasions, participants needed to multi-task between a voluntary task (proactive creativity) and a core task for which an extrinsic reward was either likely (strong competing goal) or unlikely (weak competing goal). We expected that for reward responsive participants, strong competing goal activation would decrease proactive creativity on the voluntary task. We manipulated competing goal activation through reward probability: the core task was either easy, and thus the financial reward for successfully accomplishing the task was also easy to obtain (strong competing goal activation), or the task was difficult, and thus the reward was difficult to obtain (weak competing goal activation). We measured proactive creativity twice within participants: all participants got opportunities to show proactive creativity while being exposed to a strong and a weak competing goal. Proactive creativity was rated by two independent raters after the experiment.

Participants, Procedure, Manipulations, Tasks and Measures

Participants were 56 business school students (48% male, M_{age} = 21.78, SD_{age} = 1.40, $range_{age}$ 19 – 25). They were welcomed by the experiment leader and seated behind a computer. The experimenter explained that payment depended on task performance and that performance would be monitored and rated. The participants' core task was a vocal counting task (counting backwards), always resulting in a €2.50 salary if performed correctly. The counting task was framed as participants' core objective, which would be repeated several times throughout the experiment, always resulting in the standard salary if performed correctly. We started the experiment with a medium-complexity core task (count backwards from 100, in steps of 2), rewarded with the standard €2.50 salary.

Next, participants anonymously generated 10 suggestions for improvements of the business school (adopted from De Dreu, Baas, & Nijstad, 2008) in a period of 16 minutes. We

told them explicitly that these ideas would not be rated or used for analysis, but that they were merely an anonymous preparation for a later task. We needed 10 thoughts, problems, opinions, or ideas (referred to as 'ideas' hereafter) to be able to fill both conditions (strong vs. weak competing goal) with 5 ideas to voluntarily share. To evenly distribute good and bad ideas across conditions, the experimenter classified the ideas as creative or not creative during the generation phase. Based on these classifications, the computer program randomly and evenly distributed ideas across the competing goal conditions. After the experiment, we used the expert ratings (as opposed to the experimenter's ratings during the experiment) to check whether creative ideas were indeed equally distributed across the competing goal conditions. A repeated measures ANOVA showed that average creativity scores of ideas generated did not significantly differ between strong (M_{strong} = 2.36, *se* = .037, $_{within}CI_{95}$ = [2.29, 2.44]) and weak (M_{weak} = 2.28, *se* = .037, $_{within}CI_{95}$ = [2.21, 2.36]) competing goal activation conditions, F (55,1) = 1.12, p = .294, η^2 = .020, Greenhouse-Geisser corrected. Within-participant confidence intervals were calculated using the method developed by Loftus and Masson (1994), as revised by Cousineau (2005).

Proactive Creativity and Competing Goal Activation Manipulation. After a filler task, participants received instructions that they would get to see a random selection of their own ideas regarding education improvement, and would get the opportunity to share these ideas with the experiment-leader, who would evaluate them, and reward or punish them financially. Additionally, good ideas would be selected by the experimenter for discussion with the dean of the faculty. Sharing ideas (as opposed to the generation phase) was thus no longer anonymous, and was now self-initiated (some participants never shared ideas in this phase), potentially influential in the university, and financially rewarding, yet risky: sharing a good idea would result in a €0.50 gain, sharing a bad idea in a €0.50 loss. We stressed that sharing ideas was optional. Participants were not required to share anything, and they had a core task that was relatively profitable (€2.50). Participants performed two proactive creativity trials, each with 5 messages to share and a random order of strong vs. weak competing goal activation.

We manipulated competing goal activation by changing the complexity of the core task, thereby varying the ease of obtaining the core task reward. The core task was either complex - to count backwards from 107 in steps of 3 (weak competing goal activation) – or simple - to count backwards from 100 in steps of 1 (strong competing goal activation). Although this may sound relatively easy, participants had two tasks to perform (core task and proactive creativity task) which were competing for attentional resources. They thus had the opportunity to proactively

share their own previously generated ideas, *while* performing their core task. Participants shared ideas digitally, by selecting and sending the message to the experimenter. Payment was dependent on core and proactive creativity task performance.

Dependent Variable Proactive Creativity. After the experiment, all generated ideas in the generation task were rated by two independent raters on originality and usefulness on a scale from 1 (not at all) to 5 (highly). Inter-rater reliability was good (ICC =.836, CI_{95} = [.815, .855]). Overall, originality and usefulness were strongly correlated (r =.643, p < .001), so we aggregated these ratings into one variable, generated ideas (scores we used to check whether ideas were equally distributed across conditions). The dependent variable proactive creativity was reflected by the creativity (originality and usefulness) of the messages that were voluntarily shared later during the two trials with competing core tasks[18]. Within participants, there were thus two (dependent) measures of proactive creativity: proactive creativity during strong competing goal activation, and proactive creativity during weak competing goal activation (see Table 3 for descriptives).

Independent variable Reward Responsiveness and Controls. All participants rated their BIS/BAS personality with the same scale as in the previous study (Carver & White, 1994). Similarly to Study 1, we calculated composite reliabilities, which were good for reward responsiveness (ϱ = .89), fun seeking (ϱ = .75), drive (ϱ = .91), and BIS (ϱ = .85).

A4

Results

We hypothesized that when reward responsive participants are strongly activated by the easy reward that performing the core task will bring (but not when weakly activated, when attaining the reward is difficult), they focus attentional resources on the core task, decreasing proactive creativity in this condition *(H4)*. We thus tested the effects of the interaction between competing goal activation and reward responsiveness on proactive creativity shared with the experiment leader using a repeated measures ANCOVA with reward responsiveness modeled as a continuous covariate.

[18] This measure of proactive creativity is identical to our measure of (creative) voice quality in Chapter 2.

As expected, the interaction effect was significant for reward responsiveness, F (44,1) = 7.74, p = .008, η^2 = .150, F (42,1) = 3.03, p = .034, η^2 = .101, and not for the other BIS and BAS subscales (see Table 4 for results of the all sub-scales). Messages shared by reward responsive participants were less creative than those shared by participants who were less reward responsive, but this was only the case in the condition with a strong competing goal, F (43,2) = 3.81, β = -.32, p = .030, se = .099, not in the condition with a weak competing goal, where proactive creativity of reward responsive individuals increased slightly, β = .29, p = .046, se = .111. The visualization of the data (Figure 2) shows the same pattern as the reward responsiveness * competing goal activation interaction in the field study (see Figure 1 above). We thus replicated the interaction we found in the field study in an experimental within-subjects design, indicating that approach sensitivity in the form of responsiveness to extrinsic rewards diminishes proactive creativity only in the presence of other highly attractive competing goals, and may even be beneficial if proactive creativity seems most rewarding.

Table 3. Descriptives and Correlations, (reliabilities) on the diagonal.

					Proactive Creativity		**Independents**		**BIS/BAS Controls**	
				1	**2**	**3**	**4**	**5**	**6**	**7**
	M	*SD*		Generated Ideas	Strong CG	Weak CG	RR	FS	D	BIS
Generated Ideas	2.36	.44	**1**	(.84)						
Proactive Creativity + Strong Competing Goal	2.41	.55	**2**	**.66*****						
Proactive Creativity + Weak Competing Goal	2.43	.63	**3**	**.72*****	.22					
Reward Responsive	5.56	.72	**4**	-.04	**-.30***	.12	(.89)			
Fun Seeking	4.73	.81	**5**	-.15	-.21	-.06	**.33***	(.75)		
Drive	4.74	1.24	**6**	-.08	-.25	-.07	**. 52*****	**.37****	(.91)	
BIS	4.34	1.14	**7**	.10	-.04	.17	.25	-.19	.05	(.85)

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

Table 4. Repeated Measures ANCOVA interactions of competing goal activation * BIS/BAS-subscales on Proactive Creativity to the Experimenter

	df	*F*	*p*	η^2
Reward Responsiveness	44,1	7.74**	.008	.150
Fun Seeking	44,1	1.33	.255	.029
BIS	44,1	4.21	.051	.084
Drive	44,1	2.05	.159	.044

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

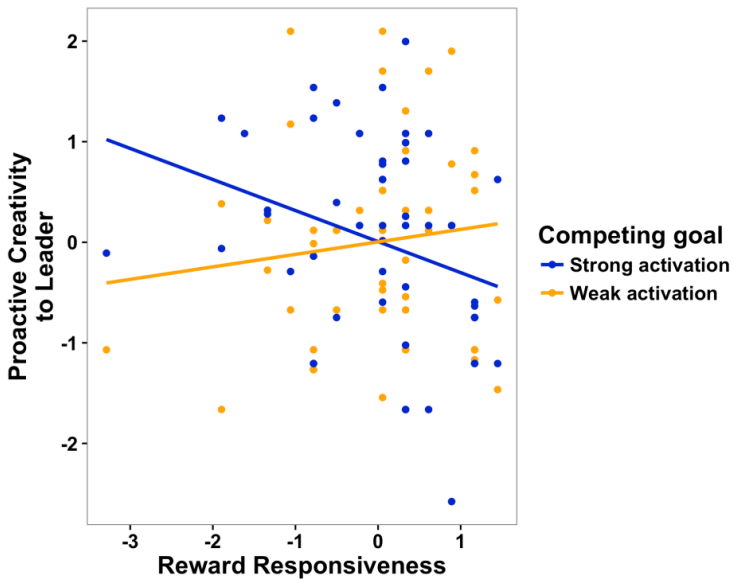


Figure 2. Reward responsiveness * Competing Goal Activation interaction on proactive creativity to experiment leader**.**

Discussion

While the behavioral approach system is widely used in the general psychology literature to explain why people engage in goal-directed, approach-oriented behaviors (e.g., Gray, 1990; Rutherford & Lindell, 2011), to date it has rarely been used to explain creative or change-oriented behaviors in organizations. Experimental creativity literature suggests however, that it might be promising to study how the approach system relates to creativity in organizations, because reactive creativity in the lab is related to individual differences in approach sensitivity (De Dreu et al., 2011). We built on and extended this work by relating approach sensitivity to reactive creativity, but also to proactive creativity shared with colleagues and leaders in the organization. These results contribute both to the literature on creativity and on the literature on the behavioral approach system.

Summary of Results and Theoretical Implications

We proposed different hypotheses for two discriminant components of approach system sensitivity, namely the sensitivity to extrinsic rewards (reward responsiveness), and the sensitivity to intrinsic rewards (fun seeking). Based on previous research relating creativity and proactivity to openness to experience and intrinsic motivation (Feist, 1998; George & Zhou, 2001; Tornau & Frese, 2013; Twomey, Burns, & Morris, 1998), we proposed that fun seeking would fuel engagement in creative behaviors, both reactive and proactive. This proposition was supported by positive relationships between fun seeking and reactive creativity *(H1)* as well as proactive creativity, but only when is shared with colleagues, not when shared with leaders *(H2)*. This is in line with current theories arguing that intrinsic motivation is important for both proactive behavior (Parker, Williams, & Turner, 2006) and reactive creativity (Amabile, 1997). Our findings also support the idea that controlling and evaluative contexts may hinder intrinsic motivation and creativity to some extent (Amabile, 1979; Deci et al., 1999): while fun seeking individuals share proactive creativity with colleagues, they do not necessarily share it with leaders, who have more reward (and punishment) power.

Another potential explanation for the relationship between fun seeking and reactive and proactive creativity through intrinsic motivation might be anticipated positive affect. We replicated earlier findings by De Dreu and colleagues (2011) who found a positive relationship between general approach sensitivity and reactive creativity. Although our results indicate that this positive relationship seems to be driven specifically by the fun seeking component of

approach sensitivity, the underlying affective explanation might still hold. De Dreu and colleagues (2011) found that the positive effect of approach sensitivity was primarily found when participants generated ideas on broad topics. Because broad thinking and creativity can be facilitated by positive affect (Isen, Daubman, & Nowicki, 1987), and approach sensitivity enhances positive affective experiences (Carver & White, 1994), approach sensitivity may help reactive creativity through intensifying positive affective reactions to cues that signal future reward. Because fun seeking refers explicitly to 'feeling good when engaging in novel experiences'(Carver & White, 1994), it is likely that individuals high on fun seeking experience positive affect when exposed to a creativity task they have never done before (i.e., a novel experience). Fun seeking individuals might thus experience positive affect and broadened thoughts when confronted with a reactive creativity task. This explanation would integrate an intrinsic motivation with a positive affect perspective on creativity in the sense that intrinsic motivation and positive affect may both enhance creativity, and preferably together, as proposed earlier by Shalley and colleagues (2004).

Next, for reward responsiveness (the sensitivity to extrinsic rewards), we hypothesized a negative effect on proactive creativity, but only when there are other, more rewarding tasks competing for attention. When faced with multiple tasks, reward responsive individuals presumably allocate attention resources based on weighing extrinsic reward probabilities and focusing on the task that potentially renders most rewards. Indeed, our field study data showed that reward responsiveness was negatively related to proactive creativity shared with colleagues who typically do not have the power to provide tangible resources as rewards for creativity. While this is in line with earlier work arguing that trait-extrinsic motivation is negatively related to creativity (Amabile et al., 1994; Prabhu et al., 2008), our study adds that sensitivity to extrinsic rewards is not necessarily always bad for creative performance. We found no negative effect of reward responsiveness on reactive creativity, where creativity was the core task, and no negative effect on proactive creativity shared with leaders who have the power to potentially reward creativity. This indicates that reward responsiveness only harms self-initiated creative performance in competing goal or task contexts, especially when creativity is unlikely to be rewarded, and other tasks seem more rewarding.

A4

We further investigated whether the likelihood of extrinsic rewards for competing tasks (competing extrinsic goal activation) influenced whether reward responsive individuals shared proactive creativity with leaders, who can reward creative performance *(H4)*. In support of this

hypothesis, our field study data showed that reward responsive employees' proactive creativity towards leaders increased when they were less focused on their own career goals, and decreased when they were more focused on these career goals. Our experiment showed the same pattern. In the experimental setting, proactive creativity to leaders decreased when extrinsic rewards for a competing goal where strongly activated, and it increased when rewards for a competing goal were only mildly activated. This shows that the relative ease or importance of gaining rewards elsewhere distracts reward responsive individuals from engaging in proactive creativity. If they are not distracted however, and proactive creativity possibly renders rewards, they can invest their efforts in proactive creativity.

The fact that we found this moderation effect of competing goal activation in two different research designs, strengthens the implications of our results for the field of creativity. As mentioned earlier, it seems that extrinsic motivation is not necessarily bad for creative performance, depending on whether rewards attract attention to creativity or towards competing tasks. These results are in line with previous work showing that rewards can enhance creative performance (Byron & Khazanchi, 2012), and research that indicates that trait-extrinsic motivation can be positively related to creativity (Choi, 2004). They also provide an explanation for previous work showing that dispositional extrinsic motivation is negatively related to creativity (Amabile et al., 1994). Namely, that whether or not extrinsic motivation helps or hinders creativity depends highly on the type of creativity (reactive versus proactive) and the context of creative tasks (rewards for competing tasks).

The results of this study may have implications for theory on the role of affect and attention in creative and proactive behaviors. The view that creativity and proactivity is driven by positive affect and broad and flexible attention dominates the literature in these fields (e.g., Fredrickson, 2001; Gasper & Clore, 2002; Isen, Daubman, & Nowicki, 1987; Parker, Bindl, & Strauss, 2010). The first study on reactive creativity and approach sensitivity (De Dreu et al., 2011) took a similar approach, and its results supported the idea that approach sensitivity enhances reactive creativity through anticipated positive affect and broad thinking. The results of this study show that this may indeed be the case, for those individuals high in fun seeking. Fun seeking individuals may generally focus attention more broadly because these individuals actively seek out novel tasks (Carver & White, 1994). They are on the search for new rewards and hence may generally be more inclined to focus on a broad range of stimuli.

On the other side of the broad - narrow spectrum, reward responsive individuals might be more inclined to focus attention on one task. The dual pathway to creativity model has argued that creative thinking can also be fostered by narrow and systematic attention focus (De Dreu, Baas, & Nijstad, 2008; Nijstad, Dreu, Rietzschel, & Baas, 2010). Research on attention and approach sensitivity has shown that reward anticipation narrows attention focus, mostly for those who are approach sensitive (Gable & Harmon-Jones, 2008; Harmon-Jones & Gable, 2009). Reward responsive people focus their attention on one particular task, namely the task that is most rewarded (Carver & White, 1994). As rewards enhance creativity (Byron & Khazanchi, 2012), it may thus be that reward responsive individuals focus their attention more narrowly and locally on creative tasks when rewards are pending. It may thus be that those who are reward responsive use a narrow and systematic attention focus to creativity, as opposed to a broad and flexible focus. This is particularly interesting in the study of proactive creative behaviors over time. Often, proactive behavior requires people to overcome setbacks and obstacles (Fay & Frese, 2001), and a narrow attention focus on the goal may be useful to persist and complete a proactive creative process from start to finish.

Because the drive component of BAS was outside of our extrinsic - intrinsic reward sensitivity theoretical focus, we did not hypothesize any effects of the drive component of BAS. Drive approach sensitivity reflects the degree to which people 'get out of their way to get something they want', it thus reflects aproach motivational persistence (Carver, 2006). Athough we did not hypothesize any effects for drive, we did find a negative effect on reactive creativity in our organizational sample. There are two explanations for this finding. First, Smit, and Boeck (2006) showed that drive is positively related to conscientiousness, which is negatively related to reactive creativity (Feist, 1998), but positively related to proactive behavior (Tornau & Frese, 2013). This might explain why we did not find a negative effect of drive on proactive creativity, while the effect on reactive creativity was negative. Second, the reactive creativity task may benefit more from a broad, flexible thinking style than proactive creativity in organizations, which might require more persistence (Fay & Frese, 2001). Too much persistence might even hinder originality in the reactive task when broad thinking is more important than drive.

Contributions

The behavioral approach system is assumed to underlie goal-directed behavior, and approach sensitivity reflects the relative ease of this systems' activation (Carver, 2006; Rutherford & Lindell, 2011). Given that proactive behavior is highly goal directed (Grant & Ashford, 2008),

one might assume that approach sensitivity generally enhances proactive creativity because people who are approach sensitive are easily activated and engaged (as opposed to inhibited and disengaged). However, our results indicate that the only component of approach sensitivity that is directly positively related to proactive creativity, is a sensitivity to intrinsic rewards, that is fun seeking. The sensitivity to extrinsic rewards, namely reward responsiveness, hinders proactive creativity, albeit only when rewards for other tasks distract attention. Our results thus suggest that it is not general approach sensitivity, but rather the specific sensitivity to intrinsic (fun seeking) or extrinsic (reward responsiveness) rewards that either guides attention towards engaging in proactive creativity, or away from proactive creativity because other tasks are more rewarding. This also extends previous work by De Dreu and colleagues (2011) who found a positive association between general approach sensitivity and reactive creativity and highlights that it may be fruitful to distinguish between the approach sensitivity scales in future creativity research.

We add to the experimental creativity literature that both rewards for creativity and type of approach sensitivity are important factors to consider in further exploring emotional motivational drivers of creativity. We add to the proactivity and creativity literature by bridging both concepts and showing when intrinsic and extrinsic reward sensitivity help or hinder proactive creativity. Furthermore, we contribute to the organizational literature by introducing approach sensitivity as an emotional-motivational driver for change oriented behavior in organizations. This study also highlights that findings from experimental studies on creativity do not necessarily apply to the organizational context (and vice versa). As creativity is important to organizational life (Shalley et al., 2004), it is important to use different (field and experimental) research designs to study the same research questions and hypotheses. Finally, an important notion we want to highlight is the interaction between trait and situation. If we want to understand why people engage in creativity, we have to look simultaneously at both what activates different individuals and the situational constraints of different types of creativity, and thus our measurements.

Limitations and Future Research

There are several limitations to the research presented here. First, although there is indirect theoretical support as to why the fun seeking component of approach sensitivity might be important in fostering creativity (e.g., due to its link with intrinsic motivation), we only have one organizational sample to support this empirically. More research on other underlying

mechanisms, for example, a positive affect enhancing or an attentional broadening effect of fun seeking, are necessary to determine whether the fun seeking effect is motivational, affective, attentional, or a combination thereof.

Furthermore, as we tried to replicate previous research on the relationship between aproach sensitivity and reactive creativity (see De Dreu et al., 2011), we studied reactive creativity without the precence of extrinsic rewards. We did not study reactive creativity with the possibility of extrinsic rewards which does happen in organizations (e.g., developers, scientists). Research shows reactive creativity can be enhanced by rewards (Baer, Oldham, & Cummings, 2003; Eisenberger, Armeli, & Pretz, 1998; Eisenberger & Cameron, 1998; Eisenberger & Selbst, 1994; Eisenberger & Shanock, 2003). Therefore, if reactive creativity was extrinsically rewarded, we would expect that reward responsive individuals show increased reactive creative performance.

Next, we did not test whether leaders in our study actually extrinsically rewarded proactive creativity. We rather argue that, compared to colleagues, they have more extrinsic reward resources and more power to allocate those resources. In support of this assumption, the strong negative relationship between reward responsiveness and proactive creativity shared with colleagues supports the idea that colleagues are less able to extrinsically reward proactive creativity than leaders are. Furthermore, our laboratory study with carefully controlled creativity-contingent financial rewards (creative ideas are rewarded, non-creative ideas are punished) showed the same interaction as the one in our field study, suggesting that the reward-situation we created in the lab was similar to that in the field. However, future field studies with manipulations of reward power in the organization may help to determine just how much reward power or reward likelihood is neccesary to inspire creative proactivity in reward responsive individuals, and how much reward for other tasks distracts them.

We aimed to test whether reward responsive individuals who strongly focus on core tasks (competing goal activation) would show less proactive creativity shared with leaders than those who focus less on core tasks. However, we can not be sure that individuals with a career orientation focus heavily on core tasks, and that the extrinsic rewards for those core tasks decrease proactive creativity.There are however several indications that our measure of career orientation captured, at least to some extent, an extrinsic but important goal that competes with proactive creativity. First, the items we used to measure career orientation focus on proactive behaviors with the explicit aim of improving core task performance and enhancing career

success (see Belschak & Den Hartog, 2010, p. 498). Second, there was a negative direct relationship between career orientation and both proactive creativity shared with colleagues and leaders (see Table 1), suggesting that career orientation activates a competing goal for proactive creativity generally. Third, the direct reward activation of the core task in the experiment resulted in a similar proactive creativity decrease in reward responsive individuals.

Finally, there is a large variety of leader behavior, such as for example, transformational leadership (e.g., Bass, 1999; Den Hartog & Belschak, 2012), that might particularly enhance proactive creative behavior of fun seeking or reward responsive individuals. On the one hand, transformational leadership may intrinsically motivate proactive creativity because these leaders invest in individual employee development (e.g., intellectual stimulation and individualized consideration). Although previous research has shown that intrinsic motivation does not necessarily mediate the positive relationship between transformational leadership and creative performance (Gumusluoglu & Ilsev, 2009). On the other hand, transformational leaders may signal that creative behaviors will be extrinsically rewarded because they actively promote change-oriented behaviors. They might motivate proactive creativity through an extrinsic motivational route, and may thus enhance creativity in reward responsive employees. Future research should further investigate the interplay between (transformational) leadership and approach motivation.

Practical Implications

Our findings have some practical implications. First, reward responsive people focus on extrinsic rewards. These employees will particularly invest energy in extrinsically rewarding tasks, which means that discretionary or unmonitored activities might suffer. If these discretionary activities, such as proactive creativity, are important, organizations should be aware that reward responsive people will only engage in them if they see there is also "something in it for them". Fun seeking individuals enjoy novelty and are likely to contribute creatively when they are faced with a novel task and contribute proactively within the team, even when leaders are not looking. These individuals will however, more often share their creative ideas with colleagues than with leaders. Therefore, there might be valuable creative potential in fun seeking individuals that might not be easily visible to leaders who would need that information. As fun seeking individuals also do very well on reactive creativity tasks, anonymous individual brainstorm sessions (e.g., Paulus & Yang, 2000) may be a good solution to tap into their potential.

Finally, organizations should take individual differences into account when deciding on organizational or team reward strategies. Many organizations use personality questionnaires to select employees, but often they do not consider those individual differences when designing reward structures in the organization. Leaders therefore may not be aware of the type of rewards their subordinates prefer, and hence may not know what motivates each individual. While one person may prefer some extra time to work on a self-chosen project, another one may prefer his/her extra efforts to be mentioned in their performance evaluations. A reward system where both intrinsic and extrinsic rewards are represented might thus enhance motivation for both fun seeking and reward responsive employees.

Conclusion

Our study supports the idea that intrinsic motivation may be an underlying motivational process for both reactive creativity and proactive creativity in organizations. Our study does not support the idea that extrinsic motivation is detrimental for creativity in general, but rather offers a contingency model that explains when it may be detrimental and when helpful. Our results help to understand how reward responsiveness and reward opportunities interact to explain when people engage in voluntary creative behaviors in organizations. Extrinsic rewards for creativity and for competing tasks, as well as individual differences in sensitivity to those rewards play an important role in determining whether employees show proactive creative behavior.

CHAPTER 5

An Alternative Approach to Attention and Affect in Anticipated Action

General Discussion and Future Research Ideas

General Discussion

Summary

Proactive people try to predict and control their own future through modification of that future. They anticipate, plan, and take action to change themselves or their environment. Proactive behavior has three key attributes: It is self-starting, change oriented, and future focused (Parker, Bindl, & Strauss, 2010). In this dissertation I studied the underlying cognitive (thinking), affective (feeling), and motivational (wanting) processes of proactive behavior in the organizational context. Proactivity literature suggest that because proactive behavior is goal directed, intentional, and consumes energy, proactive behavior requires controlled, elaborate thinking, positive activating affect, and approach motivation (Grant & Ashford, 2008; Parker, Bindl, & Strauss, 2010). However, the results of the studies presented in this thesis suggest that this may not always be the case.

In Chapter 2 we show that some parts of proactive behavior do not seem to require extensive cognitive elaboration, but may rely more on cognitive improvisation. Furthermore, people seem to differ in the amount of cognitive effort needed to successfully execute proactivity. In Chapter 3, we found that, for some people, experiencing negative affect and trying to improve their mood rather than being in a positive affective state triggers proactive behavior. Furthermore, we found that proactivity can be positively energizing, as opposed to energy consuming. Finally, our results from Chapter 4 suggest that, while individuals who are generally approach motivated engage in proactivity when it seems rewarding to them, often, in the organizational context with multiple tasks and goals, their attention gets drawn away from proactivity by core tasks that are more rewarding.

Chapter 2: Cognitive Processes

Only little research has been done to date on the cognitive processes underlying proactive behavior. The few studies on the more general cognitive abilities and proactivity show that cognitive ability relates positively to, for instance, personal

initiative and proactive personality (Tornau & Frese, 2013). However, a link with the more specific cognitive mechanism that is responsible for attention control, planning, goal-directed behavior and future thinking, that is Working Memory (e.g., Baddeley, 2003), had not yet been investigated. If indeed, proactive behavior is anticipated, planned, goal directed and systematically executed, then those who have the capacity to anticipate, plan, control attention and stay focused on a task (i.e., those high on Working Memory Capacity), should be better at completing the proactive process from start to finish. We thus attempted to capture different parts of proactive behavior, by discriminating between the mere action and the outcome of proactivity. Specifically, we studied differences in cognitive involvement between how often people decide to engage in voice (voice quantity), and the quality of voiced content (voice quality).

Three studies, in which Working Memory Capacity (WMC) was measured as an individual difference or temporarily manipulated through attention distraction, showed that high WMC is not necessary for being proactive: WMC was unrelated to how often people engaged in voice (quantity). This indicates that the decision to engage in proactive behavior does not always require elaborate cognitive resources, and might be to some extent automatic or habitual. In terms of the creative quality of the content of voice (quality), we observed a positive effect of WMC, which was however contingent on the voicer's experience with voice. For individuals who rarely voiced, WMC increased the quality of their voiced messages, but for frequent voicers it did not. This indicates that although the decision to voice or not might be more automatic, choosing what to say and how to say it, is a more cognitively elaborated process, particularly for people who do not frequently voice. In contrast, those who voiced often did not need WMC to voice high quality messages, and may thus have learned to automate their decisions of what to voice, decreasing the importance of WMC and elaborate thought.

Our findings indicate that frequent and infrequent voicers use distinct cognitive pathways to voice high quality information: infrequent voicers rely on cognitive elaboration, whereas frequent voicers do not. Frequent voicers may thus use a more intuitive, improvised cognitive pathway. Intuition 'is a perceptual process that mainly subconsciously links dissimilar elements of information' (Raidl & Lubart, 2001, p. 219). One example of such dissimilarity is the seeming contradiction between originality and usefulness. Something that is radically novel is likely harder to implement than ideas that

are more incremental (e.g., Madjar, Greenberg, & Chen, 2011). However, through voicing often, individuals may perceive and store many environmental cues that signal what type of information is valued in terms of both novelty and practicality. These cues may in time weave into unconscious associations that could make the quality decision process cognitively more intuitive, and less elaborated. In contrast, infrequent voicers seem to use an elaborated cognitive pathway: consciously trying to consider whether their voice will add novel and useful information in this particular situation. This type of decision making requires more time, effort, and cognitive resources than the former. These individual differences in cognitive pathways towards high quality voice behavior are important for the proactivity literature. They show that depending on the part of the proactive process one focusses on, either deciding to voice (quantity) or generating and selecting voice content (quality), cognitive elaboration and the focus of attention is more or less important.

These findings open up avenues for future research on how the use of distinct cognitive pathways might influence different parts of the proactive process. For example, WMC is important for attention control (Kane, Bleckley, Conway, & Engle, 2001). The fact that WMC is important for the quality of voice, indicates that the execution of successful voice behavior requires a more local, systematic attention focus than the mere initiation of a voice action. This indicates that the required focus of attention (broad or local) may be different depending on the part of the proactive process one focuses on. It thus seems important to study whether these findings are specific for voice and for the creative aspects of proactivity, or whether other proactive behaviors, such as personal initiative or taking charge, also have different elements, some of which are executed in a somewhat intuitive and cognitively broad manner, and some of which are more cognitively elaborated.

Furthermore, our findings may help to understand how to sustain proactive behaviors in management practice. If some people are more intuitive in executing high quality proactive behavior, while others need more cognitive resources to do so, then environmental factors (time pressure, stress, affect-inducing events) may have different effects for those who use intuition versus cognitive elaboration. Further understanding of how different people may cognitively approach proactivity, may increase successful use of employee voice in different situations. For example, those who can voice high

quality intuitively, may add valuable information under time-pressure when decisions need to be fast, whereas those who need cognitive elaboration will need more time to think, and must not be distracted. Extremely new and unknown problems that lie far ahead in the future, might best be solved by those who take their time and ponder before voicing. The fact that so many employers nowadays ask for proactive employees, suggests that proactivity is developing from a discretionary behavior into a work behavior that is expected from employees. However, the finding that voice behavior is processed differently in different minds, highlights that we need to be aware of the demands proactivity can put on the cognitive resources of those who are not used to execute the behavior often. Making sure that both the time and space is provided to use one's cognitive resources, may be an important prerequisite of enhancing the voice quality of all employees in the organization.

Chapter 3: Affective Processes

There is some empirical research on affective processes and proactive behavior (e.g., Bindl, Parker, Totterdell, & Hagger-Johnson, 2012; Fay & Sonnentag, 2002; Fritz & Sonnentag, 2009; Sonnentag & Starzyk, 2015). However, it is not yet fully clear how affect influences proactive behavior, and how proactive behavior influences affect. Proactivity literature proposes that positive affect enhances proactive behavior through attentional broadening (Parker et al., 2010). In contrast, we proposed that attentional narrowing, activated by negative affect, might also enhance and sustain proactive behavior. Both the influence of positive affect and of negative affect were tested in an experimental design to find out which type of affect influences proactive behavior more. In the first part of our experiment, we manipulated positive and negative affect and compared the effects of these manipulation to a neutral affect condition. Furthermore, we studied whether those who are often proactive (trait-proactive individuals) showed different behavioral responses to our affect manipulations compared to those who are rarely proactive (trait-passive-reactive individuals).

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We also tested the idea that instead of positive affect enhancing proactivity, proactivity enhances positive affect. Some studies have shown that there is a relationship between positive affect and proactivity (Bindl, Parker, Totterdell, & Hagger-Johnson, 2012; Den Hartog & Belschak, 2007). Although that may indicate that positive

affect enhances proactive behavior (Parker, Bindl, & Strauss, 2010), it could also be the other way around. Proactive behavior might make people feel better, and thus serve as an affect regulatory function. In other words, individuals may use proactive behavior to diminish negative affect, or to enhance positive affect. Furthermore, we investigated whether those who are trait-proactive (who are often proactive) differ from individuals who are trait passive-reactive (not often proactive) in terms of what (positive or negative affect) makes them proactive, and how (more positively or less negatively) they feel after engaging in proactive behavior.

We found more evidence for the idea that core negative affect enhances proactive behavior, than for the hypothesis that core positive affect enhances it. Specifically, (trait) passive-reactive individuals were more proactive when negative affect was induced than when they were in a neutral state, indicating that for them, negative affect enhances proactive behavior. Proactive individuals were less proactive when positive affect was induced, than when they were in a neutral or negative state, indicating that for them, positive affect diminished proactive behavior. Furthermore, in line with Sonnentag and Starzyk (2015), we found that proactive behavior made people feel better. Proactive behavior was related to increased positive affect from the measurement before, to the one after proactive behavior. In addition, there was a difference between (trait) proactive and passive-reactive individuals in the way they felt better. While proactive individuals particularly reported increased positive affect, passive-reactive individuals reported decreased negative affect.

This view on the affect – proactivity relationship is novel in three ways. First, previous research has found more evidence for positive affect than for negative affect – proactivity relationships. Hence, theory has highlighted positive activating affect rather than negative affect as an enhancer of proactive behavior (Bindl et al., 2012; Den Hartog & Belschak, 2007; Parker, Bindl, & Strauss, 2010). Our results did not support this in an experimental setting. We did however, find a possible explanation for previous findings of a positive affect – proactivity relationship: in our experiment, proactive behavior seemed to enhance positive affect.

Second, our results indicate that the underlying affective (motivational) processes of passive-reactive people might differ from those of proactive people. While passive-reactive people stayed passive in positive or neutral affective states, they showed increased proactivity when in negative affective states. Engaging in proactive behavior, in turn, decreased their negative affect. In contrast, proactive people felt more positive affect after engaging in proactivity. They were highly proactive in neutral and negative states, but showed least proactivity after experiencing positive affective states. Because proactive behavior made proactive individuals feel better, those who were already in a positive state may have been less motivated to engage in proactive behavior to improve their future affective state. Perhaps, proactive behavior serves distinct affect regulatory purposes for proactive vs. passive-reactive individuals. Passive-reactive individuals may use proactivity to dow-nregulate current negative affect, whereas proactive individuals may aim to up-regulate future positive affect. It would be interesting to investigate such an explanation in future research.

Third, we explored a possible affective reason for trait-proactive individuals to be proactive. We wanted to know whether proactive individuals are more sensitive to negative affective stimulation than passive-reactive individuals. This question was exploratory. It was mostly based on observations in daily life, and less on existing theories about proactive behavior. In order to study this question, we measured physiological activation during our affect manipulations, as well as (positive and negative) affect before and after the manipulation. All measures showed that trait-proactive individuals were more sensitive to our negative affect manipulation than trait passive-reactive individuals. They showed stronger increases in negative affect, stronger decreases in positive affect, and stronger physiological activation in the negative affect manipulation condition. Although this question was exploratory, the fact that all our measures showed this effect suggests that future research in this area is warranted. Our explanation of this finding, combined with the fact that proactive individuals showed the strongest increases in positive affect after proactive behavior, is that trait-proactive individuals use proactive behavior in order to cope with a sensitivity to negative affective events. Proactive people may thus have learned to control their environment and enhance positive feelings through exercising control on their environment, and

thereby, control their inner affective state. That proposition however, does require extensive further testing in longitudinal developmental studies.

In terms of the affective drivers of proactivity, this study has implications for the link between affect, attention (cognitive processes), and proactive behavior. Currently, the proactivity and creativity literatures generally assume that positive activating affect enhances broad attention and flexible thinking, and that this enhances creativity and proactive behavior (Baas, De Dreu, & Nijstad, 2008; Fredrickson, 2001; Parker et al., 2010). Yet, the experimental study presented in this thesis indicates that core positive activating affect (feeling good, happy, elated, energized), which is assumed to enhance broadened attention and flexible thinking, does not increase proactive behavior compared to a neutral state. In contrast, core negative activating affect (feeling bad, tense, anxious, bleak), which is assumed to enhance more localized attention and systematic and persistent thinking (De Dreu, Baas, & Nijstad, 2008; Gasper & Clore, 2002), enhanced proactive behavior, particularly in passive-reactive individuals. This means that perhaps unlike creativity, proactive behavior measured as persistent initiative, is not always fostered by broad attention and flexible thinking, but perhaps more by local, narrow attention and persistent thinking.

Pressing to be proactive across time, putting ideas into action and persisting in challenging the status quo, may thus require localized attention and staying persistently focused on the implementation of the proactive goal. This links to the results of Chapter 2, which showed that the quality of proactive behavior (as opposed to the quantity), required more elaborate systematic thought, and presumably a more localized attention focus. Our measure of personal initiative involved more long-term, successful execution of proactive behavior than our measure of voice quantity in Chapter 2. Personal initiative as rated by others is thus more closely related to the quality of voice, than to the quantity of voice (which can also be seen in the nomological network table in the supplementary materials of Chapter 2). One conclusion that might be drawn from both studies is thus that for persistent and successful execution of proactive behavior, localized attention and systematic, elaborate thinking is more important than for the mere initiation of proactivity.

It is important to note that in Chapter 3, we did not test how more specific, discrete emotions influence proactive behavior. While core affect refers to a more general state of pleasant versus unpleasant, or good versus bad, a discrete emotion is shorter, more intense, and has a distinct cause and an object of reference (Larsen, 2000). For example, while happiness may be a more general positive evaluation of how we feel about our life generally, pride is an emotion we feel when we have accomplished a specific goal. Both are positive, but may have different effects on proactive behavior. Since research has shown that self-efficacy is important for the execution of proactive behavior, some positive emotions might enhance proactive behavior through a self-efficacy route. Emotions such as pride, enthusiasm, optimism or inspiration may enhance a *can do* feeling (Parker et al., 2010), promoting the belief that one will be able to successfully execute proactive behavior. Further, discrete negative emotions such as depression, sadness, guilt or shame that are the results of either failure or a tragedy in someone's personal life (as opposed to our affect manipulation which was more general), may have different effects than we observed for the same *can'(t) do* reason: through reducing self-efficacy. Studying such discrete emotions and their effect on proactive behavior may thus result in different relationships, and these type of positive emotions might indeed facilitate proactive behavior while the described negative emotions might hinder proactive behavior, in line with the propositions in the literature. This seems a promising avenue for future research.

Chapter 4: Motivational Processes

Despite an extensive body of research on affective motivation in experimental creativity (Baas et al., 2008; De Dreu et al., 2011), proactivity (Bindl, Parker, Totterdell, & Hagger-Johnson, 2012; Parker et al., 2006), and organizational creativity (Amabile, Barsade, Mueller, & Staw, 2005; Amabile et al., 1994), there is not a lot of research combining and integrating the knowledge and methods from these different research streams. Specifically, the behavioral approach system (Gray, 1990; Rutherford & Lindell, 2011) is widely used in emotion and neuroscientific research to explain why people engage in goal directed, approach oriented behaviors. However, although an approach action tendency is assumed to enhance proactive goal setting and implementation

(Parker et al., 2010), behavioral approach theory is rarely used to explain proactive and creative behaviors in organizations.

We used an organizational field study (questionnaires) and a within-participant experiment to investigate when approach motivational tendencies help and when they hurt proactive creative behaviors (i.e., the creativity of proactive behavior, which is, in this dissertation, the same as the creative quality of voice, in Chapter 2). Carver and White (1994) proposed that there are individual differences in the general activation sensitivity of the approach system. People who are approach sensitive, experience increased positive affect and activation when they anticipate that behaviors will render rewards. The type of rewards that activate people however, can differ. Some are activated by intrinsic rewards such as fun and novel experiences (fun seeking individuals), while others are activated by extrinsic rewards such as winning social recognition or financial compensation (reward responsive individuals). Since proactive behavior can have both intrinsic (increased job-satisfaction, e.g., Seibert, Kraimer, & Crant, 2001) and extrinsic (better performance evaluation, salary and career success, e.g., Crant, 1995; Seibert, Crant, & Kraimer, 1999; Thompson, 2005) consequences, we investigated how these intrinsic and extrinsic aspects of approach sensitivity would affect proactive creativity in organizations.

Compared to, for example, creativity in a brainstorm session (in which creativity is the only task), proactive creativity in organizations is self-started, and there are other important tasks such as the ones listed in formal job descriptions that compete for attentional resources. As such, people need to divide their attention across proactive creativity on the one hand, and core tasks on the other hand. We hypothesized that fun seeking should have a different effect on proactive creativity than reward responsiveness, depending on the context. We expected that when extrinsic rewards (rewards hereafter) for proactive creativity are rare and rewards for core tasks are more likely, fun seeking individuals would still engage in proactive creativity because they are intrinsically motivated to engage in novel tasks. In contrast, under such circumstances, reward responsive people should focus their attention on core tasks, because they render rewards more easily. Indeed, we found that when proactive creativity is shared with colleagues, who do not control reward resources, fun seeking positively relates to

proactive creativity, while reward responsiveness relates negatively to proactive creativity. These results are in line with theory predicting that intrinsic motivation helps creative idea generation and proactive behavior while extrinsic motivation forms a hindrance (Amabile, Conti, Coon, Lazenby, & Herron, 1996; Parker, Williams, & Turner, 2006).

However, the relationship between reward responsiveness and proactive creativity is not simply negative. More specifically, this relationship depended on the strength of the reward-distraction by other tasks. When core tasks were strongly reward salient, reward responsive employees and participants (students) focused on core tasks; when core-tasks were not strongly reward salient, they focused on proactive creativity towards the leader. This indicates that people who focus on extrinsic rewards might not necessarily be less proactive or creative than people who are not sensitive to such rewards. They might however, be more easily distracted from showing such proactivity because in the organizational environment, other tasks are often more rewarding.

Our results thus show that proactive creativity is not necessarily driven by intrinsic or extrinsic motivation only, but can be the result of one or the other, depending on task-conflict and reward-context. While fun seeking individuals share proactive creativity with colleagues, they do not necessarily share it with leaders. This is in line with theory stating that evaluative contexts decrease intrinsic motivation and creativity (Amabile, 1979). In contrast with research on trait extrinsic motivation (Amabile et al., 1996), reward responsive people do share proactive creativity with leaders, which is in line with studies showing that rewards can enhance creative performance (Byron & Khazanchi, 2012). What we add to the literature, is the interaction between extrinsic trait and situation: reward responsive individuals only invest in proactive creativity to leaders when other tasks are not more rewarding.

Our results have implications for research and practice. First, considering motivation for self-initiated behaviors in complex social settings such as organizations, it is important to take into account that individuals in organizations likely experience task-conflicts. Our studies indicate that task-conflict matters, and that it may be useful to incorporate such context in experimental research on motivation and creativity. Second,

the results from our experiment indicate that when task-conflict (between core task and proactive creativity) is present, reward responsive individuals focus on the task that renders easy rewards. In practice, this implies that management should be careful with what type of rewards are allocated to which task. For example, providing bonuses or public praise for attaining core-task targets, but not for broader behaviors may decrease the motivation of reward responsive employees to engage in proactive creativity such as developing ideas about long-term future improvements of the company.

Integrative Contributions

The results of the studies presented in this dissertation suggest that it is useful to study proactive behavior with a combination of correlational and experimental designs. Our studies show that it is possible to capture proactive behaviors in experiments and to replicate lab-results in the field. The fact that sometimes, those results were a bit different than what would be expected from the literature, indicates that conclusions may depend on research designs and samples. A variety of different designs can thus help to better understand something as complex as proactive behavior. Furthermore, the results of the experimental studies may have implications for theory on how cognition and attention, affect, and approach motivation influence proactivity and suggest that several assumptions in the literature require further testing.

All of the chapters, in one way or another, involve the explicit or implicit engagement of attention in proactive behavior. WMC (Chapter 2) is a cognitive resource that supports controlled attention focus. People high in WMC are better able to localize attention and process information systematically (Kane et al., 2001). Negative activating affect (Chapter 3) is assumed to enhance a more localized attention focus, whereas positive activating affect is assumed to enhance a broader attention focus (Gasper & Clore, 2002). Reward saliency in Chapter 4, presumably distracted attention of reward responsive individuals away from proactive creativity, because reward responsive people focus on maximizing tangible gains (Scheres & Sanfey, 2006). The results in this dissertation thus suggest that activating a localized attention focus is important for some parts of the proactivity process (quality and persistent execution), but not for others (quantity of actions), and more important for activating some people (infrequent

voicers, as well as passive-reactive individuals, and reward responsive people) but less for others (frequent voicers, proactive individuals, and fun seeking individuals). The findings thus also highlight the importance of combining research on situational drivers with individuals differences: depending on individual differences, the cognitive, affective, and motivational pathways to proactive behavior seem to be different.

Future Research Ideas

In the following section, I have integrated the three topics of this dissertation into some ideas for future research on the proactive process, involving cognition (Chapter 2), affect and emotion (Chapter 3), and approach motivation (Chapter 4). The reason why different phases of proactivity could be interesting to study, is that the data in this dissertation indicate that there is not one type of thinking, affect, or motivation that is important for proactivity in general. Rather, it seems that, depending on what type or phase of proactivity (quantity, creative quality, personal initiative) we are talking about, cognition, affect, and motivation serve different functions. For example, in Chapter 2 on cognitive processes, elaborate systematic thinking seemed to be important only for the quality of proactive behavior, and only for those who did not voice frequently. Infrequent voicers needed to focus their attention on the voice task, in order to be able to communicate high quality messages. But frequent voicers did not. Further, distraction of attention did not influence the act of voice (quantity), indicating that the mere initiation of proactive behavior does not require people's full focus of attention (i.e. systematic elaboration). Next, Chapter 3 on affect suggests that when proactive behavior is measured as a more persistent behavior across time, local and systematic attention and activation become more important. Last, Chapter 4 on approach motivational sensitivity suggests that approach motivation is only good for proactive creativity if approach motivation and attention is targeted at proactive creativity, not when it is directed at other tasks.

One question that would be interesting to study, is what type of thought, or attention focus, is important in what phase of the proactive process, and how emotions and motivation can help to focus attention how and where it is needed. To study this question, recent theoretical developments in the literature on attention, affect, and

approach motivation may be useful to integrate in models of the proactive process. These developments show that the current view of positive affect enhancing broad, and negative affect enhancing local cognitive processing, might need adjustment. The model presented below, describes how discrete emotions influence cognition (attention focus), and may in turn facilitate very specific phases of the proactive process.

Affect-Cognition Models

Early affect-cognition models propose that affect influences cognition through tuning attention scope. Positive states broaden the scope of attention, while negative states narrow the scope of attention (Bless et al., 1996; Gasper & Clore, 2002; Schwarz & Clore, 1983). Similar to other researchers, we will use the terms *narrow* and *local* attention focus interchangeably when describing this systematic cognitive focus on details ('the trees'), as opposed to a *broad* and *global* attention focus when describing a more flexible cognitive focus on the big picture ('the forest'). Research shows that positive affect and the related broad attention focus (e.g., induced by watching funny movies, receiving gifts, recalling happy life events) enhances creative problem solving through broad, flexible thinking (Gasper, 2004; Isen, 2001; Isen, Daubman, & Nowicki, 1987) and broadens people's action repertoires (Fredrickson, 2001). Affect thus influences actions as well as attention. More recent models have highlighted that for broad or narrow attention focus to be paired with action, one needs sufficient activation or arousal levels (Baas et al., 2008; Bindl et al., 2012; De Dreu et al., 2008). Arousal and activation thus trigger the general engagement of attention, and negative or positive valence trigger a specific focus: local or broad. We took a similar approach in Chapter 3 of this dissertation. There are however reasons to refine this approach when studying attention, emotions and proactivity in the future. The Motivational Dimensional Model of Affect (Gable & Harmon-Jones, 2010) suggests that sometimes, positive emotions narrow attention scope, whereas negative emotions broaden attention.

The Motivational Dimensional Model of Affect

Previous research in the affect and cognition area has used different terms (affect, mood, or emotions) to describe similar experimental manipulations of how

people feel (e.g., Fredrickson, 2001; Gasper & Clore, 2002; Isen, Daubman, & Nowicki, 1987). One important discrimination here is between discrete, specific emotions (i.e., anger) and general affect (i.e., negative activating affect). Affect refers to general pleasantness or unpleasantness, which we aimed to induce in Chapter 3, while a discrete emotion is shorter, more intense and personal, and more specifically focused on a target (Larsen, 2000). The Motivational Dimensional Model of Affect (MDMA hereafter) suggests that there are specific positive emotions that narrow the attention scope, and specific negative emotions that broaden the attention scope, depending on the intensity of the approach (or avoidance) motivation related to the emotion. Gable and Harmon-Jones (2010) argue that the focus of attention is not tuned by affective valence (positive or negative), but by the motivational intensity of specific emotions.

For example, consider the following emotions: happiness, joy, enthusiasm, desire. Although happiness and joy may be activating, they refer to a current positive state and do not signal that a future goal needs to be approached and are thus low in motivational intensity. Enthusiasm and desire however, are targeted at a 'to-be-obtained' goal or object in the future. They are high in motivational intensity. Studies show that intense approach motivational positive emotions (desire) stimulate a localized attention focus, while emotions low on approach motivational intensity (happiness) focus attention more broadly (Gable & Harmon-Jones, 2008, 2010, 2011; Liu & Wang, 2014). Furthermore, one study showed that pre-goal positive affect (activated by reward anticipation) enhanced memory for locally presented information, whereas post-goal positive affect (activated by a performance reward) enhanced memory for globally presented information (Gable & Harmon-Jones, 2010). This result is particularly interesting because of the timing component (pre-goal / post-goal). The study shows that positive emotions in anticipation of good performance (highly approach oriented, such as enthusiasm) have different cognitive effects than positive emotions following good performance (not approach oriented, such as pride). It would thus be interesting to study how positive emotions, depending on their motivational intensity, may tune cognition, and serve different functions in different phases of proactivity.

In a similar vein, negative emotions may be studied separately. The MDMA proposes that strong (approach or avoidant) motivational intensity of negative emotions

should also enhance a narrow focus and tendency to act, whereas negative emotions with low motivational intensity should enhance broad focus. For example, disgust (high motivational intensity) narrows attention focus whereas sadness (low motivational intensity) broadens it (Gable & Harmon-Jones, 2010). Increasing evidence suggests that anger is an approach motivational emotion (Carver & Harmon-Jones, 2009; Harmon-Jones, Schmeichel, Mennitt, & Harmon-Jones, 2011; Harmon-Jones, Harmon-Jones, Abramson, & Peterson, 2009) and shares attentional effects with positive approach motivational emotions. Anger (negative) and desire (positive) both narrow attention compared to a neutral state (Gable, Poole, & Harmon-Jones, 2015). The motivational intensity idea is, in terms of more arousal equals more motivation, not different from the idea that activated rather than de-activated affects or emotions enhance thought-action repertoires. The difference between these views, is that arousal or motivational intensity changes the focus of attention (narrow or broad), not valence (positive or negative).

The reasoning above has implications for theorizing about the type of thinking involved in proactive behavior (and possibly creativity). Combining MDMA with the conceptual and empirical literature on proactive behavior (Bindl, Parker, Totterdell, & Hagger-Johnson, 2012; Den Hartog & Belschak, 2007; Sonnentag & Starzyk, 2015), the model would, in line with the proactivity literature, support the idea that positive activating emotions such as enthusiasm, interest and optimism enhance proactive behavior, but the underlying cognitive mechanism would be different. Attention focus is local and narrow, not broad and global. In contrast, emotions with low approach motivational intensity, such as pride, happiness and joy, should result in broader attention focus. Through distinguishing emotions based on motivational intensity, we may thus be able to learn more about how emotions influence proactivity through changing attentional focus.

MDMA and Proactive Process Models

The role of local attention and elaborate processing versus more global attention and flexible processing may depend on the part or type of proactivity one focuses on. In our studies on cognitive processing in voice behavior (Chapter 2), some people seemed

to need more elaborate, systematic processing capacity than others, and not all parts of the proactive process required the same level of elaborate thinking. It might thus be possible that, depending on the part of the proactive process, and depending on the person that is executing proactivity, different attention foci serve different functions. Broad or local focus may help or hinder different people (proactive individuals vs. passive-reactive individuals) and different parts of the proactive process (generating ideas vs. persisting to pursue change implementation).

There are three general theoretical models (Frese & Fay, 2001; Grant & Ashford, 2008; Parker et al., 2010) of the proactive process that follow similar sequences of thought / action patterns. These models suggest that the proactive process starts with *(1)* the generation of a proactive goal, followed by *(2)* a plan for action, *(3)* enactment of the plan while persisting proactive behavior over time, and *(4)* reflection upon success or failure of proactivity. One question that may be interesting to study, is how emotions high and low in motivational intensity help or hinder these phases, and whether they can trigger the transitions from one phase to another. Below, I describe some examples.

Through anticipation, people perceive a potential opportunity or problem, and generate ideas on how to alter their future (Grant & Ashford, 2008; Parker et al., 2010). In the case of opportunities in the future, the starting point of the proactive process may be an emotion with low motivational intensity, facilitating global cognitive processing (Liu & Wang, 2014). The more people perceive in their attentional field, the higher the chances of spotting opportunities. Positive or negative emotions with low motivational intensity may thus facilitate anticipation and envisioning though broad thinking and flexibility. For example, studies have shown that happiness, amusement, or other (non-approach motivated) positive emotions enhance originality of generated ideas (Baas et al., 2008). Similarly, negative emotions might motivate envisioning of a different future for reasons of coping. For example, longitudinal research found that negative emotions with low approach motivation (such as depression[19] or sadness) are related to proactive goal generation. These negative emotions thus relate to thinking

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[19] Please note that these are emotions measured at 1-item level in a healthy student sample. As such, 'depression' presumably reflects a much more momentary negative feeling than the clinical, long-term form of depression one might think of when referring to 'a depression'.

about a different future. They are however, not related to the following phases, proactive planning and enactment (Bindl et al., 2012).

Perhaps, to be able to transform anticipation and goal generation to a plan to take actions, one needs high motivational intensity. Proactive goal generation triggered by a problematic status quo may, for example, be helped by negative emotions with high approach motivation, such as frustration or anger, which according to the MDMA, localizes attention focus (Carver & Harmon-Jones, 2009; Gable et al., 2015). In the planning phase, people link ideas and goals to concrete actions (Grant & Ashford, 2008; Parker et al., 2006). A transfer from the proactive goal generation phase to the planning phase, might require a change of perspective. Emotions with strong motivational intensity reduce reactivity to novel and distracting stimuli (Gable & Harmon-Jones, 2011; Liu & Wang, 2014), and thus promote persistence to attain the proactive goal. To transfer opportunity focused proactive goals into proactive plans, one may thus need a switch from depression to enthusiasm. To switch from a problem to a solution-plan, one may need sadness to change into anger.

One side effect of negative emotions that are high in motivational intensity however, is resource depletion (Baas, De Dreu, & Nijstad, 2011), and possibly ineffective proactive behavior. For example, Grant (2013) showed that in order to successfully voice, people need to be able to regulate the negative emotions that may have enhanced proactivity in the first place. Successful enactment of proactive behavior, may thus depend on the ability to regulate emotions high in motivational intensity, and switch again from local to broad focus. For example, recovering from work through leisure time can enhance initiative on following days (Sonnentag, 2003). One explanation may be that proactive behavior requires energy. Another, is that taking some time off work problems may shift local to broad focus and facilitate a transition from proactive proactive planning to proactive enactment.

The idea that proactive behavior might benefit from strong emotions, but is also aided, or accompanied by emotion regulation or switching, also links to our findings in Chapter 3. Proactive individuals were both sensitive to negative affective stimulation, as well as able to up-regulate positive affect during proactive behavior. We have argued

that they regulate affect in part through proactive behavior, but they might also be able to switch attention focus from narrow to broad, and from broad to narrow. Similarly, being able to control or switch attention (from broad to narrow or vice versa) might be important for successful voice as studied in the field study in Chapter 2. WMC has been linked to successful regulation of emotions (Hofmann, Schmeichel, & Baddeley, 2012; Schmeichel & Demaree, 2010). It may thus be that people who are not skilled at voice (infrequent voicers), need WMC to be able to regulate negative emotions that trigger voice in the first place, and switch attention from local towards broad to select and communicate a high-quality message. To transfer proactive goals into proactive plans, and successful enactment, one may thus need to be able to switch between emotions, and perhaps between related attention foci.

After or during proactive enactment, people reflect on success or failure of the behavior and monitor whether additional action needs to be taken to ensure proper implementation. Presumably, the type of reflective thought (broad or local) depends on whether proactive behavior was successful or not. If proactive behavior was successful, people are likely to experience emotions low on approach motivation, such as pride, joy, or relaxation. Such post-goal positive emotions facilitate a broad attention focus (Gable & Harmon-Jones, 2011). Broad focus may open up the possibility for the transfer to a new proactive process. People with a broad focus may look for new opportunity focused proactive goals. If proactive behavior was not successful, the actor likely experiences negative emotions. These emotions might either be high in motivational intensity (anger, frustration, anxiety), enhancing a local attention focus and increasing persistence on attaining the proactive goal, or they may be low in motivational intensity (sadness, shame, guilt, hopelessness), enhancing a broader focus and increasing chances that people disengage from this specific proactive goal.

Confidence in the successful execution of proactive behaviors (role-breadth self-efficacy) and trait-proactivity are likely to play a moderating role in whether or not unsuccessful proactive enactment will result in negative emotions high or low in motivational intensity, and thus whether or not emotions can be used to sustain proactive engagement. The empirical chapters in this dissertation have indicated that proactive behavior, and thus perhaps also the proactive process, is cognitively and

affectively different for proactive and passive-reactive individuals (Chapter 2 and 3). In addition, there are individual differences in approach sensitivity (Chapter 4) that may enhance the attentional tuning effects of emotions with high motivational intensity. In particular the narrowing of attention by positive and negative emotions with approach motivational intensity, is likely to be stronger for individuals high in approach sensitivity (Gable & Harmon-Jones, 2010). Our studies in Chapter 4 suggest that this intense local attention focus of those who are approach sensitive, is primarily directed at non-proactive goals in a complex organizational environment with attractive rewards for non-proactive behaviors. Future research into moderators such as proactive personality or trait- personal initiative, WMC, and approach sensitivity, may shed more light on these issues.

Contribution of Emotion and Attention Modulation in the Proactive Process

The previous sections propose that for a successful proactive process, attention and emotions might need to switch or be regulated. Similar ideas about the role of dynamic changes in affect have also been mentioned by creativity scholars. For example, the Dual Pathway to Creativity Model (De Dreu et al., 2008; Nijstad, Dreu, Rietzschel, & Baas, 2010) has suggested that people can either be creative through cognitive flexibility and broad thinking (facilitated by activating positive affect) or through persistence and systematic thinking (facilitated by negative activating affect). Similarly, the Affective Shift Model (Bledow, Rosing, & Frese, 2013) suggests that creativity is enhanced when people shift from negative to positive affect. However, both of these models focus on general positive and negative (activating) affect, and, in the case of Bledow and colleagues, a specific switch from negative to positive as a creativity enhancer. Here, however, we focus on discrete emotions high or low in approach motivation and propose that both shifts from local to broad, and from broad to local are important for the execution of the proactive process. Thus, in contrast to these models, we propose to investigate the effects of emotions high and low in motivational intensity (rather than looking at affective valence) on different parts (including idea generation) of the proactive process.

Coda

The studies presented in the different chapters of this dissertation represent an effort to explore individual differences in the cognitive, affective and motivational processes underlying proactive behavior. One of the consistent outcomes is that all three underlying processes may be structurally different for individuals who are often proactive versus individuals who are rarely proactive. For frequently proactive individuals, proactive behavior seems cognitively easy and improvisational. Rarely proactive individuals need attention focus and affective activation for proactive behavior. Proactive individuals seem to somehow activate themselves and use proactive behavior to enhance positive feelings and energy. Knowledge on how these people think and regulate their feelings, will hopefully help us to train, support and sustain proactive processes at work. Knowledge about what passive-reactive individuals need to become proactive (e.g., more cognitive resources), and how reward structures can undermine motivation for proactive creative behaviors, hopefully helps organizations to create more room for proactivity in all individuals, not just the people who are intrinsically proactive.

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English Summary

In this dissertation, we studied the cognitive (thinking), affective (feeling) and motivational (wanting) processes involved in proactive behavior. Although proactive behavior can happen everywhere (e.g., setting up a neighborhood initiative to improve integration), nowadays, proactive behavior is primarily studied in organizations, thus among employees and employers. In this context, proactive behavior is anticipatory action taken by employees to impact themselves and/or their environments (Crant, 2000; Grant & Ashford, 2008; Parker, Williams, & Turner, 2006). Proactive behavior is a very complex phenomenon, which is described in more detail in Chapter 1. Theory about proactivity (e.g., Frese & Fay, 2001; Grant & Ashford, 2008; Parker et al., 2010) describes several phases through which the proactive process unfolds, starting with the generation of a proactive goal, followed by a plan for action, the execution of the plan while overcoming setbacks during that execution, and a reflective phase in which plans are altered or new plans are made. Because proactivity is a multi-faceted process, it is difficult to grasp in experimental settings. Even if one succeeds to measure proactive behavior in the laboratory, it is not possible to cover every aspect of the proactive process from beginning to end. Therefore, in the empirical chapters, we focus on distinct parts of this proactive process.

In Chapter 2 on cognitive processes, we investigated the involvement of Working Memory Capacity (WMC, the cognitive resource necessary for controlled elaborate thinking) in voice behavior (speaking up with suggestions, problems, and opinions to change the organization). Some scholars focusing on voice behavior assume that voice requires elaborate, systematic thinking, while others suggest that voice behavior might be more automatic and thus less well elaborated. The idea we present in Chapter 2 is that there are some parts of voice that require people to use more cognitive elaboration, and some parts that require little cognitive elaboration. To explain the discrepancy in the literature, we chose to study two separate parts of voice, namely the act and the outcome. To separate the mere execution of the voice act from the quality of the outcome, we created a measure that distinguishes between *(1)* voice quantity, which refers to the frequency of voice, and *(2)* the (creative) quality of voice, which refers to the novelty and value of voiced information. The main proposition in the

paper, is that elaborate cognitive processing (WMC), is important for voice quality, but less so for voice quantity.

This first empirical chapter comprises of three distinct studies. The first study was a lab study, where WMC was measured as a between-participant variable (a cognitive test). Voice behavior was measured in a team-interaction task, where a confederate played the role of a team-leader, and participants were assigned the role of follower. During the team task, the leader would make some erroneous decisions, and we measured whether participants would challenge those decisions (voice quantity), and whether the suggestions of the participant would ultimately lead to a better team-decision (voice quality). In study 2, a within-participant experiment, we took a similar approach. Instead of measuring WMC, we distracted participants' attention (a lot, and very little) while they voiced. We measured how this distraction of attention affected the number of suggestions participants made (quantity), and the originality and usefulness of their suggestions (quality). In study 3, we replicated the experiments in real organizations. We measured WMC of 152 employees. We designed measures for voice quantity and quality, and asked colleagues and team-leaders to rate quantity and quality of the employees' voice behavior.

All studies confirmed that voice quantity is unrelated to WMC. This indicates that the decision to voice (i.e., quantity) might be more automatic and intuitive than often assumed. In contrast, whether employees voice valuable information (i.e., quality), seems to rely more on the degree of cognitive elaboration of the voicer. Interestingly, voice quality was positively related to WMC, but only for those who rarely voiced. Both in study 2 and study 3, we found that individuals who voiced often, voiced high quality information regardless of whether they had high WMC, and regardless of whether they were distracted or not. This suggests that frequent and infrequent voicers might use distinct cognitive pathways to voice high quality information: infrequent voicers elaborate, whereas frequent voicers do not.

In Chapter 3 on affective processes, we studied 3 questions. First, we studied how affect (how people feel) influences proactive behavior. Second, we studied how proactive behavior changes affect. Third, we explored whether there are differences in affect between those who are generally proactive (trait-proactive individuals) and those who are generally not proactive (trait-passive reactive individuals). Although scholars

argue that how we feel influences how proactive we are, there is no causal evidence for this yet. While current theory proposes that positive affect (feeling good) enhances proactivity by stimulating broad-flexible thinking, we argued that negative affect (feeling bad) can also make people proactive through stimulating more narrow, systematic-persistent thinking. Furthermore, we proposed that one reason why proactive behavior is often found to be positively related to positive affect in the literature, might be that engaging in proactive behavior increases positive affect, instead of the other way around (positive affect enhances proactivity). Last, we hypothesized that affective causes and consequences of proactivity are different for trait-passive-reactive individuals and trait-proactive individuals.

We tested 180 participants on trait-proactivity. In the lab, we manipulated affect (negative/positive/neutral) by means of pictures and music. Afterwards, we measured persistent proactive behavior in a team interaction task and we repeatedly measured participants' affective experiences, before and after the team-interaction task. Results showed that the link between affect and proactive behavior differed depending on participants' trait-proactivity. First, in the positive affect condition, trait-proactive individuals were less proactive than in the neutral condition. In contrast, passive-reactive individuals were more proactive in the negative than in the neutral affective condition. This indicates that negative affect enhances proactive behavior (especially in passive-reactive individuals), whereas positive affect hinders proactive behavior (especially in proactive individuals). Second, passive-reactive individuals reported decreased negative affect after engaging in proactivity, whereas proactive individuals reported increased positive affect. This supports the idea that proactive behavior makes people feel better, but it indicates that trait-proactive and passive-reactive individuals may use proactive behavior in a different way. While proactive individuals seem to use it to enhance positive affect, passive-reactive individuals seem to do so to suppress negative affect.

In Chapter 4 on motivational processes, we studied motivation for proactive creativity in organizations. To capture proactive creativity, we focused specifically on why employees engage in creative voice quality (using the same measure as in Chapter 2). In Chapter 4 however, we also measured another type of creativity that is more reactive (as opposed to proactive). In experimental research, creativity is usually specifically requested, and is typically the main task that a participant focusses on. In

Chapter 4, we refer to this requested, main-task type of creative behavior as reactive creativity, which we contrast with proactive creativity. In organizations, creativity is usually not an employees' primary task. It is more proactive, and employees have other (i.e., main) tasks and goals that compete for attention. We thus refer to this (creative voice quality) as proactive creativity, for the purpose of contrasting it with reactive creativity. In Chapter 4, we investigated whether the reasons why people do well on a reactive creativity task are the same as the reasons why people invest in proactive creativity. Because reactive and proactive creativity (the way we measured them) differ in terms of volunteerism, level of distraction by other tasks, and reward likelihood, the main argument of the chapter is that the reasons why people engage in them, and thus the motivational processes, are not the same.

In Chapter 4, we chose to focus on two types of motivation: intrinsic and extrinsic, with an emphasis on the latter. While some employees may engage in creativity because they enjoy novelty and change (intrinsic motivation), others may engage in it for the purpose of receiving praise, a bonus or a promotion (extrinsic motivation). The link between intrinsic motivation and creativity is well established. There has been some controversy in the literature, however, regarding the extrinsic motivational route, which is why we investigated it in more depth. On the one hand, scholars have found that those who are generally (trait) extrinsically motivated, are less creative than those who are generally less motivated by extrinsic rewards. Extrinsic rewards on the other hand (i.e., money or praise), can sometimes increase creative performance. To investigate why extrinsic motivation sometimes helps and sometimes hinders creativity, we thus investigated the interaction between extrinsic motivational trait (reward sensitivity), distractions by other tasks, and extrinsic reward circumstances on creative performance.

Specifically, we expected that trait extrinsic motivation hinders creativity only when other more rewarding goals in the environment distract attention. This should thus only be the case *(1)* when there is distraction of other tasks, so when creativity is proactive (not reactive), and *(2)* when those other tasks render more rewards than creativity, for example when creativity is shared with colleagues as opposed to with leaders. This idea was supported by data collected in organizations (study 1). We asked employees about their extrinsic (and intrinsic) motivation, and we requested them to generate ideas on a reactive creativity task. As expected, creativity on this reactive task,

in which case employees where not distracted, was unrelated to extrinsic motivation. Next, we asked the employees' colleagues and leaders to indicate whether the employee proactively shared creative ideas with them. As expected, extrinsic motivation was negatively related to proactive creativity shared with colleagues in the organization, who are low in reward power.

Extrinsically motivated employees did invest in proactive creativity towards their leaders, who are high in reward power. However, they only did so when other tasks were unlikely to render extrinsic rewards. We replicated this last finding in an experimental design (study 2), in which we manipulated reward likelihood for a competing task within-participants. Extrinsically motivated participants' proactive creativity towards leaders (who rewarded good ideas and punished bad ideas), decreased when a competing task reward was likely, and increased when a competing task reward was unlikely. Our studies thus suggest that extrinsic motivation inhibits creativity only when other tasks seem more rewarding, and that it can facilitate creativity when it seems more rewarding than other tasks. These results highlight that organizations who rely on proactive and creative input from employees should carefully consider the side-effects of reward structures in their organization.

In the final chapter, number 5, the conclusions of all empirical studies are evaluated. The future research section of this chapter further describes an alternative way (beyond the discussion sections of the empirical chapters) of looking at the combined results of our empirical studies in the light of recent research on cognition, affect, and motivation. We propose the idea that cognition, affect, and motivation may serve a different purpose in different parts of the proactive process. Moreover, we propose that shifts in affect and attention (as opposed to one type of affect or one type of attention being primarily helpful) may facilitate the flow from one part of the proactive process to the next.

Nederlandse Samenvatting

Proactiviteit is populair. Op vacaturesites is 'proactief' de meest genoemde competentie. Proactieve mensen wachten niet op instructies, maar nemen het heft in eigen hand. Proactief gedrag is gericht op de toekomst: proactieve mensen proberen problemen voor te zijn en hun omgeving en zichzelf te verbeteren. Wat mensen precies proactief maakt is echter nog relatief onbekend omdat er geen experimenteel onderzoek naar proactiviteit wordt gedaan.

Daarom heb ik experimenteel onderzocht welke interne psychologische processen belangrijk zijn voor het uitvoeren van proactief gedrag. Ik onderzocht dus wat mensen nodig hebben om proactief te zijn. Drie hoofdstukken focussen elk op één onderliggend proces: *1)* cognitie – hoeveel bewuste aandacht heb je nodig om proactief zijn? *2)* affect – hoe beïnvloeden gevoelens proactief gedrag? en *3)* motivatie – wat drijft mensen om proactief te zijn?

Mijn onderzoek toont aan dat zowel karaktertrekken als omstandigheden proactief gedrag beïnvloeden. Mensen die door hun karakter vaak proactief zijn, hoeven bijvoorbeeld minder bewust na te denken om tot een goed initiatief te komen dan mensen die zelden proactief zijn. Mensen die zelden proactief zijn gedragen zich proactief als ze zich slecht voelen, terwijl mensen die vaak proactief zijn deze emotionele activatie niet nodig hebben. Ten slotte is voor sommige mensen de drang naar nieuwe ervaringen een intrinsieke drijfveer om proactief te zijn, terwijl voor anderen juist extrinsieke beloningen zoals status en geld motiverend zijn.

Deze resultaten zijn vernieuwend omdat proactief gedrag vooralsnog verondersteld werd afhankelijk te zijn van zeer bewust nadenken, positieve gevoelens, en intrinsieke motovatie in plaats van extrinsieke motivatie.

Proactivity is popular: as a competency, 'proactive' is often most cited on vacancy websites. Proactive individuals do not wait for instructions. They actively try to anticipate future problems and opportunities and initiate improvement in themselves and their environment. Despite proactivity's popularity in organizations and science however, we know relatively little about what makes people proactive because experimental research is non-existent.

In order to find out which psychological processes are involved in proactive behavior, I conducted a series of experiments. Three chapters each focus on one psychological process: 1) cognition - how much conscious attention do people need to be proactive? 2) affect - how do feelings influence proactivity? 3) motivation - what drives people to become proactive?

My research shows that proactive behavior is caused by an interaction of personality and situational circumstances. First, individuals who are proactive by nature, require less conscious attention to execute high quality proactivity than individuals who are naturally less proactive. Second, passive-reactive individuals are more likely to show proactive behavior when they experience negative feelings, whereas people with a proactive personality do not need such affective activation. Third, for some individuals, a need to seek out new experiences intrinsically motivates proactivity, whereas for others, rewards such as status and money can motivate proactivity more extrinsically.

These outcomes point out novel perspectives on proactivity's antecedents as proactivity was previously assumed to require a lot of (as opposed to little) conscious attention, positive (as opposed to negative) affect, and intrinsic (as opposed to extrinsic) motivation.