

A multi-method exploration of affective processes throughout the customer journey

Nanouk Verhulst
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Supervisor(s):

Prof. Dr. I. Vermeir

Prof. Dr. H. Slabbinck

Prof. Dr. B. Larivière

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Table of Contents

NEDERLANDSTALIGE SAMENVATTING	1
ENGLISH SUMMARY	4
CHAPTER I: INTRODUCTION	8
1. CUSTOMER JOURNEY AND EXPERIENCE	9
2. CURRENT ISSUES WITH THE CUSTOMER JOURNEY & CX	10
2.1. Emotional component of the CX	10
2.2. underlying processes	12
2.3. Measuring the customer journey	13
3. WHAT DOES THIS DISSERTATION TO DO?	22
4. DISSERTATION OUTLINE	23
5. REFERENCES	29
CHAPTER II: A multi-method exploration of emotions during service delivery through self-service technology or by an employee	39
1. INTRODUCTION	39
2. NEUROPHYSIOLOGICAL VS SELF-REPORT MEASURES	41
3. SELF-SERVICE TECHNOLOGY VERSUS HUMAN INTERACTION	43
4. METHODOLOGY	45
4.1. Procedure and Research Design	45
4.2. Measuring Emotions	48
4.3. Neuropsychological Measures	48
4.4. Self-Report Measures	49
5. RESULTS	50
5.1. Scenario Checks	50
5.2. Effect of Service Interface on Emotions	51
5.3. Effect of Service Interface on Service Performance Evaluation Outcomes	54
6. GENERAL DISCUSSION	54
6.1. Theoretical and MethodologicAl Contribution	56
6.2. Managerial Implications	57
6.3. Limitations and Future Research	58
7. REFERENCES	60
8. APPENDIX	69

CHAPTER III: Customizing gender? The impact of choice of frontline employees' gender on customers' emotions	74
1. INTRODUCTION	74
2. CUSTOMIZATION	76
3. GENDER OF THE EMPLOYEE	77
4. HYPOTHESES.....	80
5. STUDY 1	81
5.1. Method.....	81
5.2. Results	83
6. STUDY 2	87
6.1. Method.....	88
6.2. Results	91
7. DISCUSSION	98
7.1. Managerial, theoretical, and methodological contributions	100
7.2. Limitations and future research	101
8. REFERENCES	105
9. APPENDIX	116
CHAPTER IV: The effect of pre-consumption bodily responses on service performance outcomes and complaining.....	125
1. INTRODUCTION	125
2. BODILY CHANGES	126
3. MOVIE STIMILI.....	129
3.1. Pretest	130
4. HYPOTHESES.....	135
5. STUDIES	138
5.1. Study 1.....	139
5.2. Study 2.....	143
5.3. Study 3.....	146
6. GENERAL DISCUSSION.....	149
6.1. Managerial & theoretical contributions.....	149
6.2. Limitations and Future Studies	151
7. REFERENCES	153
8. APPENDIX	161

CHAPTER V: Boosting service performance by dark chocolate seduction	166
1. INTRODUCTION.....	166
2. DARK CHOCOLATE AS A MOOD-ENHANCER	169
3. CONSEQUENCES OF MOOD	171
4. HYPOTHESES	173
5. STUDIES	175
5.1. Pretest.....	175
5.2. Study 1	175
5.3. study 2a	178
5.4. Study 2b	181
5.5. Study 3	183
6. DISCUSSION	187
6.1. Theoretical and managerial contributions	189
6.2. Limitations and future research.....	190
7. REFERENCES.....	192
8. APPENDIX.....	199
CHAPTER VI: Concluding remarks.....	206
1. RECAPITULATION OF THE CORE FINDINGS	206
2. THEORETICAL AND METHODOLOGICAL CONTRIBUTIONS	208
3. MANAGERIAL CONTRIBUTIONS.....	210
4. LIMITATIONS AND FUTURE RESEARCH.....	213
5. REFERENCES.....	218

LIST OF TABLES

CHAPTER I: Introduction

Table 1. Overview of neuroimaging tools.....	16
Table 2. Overview of neurophysiological tools.....	19
Table 3. Overview of measuring hormones and neurotransmitters.....	21
Table 4. Overview of the experimental research conducted in Chapters II-V	27

CHAPTER II: A multi-method exploration of emotions during service delivery through self-service technology or by an employee.

Table 1. Means and standard deviations for scenario checks and control variables.....	51
Table 2. Estimated means for arousal _{GSR} and valence _{EEG} (measured by neurophysiological tools).....	52
Table 3. Estimated means for phase-specific valence via self-reported tools	53

CHAPTER III: Customizing gender? The impact of choice of frontline employees' gender on customers' emotions

Table 1. Descriptives choice and conditions: Study 1.....	84
Table 2. Estimated Means for condition: Study 1.....	86
Table 3. Estimated means of performance outcomes: Study 1.....	84
Table 4. Descriptives choice and condition: Study 2	92
Table 5. Estimated Means for condition: Study 2	94
Table 6. Estimated Means for phase: Study 2	95

Table 7. Estimated means for pleasure and arousal across conditions: Study 2.....	96
---	----

Table 8. Estimated means of performance outcomes: Study 2.....	97
--	----

CHAPTER IV: The effect of pre-consumption bodily changes on service performance outcomes and complaining

Table 1. Differences on Δ GSR/ Δ HR between control and experimental movie.....	133
---	-----

Table 2. Overview of Hypotheses.....	138
--------------------------------------	-----

Table 3. Cronbach's Alphas: Studies 1–3.....	156
--	-----

Table 4. Estimated Means: Study 1.....	142
--	-----

Table 5. Estimated Means: Study 2.....	145
--	-----

Table 6. Estimated Means: Study 3.....	148
--	-----

CHAPTER V: Boosting service performance by dark chocolate seduction

Table 1. Overview of experiments.....	168
---------------------------------------	-----

Table 2. Overview specific attributes of the types of food sampled.....	176
---	-----

Table 3. Overview of our results.....	189
---------------------------------------	-----

CHAPTER VI: Concluding remarks

Table 1. Summary of research ideas.....	213
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LIST OF FIGURES

CHAPTER I: Introduction

Figure 1. Conceptual model of customer journey and experience	9
Figure 2. Adapted consumer decision process and the customer journey.....	11
Figure 3. Overview of the dissertation.....	24

CHAPTER II: A multi-method exploration of emotions during service delivery through self-service technology or by an employee

Figure 1. Order of the design and measurement.....	46
Figure 2. Main effect of phase on self-reported phase-specific valence.....	53

CHAPTER IV: The effect of pre-consumption bodily changes on service performance outcomes and complaining

Figure 1. Estimated means for Δ GSR across the movies: pretest.....	132
Figure 2. Estimated means for Δ HR across the movies: pretest.....	133
Figure 3. Interaction Effect: Study 1.....	142
Figure 4. Interaction Effects: Study 2.....	145
Figure 5. Interaction Effect: Study 3.....	148

CHAPTER V: Boosting service performance by dark chocolate seduction

Figure 1. Proposed model controlled for mood _{before}	173
Figure 2. Mediation model for satisfaction: Study 1.....	178
Figure 3. Mediation model for satisfaction: Study 2a.....	181
Figure 4. Moderated mediation model for satisfaction: Study 2b.....	182
Figure 5. Mediation model for satisfaction: Study 3.....	185

Figure 6. Mediation model for general satisfaction: Study 3..... 186

Figure 7. Mediation model for return intention: Study 3..... 187

Figure 8. Mediation model for word-of-mouth: Study 3..... 187

LIST OF APPENDICES

CHAPTER II: A multi-method exploration of emotions during service delivery through self-service technology or by an employee

Appendix A. Text of the script for creating a loyalty card (same for SST and human)....	69
Appendix B. Scales, items, and Cronbach's alphas	70

CHAPTER III: Customizing gender? The impact of choice of frontline employees' gender on customers' emotions

Appendix A. Service script: Study 1.....	116
Appendix B. Scales, items, and Cronbach's alphas: Study 1-2.....	117
Appendix C. Service script: Study 2.....	119
Appendix D.....	120
Panel A: Relative indirect effects of mediation analysis for woman: Study 1	
Panel B: Relative indirect effects of mediation analysis for Men: Study 1	
Appendix E.	121
Panel A: Relative indirect effects of mediation analysis for woman: Study 2	
Neuro-data	
Panel B: Relative indirect effects of mediation analysis for men: Study 2 Neuro-data	
Appendix F.	123
Panel A: Relative indirect effects of mediation analysis for woman: Study 2 self-report data	

Panel B: Relative indirect effects of mediation analysis for men: Study 2 self-report data

CHAPTER IV: The effect of pre-consumption bodily changes on service performance outcomes and complaining

Appendix A. Scenarios Study 1–3..... 161

Appendix B. Scales and items for study 1-3..... 163

CHAPTER V: Boosting service performance by dark chocolate seduction

Appendix A. Scenarios Study 1-3..... 199

Appendix B. pretest of mood-enhancing effect of dark chocolate..... 200

Appendix C. Items and Cronbach’s alphas for study 1-2..... 202

Appendix D. Items and Cronbach’s alphas for study 3..... 204

LIST OF ABBREVIATIONS

CX = customer experience

EEG = electroencephalography

EMG = electromyography

fMRI = functional magnetic resonance imaging

GSR = galvanic skin response

HI = human interaction

HR = heart rate

PPG = photoplethysmogram

SST = self-service technology

NEDERLANDSTALIGE SAMENVATTING

In gevestigde economieën genereert de dienstensector meer dan 70% van het BBP. Zowel academici als managers in de dienstensector zijn voortdurend op zoek naar manieren om de customer experience en klanttevredenheid te meten en te verbeteren. Deze dissertatie focust op affectieve processen tijdens de customer journey en hoe deze processen een impact hebben op service performance uitkomsten zoals satisfactie. Naast een inleidend hoofdstuk (Chapter I), bevat deze doctoraatsthesis vier empirische hoofdstukken. Meer specifiek, hoofdstuk II en III combineren zelf-rapportage en neurofysiologische metingen om emoties van consumenten tijdens de dienstverlening te onderzoeken. Dit terwijl de consumenten selfservice technologie gebruiken of in interactie gaan met een menselijke dienstverlener (Chapter II) en wanneer je de keuze krijgt om bedient te worden door een man of vrouw (Chapter III). De twee volgende empirische hoofdstukken focussen op de lichamelijke toestand (Chapter IV) en de gemoedstoestand van de consument (Chapter V) tijdens het prepurchase stadium. Ten slotte eindigen we deze doctoraatsthesis met een algemene discussie die de theoretische, methodologische, en praktische contributies uiteenzet, alsook de beperkingen en toekomstig onderzoek bespreekt (Chapter VI).

Chapter II “*A multi-method exploration of emotions during service delivery through self-service technology or by an employee*” zoomt in op de impact van self-service technologie versus menselijke interactie op emoties. Dienstverleners worden tegenwoordig vaak vervangen door selfservice technologie, maar het effect van het gebruik van deze technologie op de emotionele component van de customer experience is nog steeds onduidelijk. Een between-subject experiment onderzoekt de emoties van consumenten tijdens een dienstverlening (maken van een getrouwheidskaart) ofwel in interactie met een werknemer ofwel met selfservice technologie. Dit hoofdstuk combineert zowel zelf-rapportage (bv. emoties, tevredenheid) als neurofysiologische metingen (verandering in huidgeleiding en hersenactiviteit). Het combineren van deze methodes staat toe om emoties die klanten ervaren tijdens verschillende fases (bv. Wanneer er iets misloopt) van de dienstverlening zowel continu, in-the-moment, en retrospectief te registreren. We tonen dat emoties inderdaad fluctueren over de verschillende fases heen. Wanneer we kijken naar de neurofysiologische metingen zien we dat de emotionele reacties van de klanten niet verschillen wanneer ze een getrouwheidskaart aanmaakten in interactie met selfservice technologie of met een dienstverlener. Aan de andere kant suggereerden de zelf-rapportage resultaten dat selfservice technologie negatievere emoties teweegbrengt in vergelijking met een dienstverlening in interactie met een werknemer.

Chapter III “*Customizing gender? The impact of choice of frontline employees’ gender on customers’ emotions*” onderzoekt of het in het belang is van een bedrijf om consumenten te laten beslissen over het geslacht van hun dienstverlener. Vandaag de dag is customizatie niet meer weg te denken uit onze wereld, maar het effect van keuze in het geslacht van de dienstverleners is nog niet onderzocht. Twee experimenten onderzoeken het effect van keuze (of geen keuze) in geslacht van de dienstverlener op emoties van consumenten en hun evaluatie van de dienstverlening. We gebruiken zowel neurofysiologische maten (verandering in zweetreacties en gezichtsspieren), die in-the-moment metingen toestaan, als retrospectieve zelf-rapportage maten. Studie 1 gebruikt enkel zelf-rapportage maten. Deze studie toont aan dat keuze versus geen keuze van geslacht dienstverlener geen andere impact heeft op de emoties van consumenten en hun evaluaties over de dienstverlening. Studie 2 repliceert deze resultaten, bovendien tonen de neurofysiologische resultaten dat vrouwen meer positieve emoties ervaren wanneer ze in de condities zonder keuze door een vrouw geholpen worden in plaats van door een man.

Chapter IV “*The effect of pre-consumption bodily changes on service performance outcomes and complaining*”. Dit hoofdstuk biedt een nieuwe invalshoek door het effect van lichamelijke toestand vóór de start van een dienstverlening te onderzoeken op de evaluaties van de dienstverlening en klaaggedrag van consumenten. Drie scenario-gebaseerde experimenten onderzoeken het effect van veranderde zweetreactie en hartslag op de evaluaties van de dienstverlening (bv. tevredenheid) in zowel een positief als negatief waargenomen dienstverlening. De lichamelijke toestand wordt geïnduceerd door middel van twee video's. De experimentele video stimuleert empathische bezorgdheid met bijbehorende lichamelijke veranderingen, terwijl de controlefilm dit niet stimuleert. De resultaten uit studie 1 laten zien dat wanneer klanten de experimentele video bekijken, vóór het lezen van een servicescenario met een positieve valentie tevredener zijn met de service, vaker geneigd zijn terug te keren en bereid zijn om positieve mond-tot-mondreclame te verspreiden. Studie 2 toont aan dat het kijken naar de experimentele video vóór het lezen van een matig negatief scenario leidt tot een hogere tevredenheid en lagere negatieve mond-tot-mondreclame. Studie 3 toont aan dat klaaggedrag na het bekijken van de controle- of experimentele film anders is. Dit onderzoek levert empirisch bewijs dat de lichamelijke toestand waarin de klant zich bevindt vóór de dienstverlening een invloed heeft op evaluaties van de dienstverlening en klaaggedrag.

Chapter V “*Boosting service performance by dark chocolate seduction*”. Dit hoofdstuk onderzoekt of een klein detail tijdens het prepurchase stadium de evaluaties van de dienstverlening (bv. tevredenheid) kan verbeteren. Meer specifiek, onderzoeken we of het eten

van donkere chocolade (donkere chocolade) de stemming van consumenten en hun evaluaties over de dienstverlening kan verbeteren. Verschillende scenario-gebaseerde studies en één veldstudie tonen aan dat pure chocolade het potentieel heeft om de evaluatie van een dienstverlening te beïnvloeden gemedieerd door stemming. Studie 1 toont aan dat het eten van pure chocolade (versus druiven of speculaas) na het lezen van een servicescenario met positieve valentie resulteert in een hogere servicetevredenheid en terugkeerintentie. Dit effect is volledig gemedieerd door de gemoedstoestand van de consument. Studie 2a toont aan dat zowel melk - als donkere chocolade een effect hebben op de gemoedstoestand in vergelijking met een controlegroep, na het lezen van een positief scenario. Studie 2b laat zien dat smaak na het lezen van een positief scenario het effect van het eten van chocolade op de stemming modereert. Wanneer de smaak van chocolade laag of middelmatig is, heeft donkere chocolade een positiever effect op de gemoedstoestand vergeleken met melkchocolade. Als de smaak erg goed is, verandert dit effect. Onze veldstudie toont aan dat wie donkere chocolade at, na de service-ervaring in een betere stemming was dan de deelnemers die niets of melkchocolade aten. Opnieuw werd de positieve impact van het eten van pure chocolade op bijvoorbeeld tevredenheid gemedieerd door de stemming.

ENGLISH SUMMARY

In established economies the service industry generates over 70% of the GDP. Both practitioners and academics are constantly looking for ways to measure and improve the customer experience, customers' service satisfaction, and stimulate their customers to return to their businesses. This dissertation focusses on affective processes throughout the customer journey while interacting with service companies and how these processes impact service performance evaluation (e.g., satisfaction).

Besides an introductory chapter (Chapter I), this dissertation includes four empirical chapters. Specifically, Chapter II and Chapter III combine both self-report and neuroscientific measures to explore consumer emotion and service performance outcomes while using self-service technology versus a human service delivery (Chapter II) and customizing the gender of frontline employees (Chapter III). In the two other empirical sections, we focus altering bodily states (Chapter IV) and mood (Chapter V) during the prepurchase stage. We conclude with a general discussion outlining theoretical, methodological, and managerial contributions and discuss limitations and recommendations for future research (Chapter VI).

Chapter II "*A multi-method exploration of emotions during service delivery through self-service technology or by an employee*" zooms in on the impact of self-service technology or human interaction on emotions. Service employees are now often replaced by self-service technology, but the effect of technology on the emotional component of the customer experience remains unclear. A between-subject experiment investigating consumers' emotions during a service encounter (creating a loyalty card) with an employee or through self-service technology demonstrates the benefits of a multi-method approach. This chapter combines self-report measures (e.g., emotions) and neuroscientific measures (changes in skin response and brain activity) which allows both continuous, in-the-moment, and retrospective monitoring of the emotions that customers experience during each phase of the service delivery (e.g., moment when a failure or recovery effort happens). We find that emotions fluctuate across different phases. Based on the neurophysiological measures, the emotional responses were identical between customers using the self-serving technology and those interacting with a frontline employee. However, the self-report data suggest negative effects of self-service technology versus frontline employees.

Chapter III "*Customizing gender? The impact of choice of frontline employees' gender on customers' emotions*" investigates if it is beneficial to offer customers a choice in the gender of the frontline employee that will serve them. Nowadays a world without customization is

impossible to imagine, but the effect of offering consumers a choice concerning the gender of the service provider has not been explored. We conduct 2 experiments to investigate the effect of gender choice of an employee on emotions and service performance outcomes, while relying on multi-method approach. We use both neuro-scientific measures (changes in skin responses and facial muscles), allowing in-the-moment measures, as retrospective self-report measures (e.g., service performance outcomes). Study 1 shows that emotions and service performance outcomes do not differ between the choice and no choice conditions. Study 2 replicates these results; however, the neuroscientific results suggest that woman have more positive emotions when being served by a woman compared to man in the no choice conditions.

Chapter IV “*The effect of pre-consumption bodily changes on service performance outcomes and complaining*”. This article offers a new point of view by exploring the effect of pre-consumption bodily states induced by a video on service encounter evaluations and complaint behavior. Three scenario-based experiments investigate the effect changed galvanic skin response and heart rate on service encounter evaluations (e.g., satisfaction) in both positively and negatively perceived service encounters. Different bodily states are induced by means of two videos, the experimental video stimulates empathic concern and its associated bodily changes, whereas the control movie does not. The results for Study 1 show that if customers’ watch the experimental video, before reading a service scenario with positive valence they are more satisfied with the service, more likely to return, and willing to spread positive word-of-mouth. In study 2 we show that watching the experimental video and then reading a moderately negative scenario leads to higher satisfaction and lower negative word-of-mouth. Study 3 shows a different impact on types of complain behavior after watching either the control or experimental movie. This research provides initial empirical evidence that pre-consumption bodily states influence service encounter evaluations and complaining behavior.

Chapter V “*Boosting service performance by dark chocolate seduction*”. This chapter investigates if a small detail during the prepurchase stage can improve service performance outcomes. Specifically, we investigate if eating dark chocolate (i.e. small detail) enhances consumers’ mood and service performance outcomes. Several scenario-based studies and a field study show that dark chocolate has the potential to impact service performance outcomes through mood. Study 1 showed that after reading a positive service scenario, eating dark chocolate (versus grapes or cookies) results in higher service satisfaction and return intention fully mediated by mood. Study 2a show that both milk and dark chocolate had an effect on mood compared to a control group after reading a positive scenario. Study 2b shows that after reading a positive scenario, taste moderates the effect of eating chocolate on mood. When the

taste of chocolate is low or mediocre, dark chocolate has a more positive effect on mood compared to milk chocolate, if the taste is very good this effect changes. Thus, we found a moderated mediation on satisfaction. Our field study shows that who ate dark chocolate had a higher mood after the service experience compared to the participants that ate nothing or milk chocolate, again the positive impact of eating dark chocolate on for instance satisfaction was mediated by mood.

CHAPTER I: Introduction

CHAPTER I: INTRODUCTION

This dissertation focusses on affective processes throughout the customer journey while interacting with service companies and how these processes impact service performance evaluation (e.g., satisfaction). The customer journey is the collection of all interactions a customer has with a firm. This means all interactions over time, during the whole purchase cycle, and across multiple touch points (Lemon & Verhoef, 2016; see Figure 1). A customer journey in fact encompasses all customer experiences a customer has with a specific firm. Creating compelling customer experiences and journeys received ample of attention in recent years (e.g., De Keyser, 2015; Lemon & Verhoef, 2016). Delivering a satisfying customer experience (CX) provides companies with an attractive competitive advantage. This is because CX is associated with benefits such as service satisfaction and long-term company success (Grewal, Levy, & Kumar, 2009; McCarthy & Schadler, 2014). Yet, how affective processes influence the CX and how to measure them best has remained relatively unclear. Therefore, this dissertation focusses on different aspects of affective processes throughout the customer journey and introduces neurophysiological measurement for the CX. Chapter II and III investigate the impact of different service interfaces (e.g., self-service technology, customization of frontline employees) on the emotional component of a single CX during the purchase stage. Central in these two chapters is the multi-method approach used, which allows to assess both conscious and unconscious emotions as well as a dynamic measurement of consumer emotion during the CX. Chapter IV and V center on how specific stimuli (e.g. eating dark chocolate) during the pre-purchase stage of customer experience impact consumers' mood (as a proxy for serotone) and bodily states (which underlie affective processes) and in turn service performance outcomes.

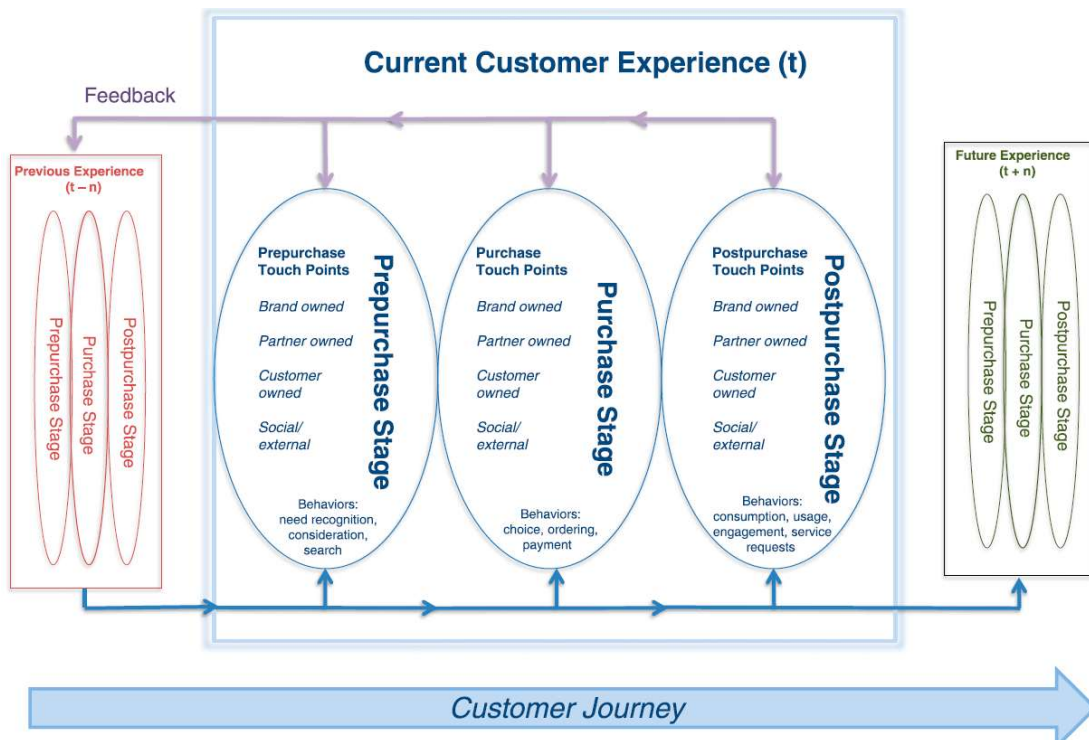


Figure 1. Process model for the customer journey and experience (Lemon & Verhoef, 2016)

1. CUSTOMER JOURNEY AND EXPERIENCE

CX is defined as “the internal and subjective response customers have to any direct or indirect contact with a company” (Meyer & Schwager, 2007, p. 118). The CX incorporates customers’ cognitive, emotional, social, and sensory responses toward service encounters (Lemon & Verhoef, 2016; Verhoef et al., 2009). A CX is created through a collection of interaction between firm and consumers at distinct points during multiple phases of a customer journey (Pucinelli et al., 2009; Verhoef et al., 2009). These distinct points are referred to as touch points, thus a touchpoint is any (non)verbal incident a customer perceives and relates it to specific firm or brand (Homburg, Jozić, & Kuehnl, 2017). Numerous factors, such as social environment (e.g., presence of other customers), shop/website atmosphere (e.g., music), type of service interface (e.g., self-service technology versus human interaction), and price influence the CX (Verhoef et al., 2009).

Over the last decade CX has gained attention from both academic literature as from practitioners (e.g., De Keyser, 2015; Lemon & Verhoef, 2016). Nowadays, most self-respecting companies rely on customer experience management to craft satisfying CXs and fulfilling customer journeys (Homburg et al., 2017; Palmer, 2010; Schmitt, 2010). customer experience management is defined as “a retailer’s strategy to engineer the customer’s experience in such a way as to create value both to the customer and the firm. Customer

experience management differs from customer relationship management by focusing on the current experience of the customer, rather than the recorded history of the customer” (Verhoef et al., 2009). Crucial in the customer journey and specific CXs is their dynamic nature (Lemon & Verhoef, 2016). Each individual CX within a customer journey exist out of 3 important phases, namely prepurchase stage, purchase stage, and postpurchase stage (see Figure 1; Lemon & Verhoef, 2016). The prepurchase stage encompasses all interaction between customer and firm before a purchase transaction. The purchases stage relates to all customer interaction during the purchase event itself, whereas the postpurchase stage covers all interactions following the actual purchase. Important to note is that during each specific stage consumer responses and experiences also fluctuate (Boshoff, 2012; Liapis et al., 2015).

2. CURRENT ISSUES WITH THE CUSTOMER JOURNEY & CX

Both researchers and practitioners have pointed out that several topics need more attention in while studying the customer journey and CX. This dissertation highlights three of these topics, namely the emotional component of the CX, exploring the impact of underlying processes during the customer journey, and measurement of the customer journey.

2.1. EMOTIONAL COMPONENT OF THE CX

Throughout this dissertation we focus on the emotional (or affective) component of the CX. This emotional component can be defined as ‘*a component of the customer experience which involves one’s affective system through the generation of moods, feelings, emotions*’ (Gentile, Spiller, & Noci, 2007, p. 398). An exploration of customer affective processes is vital (Bigné, Mattila, & Andrué, 2008; Jani & Han, 2015), because emotional responses during and after a CX affect not only cognitive judgments of a service (Lerner & Keltner, 2000), but also service performance outcomes (e.g., satisfaction; Liljander & Strandvik, 1997) and behavioral intentions (e.g., return intentions; Ladhari, 2009). Indeed, emotions play a chief role during different stages of the CX (Gaur, Herjanto, & Makkar, 2014; Tronvoll, 2011). Furthermore, Puccinelli et al. (2009) suggest that, unlike other important influencers (e.g. goals, memory, attitudes) of the consumer decision process (e.g., information search, purchase), the affective component impacts all parts of the consumer decision process and the customer journey (see Figure 2; Puccinelli et al., 2009). The model of Puccinelli et al. (2009) can be linked to the specific stages throughout the CX as visualized in Figure 2.

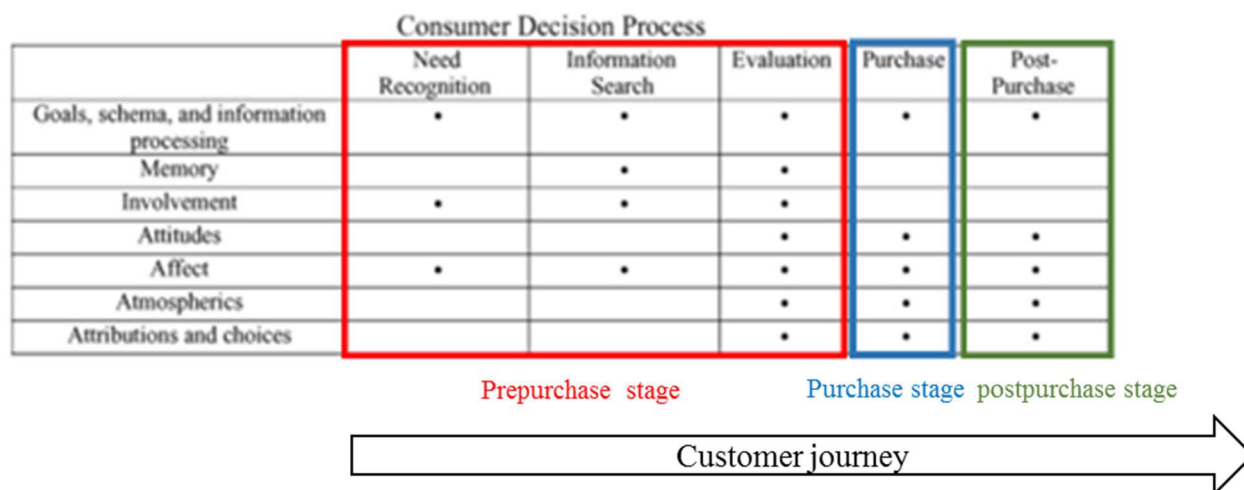


Figure 2. Adapted consumer decision process (Puccinelli et al., 2009) and the customer journey.

Throughout this dissertation different affective processes are discussed. Chapter II and III focus on conscious and unconscious emotions, Chapter IV on bodily states (which underlie affective processes; e.g. Barrett, 2006), and in Chapter V mood (as a proxy for serotonin changes). Mood is defined as mild temporary affective states that can be easily induced (Gardner 1985; Mattila & Enz, 2002; Schwarz & Clore, 1983). Mood function at an automatic level, and can bias for instance memory, evaluation, and general everyday thought processes (Bower, 1981; Clark & Isen 1982; Luomala & Laaksonen, 2000). Mood should be distinguished from emotion, since emotions are more sudden brief intense affective processes. Think about it in this way, you woke up in a positive mood with no real reason, then you generally feel good or positive throughout the day, whereas positive emotion would surface because you for instance finally published a paper and you are intensely excited and happy. Mostly this very intense brief emotion will wear off and transmute in a positive mood state the rest of the day. Nonetheless these terms, especially within the service literature, are often used interchangeably (Beedie, Terry, & Lane, 2005; Vanlessen et al., 2016), because it proves difficult to distinguish mood and emotions in practical consumer research (Bagozzi, Gopinath, & Neyer, 1999), especially since mood states are often called emotional states as well. Affect is seen as an overarching term including mood and emotion (Bagozzi, Gopinath, & Nyer, 1999; Ekkekakis, 2012; Larsen, 2000). Further, bodily states such as neurotransmitter levels and changes in the peripheral nervous system (controls e.g., heart rate, saliva secretion) are also part of the human affective system, changes in bodily states (e.g. heart rate, hormones) underlie affective processes (Barrett, 2006; Cacioppo et al., 2000; Mauss & Robinson, 2009). Ample academic literature (e.g., Barrett, Mesquita, Ochsner, & Gross, 2007; Damasio & Carvalho, 2013; James, 1894; Laird & Lacasse, 2014) points out that bodily changes (e.g.,

changes in the hormones, autonomic nervous system) have a vast impact on our behavior and emotions (Bechara et al., 2000; James 1894; Laird & Lacasse, 2014). By measuring changes in the peripheral nervous system (e.g., heart rate) you can determine whether a person is feeling positive or negative, aroused or not, or whether the person will approach or avoid something (Barrett, 2006; Cacioppo et al., 2000; Mauss & Robinson, 2009). Indeed, previous research shows that feedback from the peripheral nervous system helps creating emotional experiences and catalyzes other psychological processes such as cognition and memory (Barrett & Lindquist, 2008; Blascovich & Mendes, 2010; Critchley & Nagai, 2012; Niedenthal, 2007).

2.2. UNDERLYING PROCESSES

A second issue in the service domain, is the need to investigate underlying processes, rather than only proximate explanations of human behavior (Griskevicius & Kenrick, 2014, Saad, 2013, Plassmann et al., 2015) to better understand customers' reactions, emotions, and behavior. For instance, when Arne eats a Kinder Bueno and explains he did this because he was hungry. Of course this not the full story, underlying processes, which we are often unconscious of (Kenrick, Griskevicius, Neuberg & Schaller, 2010), such as your bodily states (e.g. lack of sugar) and/or evolutionary reasons (e.g. survival) are the underlying motivators of Arne eating the Kinder Bueno. Importantly, (un)conscious affective processes also occur do to underlying processes such as bodily states. Indeed, the brain exerts control over our body through the neural (autonomic) and hormonal systems. These systems direct information about the bodily states back to our brain and trigger automatic processes that alter both conscious and unconscious processes such as approach or avoidance behavior (Bechara, Tranel, Damasio, & Damasio, 1996; Jänig, 2003). This feedback from the peripheral nervous system helps creating emotional experiences and catalyzes other psychological processes such as cognition and memory (Barrett & Lindquist, 2008; Blascovich & Mendes, 2010; Critchley & Nagai, 2012; Niedenthal, 2007).

CX researchers typically adopt proximate explanations of behaviors along the customer journey, but exploring underlying processes may offer additional insights. Indeed, underlying processes such as bodily states have received little attention in the service research domain (Krishna, 2012; Loewenstein, 2000). Studies that do include bodily states focus on the effect of a stimulus (e.g., the service encounter) on bodily changes to derive the emotional reaction toward that stimulus (e.g., Boshoff, 2012; see also Chapter II & Chapter III of this dissertation), but fail to investigate what the effect of for instance prepurchase bodily states is

on the CX. Nevertheless, both recent research in psychology and marketing illustrates the benefits such an approach. For example, Boksem & Smidts (2015) and Lichters et al. (2016) showed that changes in bodily states can successfully predict consumers preferences and consumer behavior. Or Correa, Stone, Stikic, Johnson, and Berka (2015) showed that bodily responses while watching a certain movie predicted donation behavior after the movie.

Several reasons can be put forward why studying underlying processes contributes to the service domain. Firstly, underlying processes can subconsciously (i.e. without realizing it) elicit different reactions toward service encounters. Secondly, some underlying processes can be influenced (e.g. bodily changes), and thus service providers could try influence these underlying processes by external cues if they would be better understood. Examples that can for instance influence bodily changes are showing an emotional movie (Barraza, Alexander, Beavin, Terris, & Zak, 2015), playing certain music (Zimny & Weidenfeller, 1963), or introducing something new and exciting (Harrison et al., 2000; Kreibig, 2010). Lastly, studying underlying processes can offer us deeper insights on individual differences and how the consumers' mind works (Plassmann, Venkatraman, Huettel, & Yoon, 2015), since certain underlying processes such as neurotransmitter levels or physiological changes are an observable window of emotions and certain cognitive processes.

2.3. MEASURING THE CUSTOMER JOURNEY

Recent reviews stress the need for new and better indicators of the customer experience (e.g. De Keyser, 2015; Lemon & Verhoef, 2016; Venkatraman, Clithero, Fitzsimons, & Huettel, 2012). This need emerged because past research suggests that a dynamic measurement of the CX is key in advancing the field of the customer journey (De Keyser, 2015; Lemon & Verhoef, 2016; Verhoef et al., 2009). The literature offers a manifold of methods to measure emotions during the CX (Klaus, 2014; Verleye, 2015), but past research on the customer journey and experience has predominantly relied on self-report measures, restricting internal and external validity of previous findings (Bruun & Ahm, 2015). Retrospective self-reports have several limitations, especially while studying the customer journey. First of all, they do not allow in-the-moment measures of the CX, although past research suggests that a dynamic measurement of the CX is key in advancing the field (De Keyser, 2015; Lemon & Verhoef, 2016; Verhoef et al., 2009). Furthermore, the self-reported retrospective assessment of emotions that participants experienced during a CX or self-reported service performance outcomes could be biased due to several reasons. For instance, emotional responses are often automatic and subconscious (i.e. person is unaware of the

emotional response), so that customers might be unable to tell what they really feel sometimes (Podsakoff, Mackenzie, Lee, & Podsakoff, 2003; Poels & Dewitte, 2006). Further, people may not accurately recall experienced emotions. Retrospectively reported emotions seem to be based on representations about emotion rather than on emotion itself, which could result in different results (Clore et. al., 2001; Robinson & Clore, 2001). Further, thinking about how you felt in the past (retrospective feelings), does not necessarily reflect how you really felt at that time (Lazarus, 1995). Self-report measures are also susceptible to social desirability bias, for instance past research showed that gender differences in emotion are more consistent with gender stereotypes when people are asked to report on a retrospective experience compared to when people are asked to report on specific concurrent experiences (Shields, 1991; Shields, 2000).

A novel approach to study emotions and underlying processes during the customer journey that can be put forward is using neuroscientific techniques (Lemon & Verhoef 2016; Venkatraman et al. 2012). Neuroscientific techniques include for instance galvanic skin response and electroencephalography (for an overview see Table 1-3). Studying the CX with a multi-method approach, such as complementing and comparing self-report measures with neurophysiological techniques would be beneficial for our comprehension of the CX and the customer journey. Several benefits of this approach can be put forward. Several neuroscientific techniques allow monitoring emotions during the entire CX can provide a fine-grained picture of what is going on in consumers while the CX is taking place. This could for instance help elucidate whether one CX is preferred over another (e.g., CX with service delivery by self-service technology vs human interaction). Furthermore, neurophysiological measurements allow identifying key moments (Zomerdijk & Voss, 2010), such as when a failure or recovery effort happens or when negative or positive emotions surface, because they allow to capture temporal fluctuations of emotions during the CX (Boshoff, 2012; Liapis, Katsanos, Sotiropoulos, Xenos, & Karousos, 2015). Identifying these key moments could help to pinpoint moments where interventions might be necessary and therefore prove beneficial in designing successful services. In essence, using neuroscientific techniques allows to capture the dynamic nature of the customer journey, overcome specific biases and recall issues linked to retrospective self-report measures, allow to study the current experience, and can measure autonomic responses. Neuroscientific techniques are also equipped to measure some underlying processes (e.g., neurotransmitter level, changes in physiological reactions).

Neuroscientific techniques measures changes in the human body or brain. There is a wide range of bodily changes that can be examined such as changes in brain activation,

neurotransmitter levels, and peripheral physiological reactions. The tools to measure bodily changes largely fall in three groups (Dimoka et al., 2010; Kenning & Plassmann, 2005; Mauss & Robinson, 2009); neuroimaging techniques (measure changes in the brain; see Table 1), physiological measures (measures changes in peripheral system, see Table 2), and techniques to measure hormone and neurotransmitter levels such as blood draws and saliva swabs (Table 3). In what follows, we briefly discuss the most important techniques that could be relevant for service research.

2.3.1 Neuroimaging techniques

Two neuroimaging techniques that deserve extra attention are electroencephalography (EEG) and functional magnetic resonance imaging (fMRI). EEG measures brain activity by means electrodes on the scalp. EEG has many potential applications for service research and consumer behavior, but a particularly interesting one is measuring frontal brain asymmetry. For instance, frontal brain asymmetry can give an indication on approach–avoidance behavior during the CX or an advertisement stimulus (Mauss & Robinson, 2009). Approach behavior is associated with positive emotions, such as engagement, interest, and happiness, whereas avoidance is associated with negative emotions, such as disinterest, disengagement, fear, and disgust (Davidson et al., 1990). Thus, asymmetry is a promising measure for emotional valence (Ohme et al., 2009). For an example of applying EEG in the service domain see Boshoff (2012) or Chapter II in this dissertation.

fMRI is used to image the change of blood flow in the brain. For instance, when faced with a particular stimulus such as a video, certain areas in the brain related to someone's response toward the stimulus will receive more oxygenated blood flow than they do at rest time. These changes are picked up by fMRI (for a more detailed explanation see e.g., Kenning, Plassmann, & Ahlert, 2007; Morin, 2011). fMRI is a promising technique to study consumers. Recent studies revealed that fMRI is able to shed light on subconscious processes such as affective aspects of consumer behavior. However, we caution that still many limitations are at hand (Kenning et al., 2007). For instance, fMRI allows only rather simple designs, since fMRI relies on many stimulus presentation repetitions (to reduce the noise), and is thus not suited to study for instance the consumer journey.

Table 1.

Overview of neuroimaging tools

Neuroimaging tools	Measures	Indicates...	Advantages	disadvantages
<i>fMRI</i> *	Measurement of metabolic activity using the magnetic properties of blood:	can indicate attention, affect, memory, desirability → depends on focus brain part → which brain part is active cortex during more complex cognitive tasks	- good spatial resolution - non- invasive	- lower temporal resolution (vs EEG/MEG) - high investment (time, price, data analysis) - Risk of confounding factors (movement) - very unnatural (noise)
<i>PET</i> *	Nuclear medicine technique for analyzing metabolic procedures in neurons:	which brain part is active	- good spatial resolution	- poor temporal resolution - invasive - costly - very complex data analysis - unnatural
<i>EEG</i> +(<i>ERP</i>)	Voltage fluctuation at surface of brain	approach- avoidance /valence	- good temporal resolution (in-the-moment measures) - relatively cheap - relatively straight forward data analysis - non- invasive	- not good at locating brain areas responsible for voltage fluctuations - high investment (time, price, data analysis) - risk of confounding factors (temperature, movement, power grid) - unnatural
<i>MEG</i> *	Registration of changes in magnetic streams induced by voltage fluctuations	accurately pinpoints sources in primary auditory, somatosensory, and motor areas	- good temporal resolution (in-the-moment measures) - non- invasive	- high costs - complex data analysis - unnatural - limited spatial resolution

Note. (*) At this point less interesting in service research

For details discussion see e.g. Kenning et al., 2007, Plassmann et al., 2007; Venkatraman et al., 2015

2.3.3. Neurophysiological tools

More interesting, due to lower costs and easier in use, are neurophysiological tools. They allow to capture changes in the peripheral nervous system. Tools or measures often used in emotion research are galvanic skin response (GSR), photoplethysmogram (PPG), electromyography (EMG), and the eye tracker (e.g., Mauss & Robinson, 2009; Poels & DeWitte, 2006). GSR gives an indication of electrical conductance of the skin (related level of sweat in the sweat glands) and indicates bodily arousal (Grings & Dawson, 1978). GSR is measured by electrodes placed directly on the skin, mostly the palm or finger tips (van Dooren, de Vries, & Janssen, 2012). You can find an example of how GSR can be used to study customers and the CX in Chapters II-IV of this dissertation. PPG is used to measure blood penetration into small veins such as fingers and can be used as an index for heart rate (HR). Because the pumps blood through the whole body, blood penetration, and thus heart beats, can be measured at a finger (Elgendi, 2012). Also, other techniques can be applied to measure heart rate such as an electrocardiogram. HR is not only linked to arousal, but can also be connected to positive and negative affect (Lang, Greenwald, Bradley, & Hamm, 1993; Palomba, Angrilli, & Mini, 1997; Poels & Dewitte, 2006). For an application, see Chapter IV of this dissertation.

EMG measures changes in muscle activity by means of electrodes placed on or in muscles (Fridlund & Cacioppo, 1986). The most interesting application for service research is the registration of facial muscle activity, by measuring activity in the corrugator supercilli muscle and zygomaticus major muscle (Fridlund & Cacioppo, 1986). Registration of facial muscle activity is directly connected to emotional states (Dimberg & Petterson, 2000; Fridlund & Cacioppo, 1986; Larsen, Norris, & Cacioppo, 2003). The Corrugator supercilli muscle is activated when someone frowns, thus indicating negative emotions. Whereas the zygomaticus major muscle is activated when someone smiles and indicates positive emotion. For an example in the service context see Boshoff (2012) or Chapter III of this dissertation.

Finally, eye tracking systems can obviously be used to measure the position of eyes, but more important for our discussion is that these systems allow to measure pupil dilation and amount of blinking. Pupil dilation is an automatic physiological reaction, linked to for instance attention (Hoeks & Levelt, 1993), mental effort (Hess & Polt, 1964), and arousal (Bradley, Miccoli, Escrig, & Lang, 2008). Also blinking of the eyes is related to mental effort and workload (Brookings, Wilson & Swain, 1996). Applying eye tracker research could be particularly interesting during website usability studies and advertising, but also to investigate

the attention-capturing power of elements of the servicescape during a CX (e.g., displays, service personnel). For an example see the review of Wedel and Pieters (2008).

As suggested earlier in this introduction, both neuroimaging tools and tools measuring changes in the peripheral system have several advantages in common that make them particularly equipped to study the CX and consumers behavior in general (De Keyser, 2015; Lemon & Verhoef, 2016; Venkatraman et al., 2012). They allow in-the-moment measures during a CX, hence they can capture temporal fluctuations of emotions during the CX (Boshoff, 2012; Liapis et al., 2015). Furthermore, these measures can bypass certain shortcomings of self-report measures (e.g., social desirability bias, no recall) since emotions measured by neurophysiological tools measure automatic responses that people cannot control. Furthermore, except for fMRI, all aforementioned tools have wearable versions, which allow studying bodily changes in real-life or throughout a customer journey that captures several touchpoints. For instance, we could send someone into a museum while measuring EEG and GRS throughout the whole experience (e.g., museum bar, museum shop, information kiosk, watching paintings).

Table 2.

Overview of neurophysiological tools

Neurophysiological tools	Measures in the body	Indicates	Advantages	Disadvantages
<i>GSR</i>	sweat eccrine in glands	arousal	<ul style="list-style-type: none"> - less sensitive to noise - in-the-moment measurement - avoids bias - captures fluctuations 	<ul style="list-style-type: none"> - temporal sensitivity is poor - high time investment/ price (vs self-report) - risk of confounding factors (temperature, movement, power grid) - unnatural
<i>PPG</i>	heart rate	arousal valence cognitive demands	<ul style="list-style-type: none"> - in-the-moment measurement - avoids bias - captures fluctuations 	<ul style="list-style-type: none"> - interpreting relevance can be challenging - high time investment/ price (vs self-report) - risk of confounding factors (temperature, movement, power grid) - unnatural
<i>(facial) EMG</i>	(facial) Muscle tension	valence	<ul style="list-style-type: none"> - in-the-moment measurement - avoids bias - captures fluctuations 	<ul style="list-style-type: none"> - sensitive to noise (e.g. talking) - high time investment/ price (vs self-report) - risk of confounding factors (temperature, movement, power grid) - unnatural
<i>EYE TRACKER</i>	position eye, pupil dilation, blinks, ...	attention arousal mental load eye position	<ul style="list-style-type: none"> - in-the-moment measurement - avoids bias - captures fluctuations 	<ul style="list-style-type: none"> - pupil dilation hard in real life setting - high time investment/ price (vs self-report) - risk of confounding factors (light, movement)

Note. For detailed discussion see e.g. Dimoka et al., 2012; Maus & Robinson, 2009; Diricana & Göktürk, 2011

2.3.3. Measuring neurotransmitter & hormone levels

To measure neurotransmitter and hormone levels (e.g., cortisol, oxytocin, testosterone) in the body researchers rely on blood draws, saliva swaps, and urine samples (e.g., Barraza et al., 2015; Buckert, Schwieren, Kudielka, & Fiebach, 2014). Obviously, these tools do not allow in-the-moment observation, but still could be interesting to use in the service research domain because changes in neurotransmitter levels affect behavior (e.g., buying behavior; Lichters et al., 2016), physiology (e.g., heart rate), and psychological processes (e.g., mood, trust) dramatically (for reviews, see Rilling & Sanfey, 2011; von Bohlen & Halbach, 2006). Studying neurotransmitters could help to understand underlying processes and/or important mechanisms such as trust better. Indeed, it is widely expected that displaying friendliness and genuine care during employee–customer interactions boosts trust (Gremler, Gwinner, & Brown, 2001; Lemmink & Mattsson, 2002; Sundaram & Webster, 2000); yet a thorough understanding of the mechanisms that drive trust is lacking. This is where studying neurotransmitters can help, for instance oxytocin is a key driver of empathy, prosocial behavior, and trust during human interaction (e.g., Barraza & Zak, 2009). Just on a side note, these techniques can only measure levels in the body, when you want to measure for instance neurotransmitter levels in the brain you have to rely on more invasive techniques such as PET (where participants take a certain drug enhanced with fluorine; e.g., Kenning et al., 2007) or with a tube straight in the brain (mainly restricted to animal research).

This dissertation does not focus on neurotransmitters and hormones, however we do briefly touch this topic in Chapter IV and V. In Chapter IV we used a video manipulation that most likely impacts oxytocin levels. In Chapter V we have participants eat dark chocolate which has the potential to influence serotonin levels.

Table 3.

Overview of measuring hormones and neurotransmitters

Technique to measure neurotransmitters & hormones	advantages	disadvantages
blood draws urine samples saliva swaps	- possible to link to ultimate explanations - objective - investigating underlying mechanisms	- very invasive - expensive - need for medical analysis
Examples of neurotransmitters & hormones	Relates too for example...	Examples of possible research topics
Oxytocin	pro-social behavior	frontline interactions
Serotonin	mood	servicescape CX in hedonic settings
Dopamine	reward feelings	servicescape recovery CX in hedonic settings
Testosterone	aggression	failure
Cortisol	impact on stress	failure employee well-being CX in health care

Note. For detailed reviews see Rilling & Sanfey 2011; von Bohlen & Halbach, 2006

To be complete, but out of the scope of this dissertation, it should be mentioned that also stable bodily states can have an impact on how consumers behave in the world or experience a service. To illustrate, exposure to fetal testosterone (measured by ratio between the length of the index and ring finger=2D:4D) predicts long-term success and the number of years stayed in the trading business among high-frequency financial traders (Coates, Gurnell, & Rustichini, 2009). Further it can also impact cooperative behavior (Millet & DeWitte, 2006). Conversely, the impact of these biomarkers remains heavily debated in the literature (e.g., 2D:4D ratio; Turanovic, Pratt, & Piquero, 2017). Furthermore, Simonson and Sela (2010) and Smidts et al. (2014) suggest that to fully understand consumer choice behavior and evaluation we should also look at the molecular level in humans (i.e. genetics). Indeed, it appears that our genes play role in obesity behaviors (Bell, Walley, & Froguel, 2005) or even preference between utilitarian or hedonic options (Simonson & Sela, 2010). Nevertheless, we are only at the nascent stages in understanding the molecular mechanisms that can underlie consumer choice processes (Smidts et al., 2014).

Throughout this dissertation, we used several measures of bodily changes. In Chapter II and III, we use bodily changes as a window of emotional reactions toward a stimulus, in this case a service encounter. In Chapter II we use EEG and GSR, whereas Chapter III applies EMG and GSR. Chapter IV takes another approach by manipulating bodily states by means an experimental procedure. Chapter IV measures two peripheral nervous system responses often used in emotion research, namely GSR and HR (see Table 4 for an overview of the techniques used in this dissertation).

3. WHAT DOES THIS DISSERTATION TO DO?

This dissertation taps into to the need to explore affective processes and underlying processes during the customer journey in more depth and explores new measures of the customer journey to do so. Additionally, we explore if these new measures contribute to understanding customer service performance evaluation (e.g. service satisfaction, return intentions) better and if underlying processes (e.g., bodily changes) predict different service performance outcomes.

First of all, this dissertation explores if neurophysiological measures can contribute to a better understanding of the customer journey. Using neurophysiological measures can bypasses several shortcomings of retrospective self-reports, since emotions measured by neurophysiological tools measure automatic responses that people cannot control, hence are more likely to resemble true and cognitively unbiased feelings of actual experiences (Boshoff, 2012; Kahneman & Krueger, 2006). Furthermore, they allow to capture in-the-moment measures. Therefore, both Chapter II and III will use a multi-method approach that combines neurophysiological and self-report tools to measure the impact of service interfaces on consumer emotions. Adopting such an approach, we zoom in on the affective component of the CX.

In Chapter II and III we focus on the impact of different service interfaces since they have an important impact on the CX (Heineke & Davis, 2007; Patrício, Fisk, and Falcão e Cunha, 2008; Verhoef et al., 2009; Zomerdijsk & Voss, 2010). The service interface or service delivery mode is a service subsystem that integrates the physical environment, people, and process (Patrício, Fisk, Falcão e Cunha, & Constantine, 2011). Customers interact with a specific service interface during every service encounter. Examples of interfaces that can deliver a service are frontline employees (e.g., face-to-face, over the phone), technology (e.g. mobile devices), self-service technology, or even blends of different interfaces (multi-interface systems; Patrício et al., 2008). The aim of

Chapter II is to investigate how a self-service technology interface compared to a human interaction service interface impacts the CX. Chapter III focuses on the customizing the gender of the frontline employee on the CX. The service interface is thus either being served by a male or female employee.

Secondly, this whole dissertation centers on affective processes throughout the customer journey, we not only explore the application of new techniques to measure affective processes, but also investigate how affective processes during different stages of the customer journey have an impact on service performance outcomes. In Chapter II and III we focus on consumer emotions during the purchase stage, whereas in Chapter IV and V we investigate how changed bodily states and mood during the prepurchase stage influence consumer outcomes. Furthermore, we include a failure and recovery during the CX in Chapter II and III, because they are generally seen as touchpoints during a CX that clearly elicit emotions. Thus, we introduce failure and recovery actions to be able to distinguish emotional changes throughout the journey, to be able to investigate if neurophysiological measures are equipped to pick up this emotional information. In a way this can be seen as a ‘check-point’ for our measures.

Thirdly, we explore if manipulating underlying processes during the prepurchase stage has an influence during the rest of the customer journey. In Chapter IV we elicit changes in bodily states (linked to empathic concern and oxytocin) and in Chapter V serotonin level. We investigate their impact during service encounters that range in valence. We for instance distinguish encounters that are perceived as very positive versus very negative or moderately positive. This allows drawing conclusions on how manipulating underlying processes can be context-dependent.

4. DISSERTATION OUTLINE

This dissertation focusses on both the prepurchase and purchase stage of the customer journey (see figure 3). In Chapter II and III, we address the impact of service interfaces (SST and human interaction) and choice in gender of the frontline employee on the emotional component of the CX by means of a multi-method approach. In Chapter IV and V, we focus on consumers’ prepurchase mood and bodily states. Finally, Chapter VI provides an overview of the theoretical, managerial, and methodological contributions of the dissertation and discusses the limitations and future research opportunities inspired by the four empirical chapters. In what follows we briefly discuss

each chapter. Table 4 presents an overarching overview of the experimental research conducted in Chapters II-V.

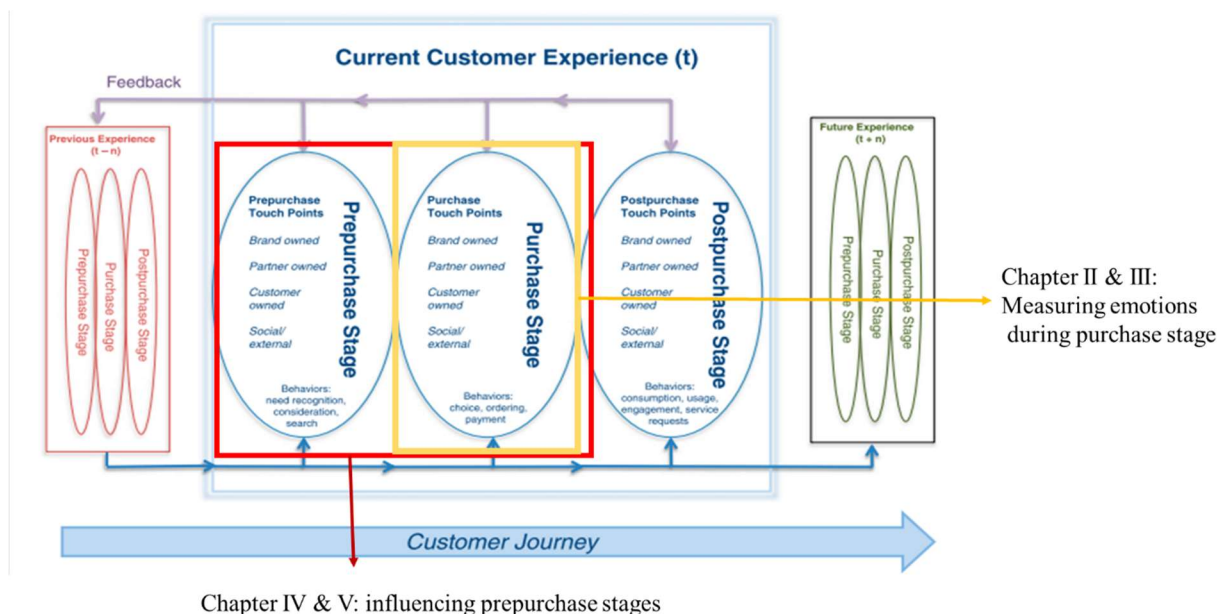


Figure 3. Overview of the dissertation

In Chapter II: “*A multi-method exploration of emotions during service delivery through self-service technology or by an employee*”, we explore the impact of service interface (SST versus human interaction) on the emotional component of the CX. This study applies a multi-method approach, namely it combines self-report measures and neuroscientific measures. Combining these two methods allows both continuous, in-the-moment, and retrospective monitoring of the emotions that customers experience during different phase of the service delivery (e.g., moment when a failure). Our study showed that indeed emotions fluctuate across different phases. Furthermore, according to the neuroscientific measures emotional responses were identical between customers that used SST and those interacting with a frontline employee. Conversely, the self-report data suggested negative effects of self-service technology versus frontline employees.

Chapter III: “*Customizing gender? The impact of choice of frontline employees’ gender on customers’ emotions*”, investigates the impact of choice of the gender of a service employee on emotions and service performance outcomes. In contrast of what is expected by the literature, Study 1 demonstrates that choice of gender (versus no choice) does not impact emotions, nor service performance outcomes. Possible reasons are that scenarios and self-report measures are not

ideal to study or measure emotions. Therefore, Study 2 combines self-reports with neurophysiological measures and participants had a real interaction with a real employee, instead of reading a scenario. Study 2 replicated most results of Study 1.

Chapter IV: “*The effect of pre-consumption bodily changes on service performance outcomes and complaining*” aims to examine the effect of pre-consumption bodily changes induced by a video on service encounter evaluations and complaint behavior. The experimental video decreases heart rate whereas the control video increases heart rate. The results show that that if customers’ watch the experimental video, before reading a service scenario with positive valence they are more satisfied with the service, more likely to return, and willing to spread positive word-of-mouth (Study 1). Furthermore, we show that watching the experimental video and then reading a moderately negative scenario leads to higher satisfaction and lower negative word-of-mouth (Study 2). Lastly, we show that watching either the control or experimental movie has a different impact on types of complain behavior (Study 3).

Chapter V: “*Boosting service performance by dark chocolate seduction*” investigates if a small detail during the prepurchase stage can improve service performance outcomes. Specifically, this chapter investigates if eating dark chocolate (i.e. small detail) impacts service performance outcomes such as satisfaction. Study 1 show that after reading a positive service scenario, eating dark chocolate (versus grapes or cookies) results in higher service satisfaction and return intention. This effect was fully mediated by mood. This effect does not occur after reading a negative service scenario. We conduct study 2 to exclude a general chocolate effect (Study 2a) and test the impact of taste as a moderator (Study 2b). Results of Study 2a show that both milk and dark chocolate had an effect on mood compared to a control group that did not eat anything after reading a positive scenario. Only eating milk chocolate (compared to eating nothing) had an impact on satisfaction and return intention mediated by mood. After reading the moderately positive scenario. We found no significant effects on satisfaction, however we found that eating milk chocolate (versus nothing) had a significant indirect effect (through mood) on return intention. Study 2b shows that after reading a positive scenario, tastes indeed moderates the effect of eating chocolate on mood. When the taste of chocolate is low or mediocre dark chocolate has a more positive effect on mood compared to milk chocolate, if the taste is very good this effect changes. Thus, we find a moderated mediation on satisfaction. This was not the case after reading a moderately positive scenario. Lastly,

our field study shows that who ate dark chocolate had a higher mood after the service encounter compared to the participants that ate nothing or milk chocolate (Study 3). Furthermore, the positive impact of eating dark chocolate on for instance satisfaction was mediated by mood.

Table 4. General overview of experimental studies

Chapter	Content (or condition)	Measurement	Affective outcomes	Service related outcomes	Service context	Type of study	Measurement during stage of the customer journey		
							Prepurchase	Purchase	Postpurchase
Chapter II									
Study 1	SST versus human interaction	Self-report measures Neuroscientific measures: EEG-GSR	Consumer emotions	Service performance outcomes	Making a loyalty card for a book store	Experiment with real life interaction		x	x
Chapter III									
Study 1	Choice or no choice between frontline employee gender	Self-report measures			Reservation of a concert ticket in concert venue	Scenario-based experiment		x	x
Study 2		Self-report measures Neuroscientific measures: EMG-GSR	Consumer emotions	Service performance outcomes		Experiment with real life interaction		x	x
Chapter IV									
Pretest	Watch a movie eliciting bodily changes related to empathic concern or not related to empathic concern	Self-report measures Neuroscientific measures: GSR-HR	Mood Bodily responses		/	Experiment	/	/	/
Study 1		Self-report measures		Service performance outcomes	Restaurant	Scenario-based experiment	x		x
Study 2				Service performance outcomes	Mobile phone shop	Scenario-based experiment	x		x
Study 3				Complaint behavior	Hotel	Scenario-based experiment	x		x

Chapter	Content (or condition)	Measurement	Affective outcomes	Service related outcomes	Service context	Type of study	Measurement during stage of the customer journey		
							Prepurchase	Purchase	Postpurchase
Chapter V									
Study 1	Eating dark chocolate (versus other food) in scenarios ranging in valence	Self-report measures	Mood	Service performance outcomes	Restaurant	Scenario-based experiment	x		x
Study 2a			Mood		Mobile phone shop	Scenario-based experiment	x		x
Study 2b			Mood		Mobile phone shop	Scenario-based experiment	x		x
Study 3			Mood		Shoe store	Field study	x		x

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**CHAPTER II: A multi-method exploration of emotions during service
delivery through self-service technology or by an employee**

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1. INTRODUCTION

In recent years, both practitioners and scholars have paid notable attention to creating compelling customer experiences (De Keyser 2015; Lemon and Verhoef 2016). This comes as no surprise, a satisfying customer experience provides companies with an appealing competitive advantage because it results in service satisfaction and long-term company success (Grewal, Levy, and Kumar 2009; McCarthy and Schadler 2014). Numerous companies currently focus on this advantage by explicitly promising great customer experiences in their mission statement (De Keyser 2015, Meyer and Schwager 2007).

Emotions play a crucial role both during the CX (Gaur et al. 2014, Tronvoll 2011). Indeed, to understand how people experience a service, an exploration of their emotions is crucial (Bigné, Mattila, and Andrué 2008; Jani and Han 2015) because emotional responses during the CX affect cognitive judgments of a service (Lerner and Keltner 2000), service performance outcomes (e.g., satisfaction; Liljander and Strandvik 1997), and behavioral intentions (e.g., return intentions; Ladhari 2009).

Extensive methods exist for measuring emotions during CX (Klaus 2014; Verleye 2015), but previous research on CX and service interfaces has predominantly relied on self-report measures and scenario-based studies, restricting internal and external validity of previous findings (Bruun and Ahm 2015). For instance, self-report measures do not allow in-the-moment measures of CX, even though studies show that a dynamic measurement of the CX is of high importance (Verhoef et al. 2009). The current paper aims to address limitations posed by retrospective self-report scales and scenario-based studies by using a multi-method approach to assess emotional responses during a real-life CX. Through combining both self-report and neurophysiological measures to better understand the affective component of CX (Ostrom et al. 2015; Mccoll-Kennedy et al. 2015). This is particularly interesting, because neurophysiological measures allow to capture additional experiential in-the-moment and dynamic measurement of CX (Lemon and Verhoef 2016; Venkatraman et al. 2012). In essence, the *first research objective of this paper is to explore if using neurophysiological tools to measure emotions during a real-life CX can add to*

our understanding of CX, its dynamic nature, and help to predict service performance outcomes (e.g., satisfaction).

In order to accomplish this, we focus on one specific factor affecting the emotional component of CX, namely, service interfaces (Verhoef et al. 2009). The service interface that we focus on is service delivery by self-service technology (SST) versus human interaction (HI). We will explore the effect of those two service interfaces on the emotional component during a CX (including a failure) and its service performance outcomes (e.g., satisfaction).

The reason for focusing on this topic is two-folded. First, there is a renewed interest in studying the frontline service interface and how this service interface can enhance the CX (Singh, Brady, Arnold, and Brown, 2017). Second, technology recently transformed the way in which services are delivered. Key in this transformation is the replacement of HI by SST (Blut, Wang, and Schoefer 2016; Giebelhausen et al. 2014). In some types of services (e.g., E-retail, online banking), technology has completely replaced HI. However, the implications of this transition on CX remain relatively unclear. SST research to date has mainly focused on determinants of customers' intentions to adopt and use SST, such as technological readiness and ease of use (e.g., Blut, Wang, and Schoefer 2016; Dabholkar and Bagozzi 2002; Lin and Hsieh 2007; Oh, Jeong, and Baloglu 2013; Wang, Harris, and Patterson 2013), but little is known about emotions during service delivery by SST vs HI, how they fluctuate throughout a CX, and their impact on service performance outcomes. Indeed, the literature provides mixed results on the impact of SST vs HI on emotions and performance outcomes. Thus, our *second research objective is to explore the emotional component of the CX while a service is delivered by SST or HI*. We explore if type of service interface affects emotions (valence and arousal) differently in the various phases throughout the CX (e.g., recovery, failure) and if type of service interface (HI vs. SST) affects service performance outcomes (e.g., satisfaction, complaint intention).

The emotional component consists of two dimensions, namely, valence and arousal, as described in previous literature (Mehrabian and Russell 1974; Porat and Tractinsky 2012). Both consumers' valence and arousal levels change throughout the CX (e.g., Boshoff 2012; Lui, Sparks, and Coghlan 2016). Therefore, we included a failure in the CX because a failure tends to spark negative emotions, which have a stronger impact on performance outcomes than positive emotions (Baumeister et al. 2001; Gijzenberg, van Heerde, and Verhoef 2015). Including this failure will allow us to investigate if neurophysiological versus retrospective self-report measures

are better equipped to pick up these negative emotions throughout the CX. To be able to explore if neurophysiological and self-report measures of emotions can be linked to service performance outcomes these were also included in the study.

We carried out a 2 (SST vs. HI, between subject) \times 6 (phases, within subjects) mixed design study to investigate how service interfaces affect the emotional component of CX and identify key moments during a service (e.g., when a failure or recovery effort happens). This paper contributes to the literature in several ways, we proposed two research objectives that will allow us to explore if neurophysiological measures are better equipped, compared to retrospective self-report measures, to study the dynamic nature of CX, as well as explore if one or the other contributes more to our understanding of the CX and its service performance outcomes. Furthermore, this paper contributes to the service interface literature by exploring the impact of service delivery by SST or HI with a different method and during a real-life service interaction.

In the following sections, we briefly discuss retrospective versus neurophysiological measures, SST literature, and compare services delivered via HI versus SST. Next, we discuss the study design, methods, and results. We then elaborate on theoretical, methodological, and managerial implications, before discussing limitations and future research ideas.

2. NEUROPHYSIOLOGICAL VS SELF-REPORT MEASURES

Previous research on CX has predominantly relied on self-report measures, yet retrospective self-report measures can be biased due to several reasons. First of all, retrospective self-reports do not allow in-the-moment dynamic measurement of a CX (Boshoff, 2012; Kahneman and Krueger, 2006; Verhoef et al. 2009). Indeed, retrospective reported emotions seem to be based on representations about emotion rather than on emotion itself, which could result in different results (Clore et al., 2001; Robinson and Clore, 2001). Thinking about how you felt in the past (retrospective feelings) does not necessarily reflect how you really felt at that time in the past. Further, while retrospectively reconstructing emotion contextual details, that could be important, while actually experiencing emotions are absent (Lazarus, 1995).

Secondly, emotional responses are often automatic and subconscious. People may not accurately recall experienced emotions. Hence, the retrospective assessment of emotions that participants experienced during CX or self-reported service performance outcomes may be biased, and if they already recall emotions, people may exaggerate or give overly positive

responses since the emotions or outcomes reported are already processed by their mind (Clore et al., 2001; Podsakoff et al. 2003; Poels and Dewitte 2006).

In contrast to retrospective self-reports, neurophysiological tools allow capturing temporal fluctuations of emotions during a CX (Boshoff 2012; Liapis et al. 2015) and measurement of both automatic and (sub)conscious emotional responses during the CX in real time (instead of post-experience). Such measurements allow to identify key moments and capture the dynamic nature of the CX (Zomerdijk and Voss 2010), and are more likely to resemble true feelings associated with actual experiences (Kahneman and Krueger 2006). Furthermore, recent studies in the domains of computer and service sciences using both neurophysiological measures and (retrospective) self-reported measures to study human–computer interactions (e.g., SST) or HI showed that the literature can greatly benefit from combining different measures. Mainly because this approach enriches overall understanding and avoids certain biases (Brave and Ness 2002; Bruun and Ahm 2015).

On the other hand, neurophysiological measures have several downfalls compared to self-reports. Using neurophysiological tools is relatively expensive (equipment, payment participants), time-consuming (e.g. install sensors, data-analysis), and data-analysis is more complex. Generally, it takes a different skillset for researchers to be able to conduct a neurophysiological experiment. Therefore, it is important for the service literature to explore if it is worthwhile to adopt neurophysiological measures to study the CX.

In this paper, we use two neuroscientific techniques; electroencephalography (EEG) and galvanic skin response (GSR). We used these due to several reasons. Firstly, they both measure a different dimension of emotion, namely EEG is related to valence (or pleasure; Ohme et al., 2009) and GSR to arousal (Grings and Dawson 1978). Secondly, they are both highly suitable to capture in-the-moment temporal fluctuation (Kenning et al. 2007). Furthermore, they are not susceptible to certain biases such as recall bias. Lastly, they are both relatively affordable and not overly complex to use and interpret, compared to other neuroscientific tools (Kenning et al. 2007; Poels and Dewitte 2006).

3. SELF-SERVICE TECHNOLOGY VERSUS HUMAN INTERACTION

SSTs are defined as “*technological interfaces that enable customers to produce a service independent of direct service employee involvement*” (Meuter et al. 2000, p. 50). Examples include self-scanning checkouts at retailers and self-check-in at airports. SST research to date has mainly focused on determinants of customers’ intentions to adopt and use SST, such as technological readiness and ease of use (e.g., Blut, Wang, and Schoefer 2016; Dabholkar and Bagozzi 2002; Lin and Hsieh 2007; Oh, Jeong, and Baloglu 2013), but little is known about emotions during SST usage and how they fluctuate throughout an SST experience and the differential effects of service interfaces (SST vs. HI) on various phases of a CX.

Past research on the effects of employee–customer or HI suggests that interpersonal interactions during service delivery have a substantial effect on overall service performance outcomes, with good interactions improving the CX (Bitner, Booms, and Tetreault 1990). Indeed, frontline employees have an enormous impact on customers’ emotions (for an overview of relevant studies see Petzer et al. 2012).

Similar processes are at play during both SST and HI. However, the discussion on which of the two is preferred continues to be an important subject of debate. Further, few studies have empirically investigated the different impact of SST versus HI on service performance outcomes, although many people believe, without strong or converging empirical back-up, that SST is less satisfying than HI. This bias exists in both scholars (Shi 2011; Yan et al. 2013) and companies (Anand 2011; Mullins 2012).

Several researchers put forward that people generally prefer HI (vs. SST) and that SST is less satisfying than HI. For instance, Kattara and El-Said (2014) tested preferences for SST versus HI for different service encounters during a hotel stay and found that customers preferred HI over a technology-based interaction for most types of encounters (e.g. check-in, reservation). Yan and colleagues (2013) appear to be the first to attempt to understand how SST versus HI impacts customers’ outcomes within the service domain. They showed that consumers perceived higher levels of service quality after an HI versus SST, which in turn led to higher satisfaction. Other studies suggest a preference for HI over SST by showing that including human features or higher perceived warmth in SST is associated with better attitudes about SST, makes people less likely

to switch back to HI, and can improve service outcomes (Appel et al. 2012; Fan, Wu, and Mattilla 2016; Van Doorn et al., 2017).

On the other side, some scholars do not fully agree that higher satisfaction arises from HI versus SST and that HI is always preferred (Espina and Perez, 2015; Ha and Perks 2005; Janda and Ybarra 2005; Koronowski 2010; Shankar, Smith, and Rangaswamy, 2003). SST may have specific features that induce a positive CX (e.g., shorter perceived waiting time, increased perceived control; Weijters et al. 2007; Dabholkar, Bobbitt, and Lee, 2003).

Next to the mixed findings for HI versus SST on service performance outcomes, differential effects of service interfaces (SST vs. HI) on various phases of a CX remain unclear, although it is generally known that consumers' emotional responses change throughout a CX (e.g., Boshoff 2012; Lui, Sparks, and Coghlan 2016). Exceptions are the studies of Matilla, Cho, and Ro (2011) and Harris et al. (2006) who suggest that recovery actions are better conceived or more satisfying when they are delivered through HI instead of SST, implying that emotional reactions towards the recovery phase of CX should be more positive with HI versus SST. However, they let consumers judge scenarios using retrospective self-reports which have their limitations, and they ignored phases other than customer recovery during a CX.

In sum, previous literature is not entirely convincing in conclusions about whether HI outperforms SST. Several reasons exist for these mixed findings, and our study attempts to overcome some of these issues. First, ample research has been conducted on SST and HI in isolation, but empirical evidence directly comparing emotions and performance outcomes following SST use or HI is scarce. Second, a wide variety of designs and measurement tools such as experiments, field studies, and questionnaires have been used to investigate HI and SST, which can result in different findings. Most research has relied on post-encounter self-report measures, which have several pitfalls, as previously explained. Third, most studies have used scenarios rather than real interactions, which could result in participants making judgments based on their general preferences or common beliefs instead of what they would truly experience. Finally, previous research did not account for either the dynamic nature and emotional component of CX. For example, customers' emotions can vary during a failure or recovery phase and can affect service performance outcomes differently. To tackle these shortcomings, our study directly compares the emotional impact of SST and HI. Further, we measure emotions by a multi-method approach that allows accounting for the dynamic nature of the both conscious and

subconscious emotional components of CX and overcoming issues with post-encounter self-report measures. To overcome limitations of scenario-based research, we used a real-life interaction in which participants talked to an employee or used SST.

4. METHODOLOGY

4.1. PROCEDURE AND RESEARCH DESIGN

Participants in our study made a loyalty card either by using SST (SST condition) or by communicating with a real-life employee (HI condition) while neurophysiological responses were measured. The participants provided the employee or the SST system with personal information to create the loyalty card.

First, a pilot test with four participants ensured that all neuroscientific tools were working properly and that the flow of the design worked well. Next, we invited 40 participants (50% men, $M_{age} = 23$ years), including students and personnel of a European University, to our laboratory to participate in a 2 (SST vs. HI, between subject) \times 6 (phases, within subjects) mixed design experiment. Both conditions were the same except that either an employee requested the participants' personal information and typed it in for them (HI condition) or participants read instructions on the information they had to provide and typed it in themselves on a computer (SST condition). The service encounter consisted of several phases (cf. Boshoff 2012; see Figure 1, see appendix A for script). First, the participant was greeted by the employee or SST (welcome phase). Next, they either typed in their personal details (e.g., name) or gave the employee their details (service intervention 1 phase), after which a failure happened ("Something went wrong, we could not store your information. Please wait a moment"; failure phase). The duration of the failure was 15 seconds. Importantly, the failure was independent of the service interface. In both conditions, the computer system could not store the participant's information, which prevented participants from having different blame attributions between conditions, which might result in different behavior (Harris et al. 2006). After these 15 seconds, a recovery action was undertaken (excuses and promised discount for future orders; recovery phase). Afterwards, we asked participants to give their personal data again (Service intervention 2 phase). Finally, they were informed that they successfully created a loyalty card and were thanked (goodbye phase).

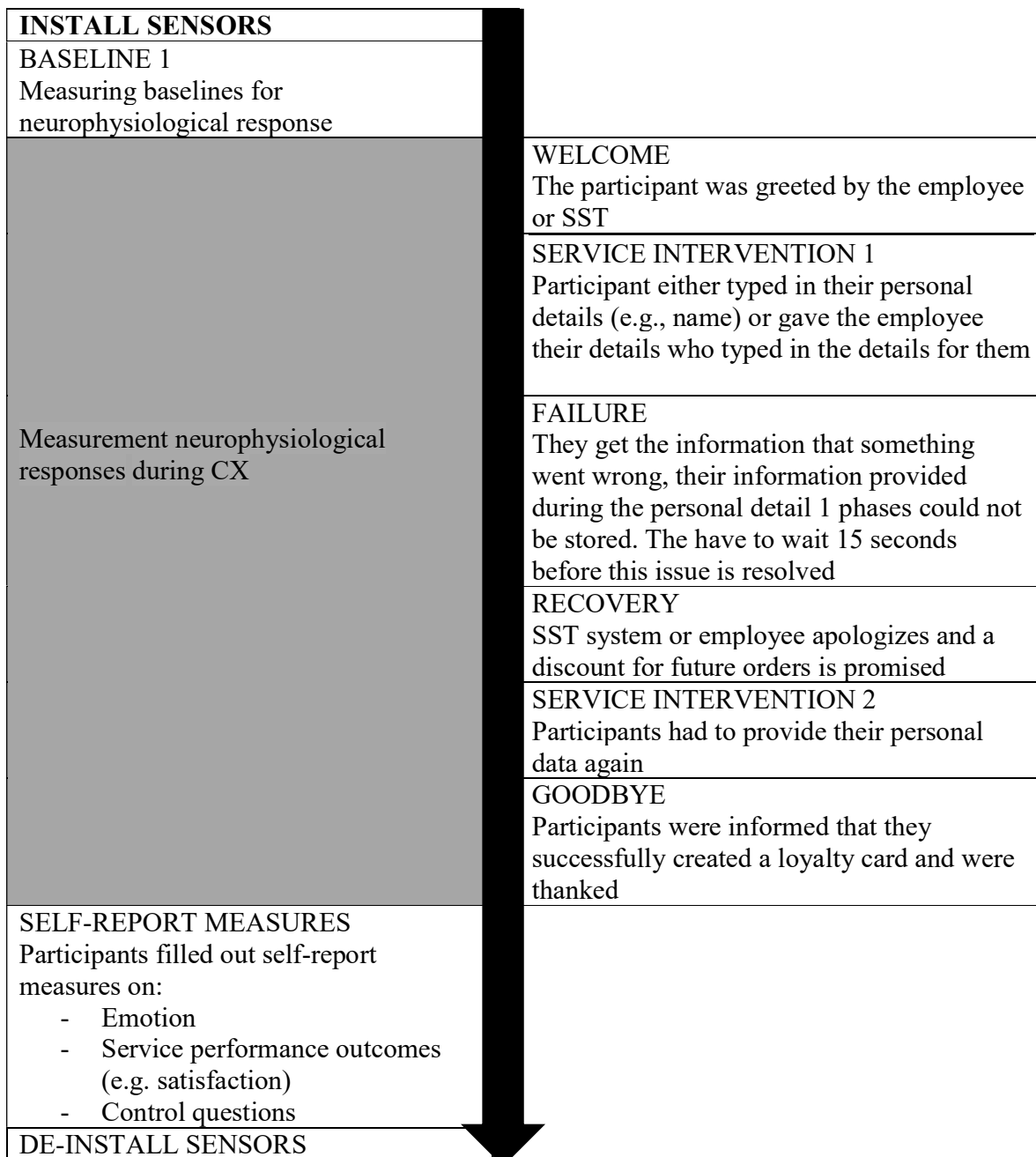


Figure 1. Order of the design and measurement

Participants were randomly assigned to one of the experimental conditions; however, we did not balance the gender distribution between conditions, because men and women differ in certain biological responses, such as galvanic skin response (GSR; Bianchin and Angrilli 2012). First, participants entered the laboratory, read an instruction letter explaining the neurophysiological tools and study purpose, and signed an informed consent document. As a cover story, which was

identical between conditions, respondents were told that their neurophysiological responses while creating a loyalty card for a bookshop would be measured to test the “service script” of a specific company. Next, participants were seated in a comfortable chair while EEG and GSR sensors were placed. The experiment began with several steps: baseline measurements, the service encounter, and filling out a survey. In line with standard practices (e.g., Boshoff 2012), we measured brain activity (by EEG) and GSR twice to establish baselines for each participant before starting the real experiment. The default brain activity and skin conductance are different for each individual (e.g., Jackson et al. 2003), and baseline results can be used to correct experimental responses (Kirk 2003; Zhang et al. 2014). For the first baseline, the “resting state baseline,” participants relaxed and watched a white cross on a screen for 2 minutes. The first minute and a half was only to ensure that the participants’ GSR and brain activity returned to their normal resting state because the placement of the sensors can be arousing in itself. Next, we measured participants’ GSR and EEG responses while they either typed (SST condition) or spoke out loud (HI condition) random numbers, names, and e-mail addresses for 1 minute. These responses were used to construct the second baseline (i.e., the “type or talk” baseline). Only the last 30 seconds of each baseline was used to construct the baseline scores for GSR and brain activity. The resting state baseline was used to correct responses during the phases of the experiment in which participants only had to read or to listen (e.g., failure). The “type or talk” baseline was used to correct responses during the phases in which participants also typed or spoke (e.g., providing personal data). The latter was important because resting state baseline is not optimal as a control if participants have to do something specific during the experimental phase that can also affect neuropsychological responses such as talking or typing (Leli et al. 1982).

The actual experiment started upon completion of the baseline measurements. The storyline of the encounter was the same in both conditions (see appendix A), but in the SST condition participants were welcomed by a computer and had to create a loyalty card themselves by using SST, whereas in the HI condition participants interacted with a service employee (i.e., research assistant). The research assistant had undergone training to always act in exactly the same manner. In addition, he was always dressed in the same clothing because the appearance of service employees can influence service perceptions (Shao, Baker, and Wagner 2004).

After the participants went through all six phases of the service encounter, two baselines were again measured, following the same procedure used prior to the actual experiment, but only lasting one minute each. Again, only the last 30 seconds of the baseline measurements were used to construct the baseline scores. After this procedure a laboratory assistant entered the room and stopped the recording of neuropsychological measures and opened the retrospective self-report survey on emotions and performance outcomes. Once the survey was finished, the neuropsychological tools were disconnected and the participant left the laboratory. Participants were thanked for their involvement with an invitation to participate in a raffle to win a 30 euro coupon for a multi-media store.

4.2. MEASURING EMOTIONS

To investigate emotions, we rely on the Pleasure-Arousal-Dominance (PAD) model (Mehrabian and Russell 1974; Porat and Tractinsky 2012), which states that environmental factors, such as service interface, have an effect on customers' emotions. The PAD model posits that emotions comprise three dimensions, namely valence (or pleasure), arousal, and dominance. Emotions in turn affect attitudes toward, for instance, service providers. Because the dominance dimension has been considered to be more of a cognitive than emotional response in past research (cf. Russell 2003), it is not discussed any further in this paper, consistent with other research (e.g., Bigné, Mattila, and Andreu 2008). Emotion (valence and arousal) was measured both by neurophysiological techniques (GSR, EEG) and retrospective self-report methods.

4.3. NEUROPSYCHOLOGICAL MEASURES

We used two neurophysiological measures. First, changes in GSR were recorded by means of Ag/AgCl electrodes placed on the shoulder (van Dooren, de Vries, and Janssen 2012). These changes are used to measure stress reactions, and they can indicate emotional arousal. The electrodes are typically placed on the fingers tips or palm, but we placed them on the shoulders to avoid artifacts due to typing or using the mouse. Placing GSR electrodes on the shoulders is a previously validated alternative to placement on palms and fingertips (van Dooren, de Vries, and Janssen 2012). GSR was measured using Thought Technology Ltd. Hardware (ProComp Infiniti) and software (BioGraph Infiniti).

Secondly, brain activity was monitored by means of EEG using the same hardware and software as for GSR. We assessed frontal brain asymmetry. Two EEG electrodes were placed on

the scalp, one on the left side and one on the right, using a frontal positioning according to the commonly used International System (SI) 10-20 reference system (Cacioppo, Tassinari, and Berntson 2000; Jasper 1958). Two electrodes were also attached to the earlobes; one was used to record a reference signal, and one served as a ground sensor. Before starting the recordings, we ensured that impedance was below 7 k Ω and sensors had a good connection (Usakli 2010). Frontal brain asymmetry indicated approach–avoidance behavior during the service experience. Approach behavior is associated with positive emotions, such as engagement, interest, and happiness, whereas avoidance is associated with negative emotions, such as disinterest, disengagement, fear, and disgust (Davidson et al. 1990). Consequently, asymmetry is a promising measure for emotional valence (Ohme et al. 2009). We used virtual channels so that the two incoming EEG signals could be immediately filtered with an order 4 IIR Butterworth band pass filter (8-12 Hz) to remove artifacts (e.g., movement) and one asymmetry index score could be automatically calculated. The asymmetry index score was calculated, according to standard practices; that is, left alpha power was subtracted from right alpha power (Coan and Allen 2004). High scores mean more approach behavior than avoidance behavior.

To control for individual differences in GSR and brain activity, we used the baselines as covariates in our models (Pocock et al. 2002; Zhang et al 2014). In total we had four baselines, two resting state baselines and two “type or talk” baselines. Each type of baseline was measured both at the beginning and end of the experiment. The two resting state baselines were averaged as well as the two “type or talk” baselines to construct baseline variables for further analysis. For the GSR data we only used the averaged resting state baselines because typing or talking did not impact arousal: the “type or talk” baselines for GSR correlated highly with the resting states baseline ($r > .99$). For the EEG data, we used all baselines. We used the averaged resting baseline to control the scores of phases during which people did not talk or type (welcome, failure, recovery, goodbye) and the averaged “type or talk” baseline scores for phases during which participants had to talk or type (when providing personal details).

4.4. SELF-REPORT MEASURES

Most measures were adopted from past research, and all items were translated from English into the native language of the research facility by means of back-translation (see Appendix B for items, items order, and Cronbach’s alphas). Most measures used a 7-point Likert scale, unless stated otherwise and had satisfying Cronbach’s alphas ($\alpha > .6$).

Emotions. Participants answered items about both their general emotion during the service and their phase-specific emotions. For general emotion, participants indicated how they felt during this service encounter, with responses ranging from not at all pleasant to pleasant (Ladhari 2009) and by using the 12-item semantic differential scale of Russell (1980) to assess valence (e.g., unhappy to happy) and arousal (e.g., cheerful to depressed). The item “active to passive” was removed to obtain a satisfactory Cronbach’s alpha for the arousal scale ($\alpha > .59$). For phase-specific valence, participants indicated if they experienced negative, neutral, or positive feelings (not at all to very much) during all six phases separately (e.g., greeting). To ensure that participants knew which phase we were referring to, the text used during the service was shown at the top of the answer page.

Service performance outcomes. Participants rated five satisfaction items (Lin and Hsieh 2007; Maxham 2001), three items about purchase intent in the bookstore (Maxham 2001), three re-use intention items (Turel, Yuan, and Connelly 2008), and one complaint intention item (Kim et al. 2003). Word-of-mouth valence was constructed by two positive word-of-mouth (WOM) items and two reversed negative WOM items (adopted from Harsion-Walker 2001; Zeithaml, Berry, and Parasuraman 1996).

Control questions and scenario checks. Participants answered four items about their need for HI (Dabholkar 1996) and two items about their habit of using SST (self-constructed). Their gender and age were also assessed. Gender, need for human interaction, and habit of using SST were used as covariates in our data-analysis (Blut et al. 2016; Venkatesh 2012). As a check for the scenarios (or scripts) used, participants filled out one item about scenario realism, one for scenario valence, two for ease of use to create a loyalty card (self-constructed), and three about their perceived control while creating the loyalty card (adapted from Dabholkar 1996). These scenario checks were used to ensure that the scripts were equal for those variables in both conditions since they can influence consumers reactions toward a SST service.

5. RESULTS

5.1. SCENARIO CHECKS

We first tested if the scripts were realistic. An independent t-test revealed that realism was sufficient ($M_{SST} = 5.65$; $M_{HI} = 5.45$) for both conditions and did not significantly differ ($t(38) = -$

.37, $p > .05$), indicating that both scenarios were perceived as equally realistic. Furthermore, scenario valence (e.g., positive or negative perceived service) was the same in both conditions ($t(38) = .48, p > .05$; $M_{SST} = 4.70$; $M_{HI} = 4.55$). Additionally, perceived control ($t(38) = -.07, p > .05$; $M_{SST} = 4.03$; $M_{HI} = 4.07$) and ease of creating the loyalty card ($t(38) = -.32, p > .05$; $M_{SST} = 4.60$; $M_{HI} = 4.75$) did not significantly differ between conditions. For all following analyses we used gender, need for HI, and habit of using SST as control variables, and previously described baselines were also used as covariates. For means and standard deviations for the scenario checks and control questions see Table 1.

Table 1.

Means and standard deviations for scenario checks and control variables

	SST	HI
Scenario checks		
Realism	5.65 (1.66)	5.45 (1.73)
Valence	4.70 (1.13)	4.55 (.83)
Perceived control	4.03 (1.61)	4.07 (1.22)
Ease of use	5.60 (1.62)	5.75 (1.29)
Control questions		
Habit of using SST	5.40 (1.57)	5.35 (1.63)
Need for human interaction	4.48 (1.06)	5.13 (1.23)

5.2. EFFECT OF SERVICE INTERFACE ON EMOTIONS

To explore effect of service interface on emotions, we first conducted a series of 2 (SST vs. HI, between subjects) \times 6 (different phases, within subjects) mixed linear model analyses to investigate the effects of service interface on emotions and more specifically, during different phases. We used the first-order autoregressive model (AR(1)) as repeated covariance type to account for the nature of the data because neurological data from a certain phase have an effect on the following phase. First, results for arousal measured by GSR (arousal_{GSR}) and valence by EEG (valence_{EEG}) are discussed, which are followed by the results from the self-reports.

We only found a significant main effect for phase ($F(5, 157.46) = 2.64, p < .05$; $\eta^2_p = .07$) on arousal_{GSR} (see Table 2 for estimated means). No significant effect of service interface on arousal was found. To follow up the main effect of phase, we conducted pairwise comparisons of the

different phases with Bonferroni correction. Arousal during the goodbye phase was significantly different from the recovery phase (with $p < .05$) and marginally significantly from the service intervention 1 phase and welcome phase (with $p < .10$). Arousal was highest during the goodbye phase and increased throughout the whole service encounter. Further, except for baseline values, none of the control variables had an effect on arousal_{GSR}.

For valence_{EEG} we did not find any significant effects of phase or service interface ($p > .05$; see Table 2 for estimated means). Again, none of the control variables had an effect on valence_{EEG}, except baseline values.

Table 2.

Estimated means for arousal_{GSR} and valence_{EEG} (measured by neurophysiological tools)

Service interface	Arousal _{GSR}	Valence _{EEG}
SST	11.97	.88
HI	11.89	.09
Phases		
Welcome	11.65	.669
Service intervention 1	11.71	.230
Failure	11.90	.545
Recovery	11.90	.844
Service intervention 2	12.08	-.286
Goodbye	12.34	.896

To investigate self-reported emotions, we first conducted a 2 (SST vs. HI, between subjects) \times 6 (different phases, within subjects) mixed linear model analysis with phase-specific valence (valence_{phase}) as the dependent variable and with a diagonal repeated covariance type. We found a main effect of phase ($F(5, 61.04) = 28.61, p < .001; \eta^2_p = .70$) and a marginally significant effect of service interface ($F(1, 217.60) = 3.13, p < .10; \eta^2_p = .01$; see Table 3 for estimated means) on valence_{phase}. Valence_{phase} was more positive in the HI condition than in the SST condition. The interaction between service interface and phase on valence_{phase} was not significant ($p > .05; \eta^2_p = .05$). Following up the main effect of phase, we conducted pairwise comparisons of the different phases with Bonferroni correction (see Figure 2). Both the failure and filling out service intervention 2 phase significantly differed from all other phases (with $p < .001$). The other phases

did not differ significantly from each other. $Valence_{phase}$ was most positive during welcome, service intervention 1, recovery, and goodbye phases, whereas the most negative during failure and service intervention 2 phase. Regarding the control question, both gender ($M_{man} = 4.10$, $M_{female} = 4.54$; $F(1, 215.44) = 11.15$, $p < .001$) and need for HI ($F(1, 215.44) = 7.40$, $p < .05$) had a significant impact on $valence_{phase}$. Higher need for HIs leads to higher $valence_{phase}$.

Table 3.

Estimated means for phase-specific valence via self-reported tools

Service interface	Valence
SST	4.20
HI	4.44
Phases	
Welcome	4.80
Service intervention 1	4.53
Failure	2.98
Recovery	5.15
Service intervention 2	3.45
Goodbye	5.00

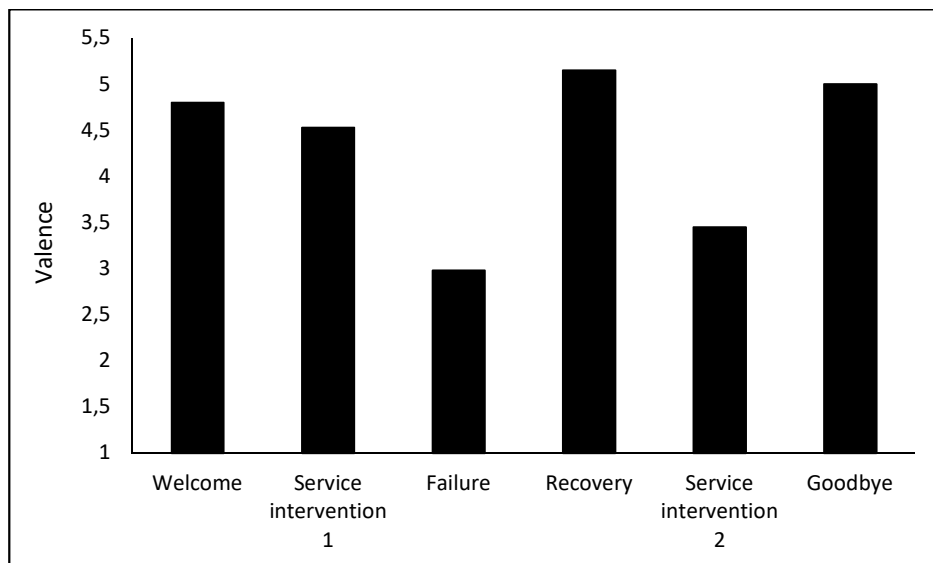


Figure 2. Main effect of phase on self-reported phase-specific valence

To investigate the effect of service interface on self-reported global valence and arousal, we conducted two ANOVAs. We found no significant main effects of condition on valence ($F(1, 35) = 1.31, p > .05; \eta^2_p = .04$) and arousal ($F(1, 35) = .01, p > .05; \eta^2_p = .0003$). Furthermore the control variables had no influence on arousal; however, gender ($M_{\text{man}} = 4.10, M_{\text{female}} = 4.85; F(1, 35) = 9.14, p < .05$) and habit of using SST ($F(1, 35) = 9.14, p < .10$) had (marginally) significant effects on global valence.

In sum, when looking at the neurophysiological data, we only found an effect of phase on arousal. When looking to the self-reported retrospective global emotions, we do not find any effect of service interface on valence and arousal. However, when we consider self-reported phase-specific valence, we see that phase has a clear impact and service interface a marginally significant impact. The impact of service interface on emotions seems very limited in our study. However, emotions during the different phases do clearly fluctuate throughout the CX.

5.3. EFFECT OF SERVICE INTERFACE ON SERVICE PERFORMANCE EVALUATION OUTCOMES

To investigate the effect of service interface on customer service evaluations, we conducted a series of ANOVAs. We found no significant main effect of service interface on satisfaction, WOM, purchase intention, complaint intention, and re-use intention (with $p > .05$). When looking at the control questions, we see several effects. For instance, gender (marginally) significantly influenced satisfaction, purchase intention, re-use intention, and WOM. Further, habit of using SST affected satisfaction and need for HI, WOM. In sum, we found no effects of service interface on the service performance outcomes.

6. GENERAL DISCUSSION

This paper investigates the effect of service interface on the emotional component of the CX by a multi-method approach. Our results show that service interfaces and phase have no effect on valence_{EEG}, but we did find a main effect of phase and a marginally significant effect of service interface on self-reported phase-specific valence. Valence_{phase} was more positive during the HI condition. Further, in line with what would be expected (e.g., Boshoff 2012), the failure and filling out service intervention 2 phase were the most negative and differed from all other phases.

That the failure phase would be the most negative was proposed in most past research, except for Boshoff (2012). For the service intervention 2 phase, we argue that people are probably a bit annoyed that they have to give their details again even though they received a discount. Important to note is that, in line with Boshoff (2012), but in contrast to many other researchers, we did not find higher positive effects (compared to other phase) of recovery actions (e.g., Chebat and Slusarczyk 2005; DeWitt, Nguyen, and Marshall 2008). We also did not find that recovery actions are better perceived when done by a human employee, contrasting results of, for instance, Matilla, Cho, and Ro (2011).

Further, we did not find an effect of service interface on self-reported global valence. One may conclude that service interface essentially has no effect or only a limited effect on valence while creating a loyalty card. We suggest that, on the one hand, when people are confronted with post-encounter valence questions and as such obliged to form an opinion about specific phases, they are more likely to report negative valence, for instance, for the failure phase. It is possible that these answers do not reflect their true feelings during the encounter, but rather are a forced post-encounter cognitive appraisal (Cacioppo 2002) and customers' answers can become more extreme in this case, especially with negative emotions (e.g., Bruun and Ahm 2015). On the other hand, unlike neurophysiological measures, a post-encounter global valence measure cannot detect the subtlety of emotions varying throughout a CX.

Furthermore, looking at the neuroscientific data, we found a main effect of phase on arousal. Interestingly, no effect was observed on self-reported arousal. A plausible explanation, in line with peak-end theory, is that people are only able to recall their general level of arousal or the arousal they experienced during a specific phase or at the end of an experience (Kahneman, Wakker, and Sarin 1997; Verhoef, Antonides, and de Hoog 2004). For instance, if they get especially aroused during one phase, it is possible that they remember this best and report this arousal. This situation illustrates the advantages of continuous and in-the-moment measurement of arousal by means of GSR during a CX. We conclude that SST versus HI has a limited effect on emotions during the CX as measured by neuroscientific tools, but we do see some differences when looking at the self-report measures. Still, most variation in emotion is associated with phase.

Contrary to previous literature, we did not find differences of service interface on service performance outcomes such as satisfaction and re-use intention, indicating that, at least when

creating a loyalty card, it does not matter if customers use SST or are assisted by an employee. This finding can be explained by service interface in our study having a very limited impact on emotions while a loyalty card was being created. We advocate that creating a loyalty card is a simple service encounter and most likely not very engaging for consumers, hence the low impact of service interfaces.

In summary, finding different results for different methods is not uncommon (e.g., Kim and Jang 2014), particularly when comparing neuroscientific and self-report measures (e.g., Boshoff 2012) because they are both subjected to different biases and/or imperfections. Combining these two methods allows a deeper comprehension of CX, particularly on how different service interfaces affect different phases of the CX.

6.1. THEORETICAL AND METHODOLOGICAL CONTRIBUTION

This paper contributes to the CX and SST literature in several ways. The biggest contribution lies in the comparison of neurophysiological versus self-report measures. Many calls have been made to complement self-report measures with neuroscientific techniques to study CX (Lemon and Verhoef 2016; Venkatraman et al. 2012), our study explores if this is necessary. When comparing the two different measures we see that for instance neurophysiological measures are better in picking up difference in arousal level across phases, thus it provides us with extra information on the CX. However, looking at valence the neurophysiological tools were not able to pick up difference in valence between the two service interfaces and phases. Also, the global self-report measure of valence did not show indicate differences between service interface, yet self-reported phase-specific valence did. Furthermore, self-reported phase-specific valence provides us with extra information on valence of different phases. A plausible explanation is that positive and negative emotions towards a service encounter are overestimated by use of self-report measures compared with other measures (e.g., Kim and Jang 2014). All in all in looking at both methods, we do not find substantial differences between the two service interfaces. Consequently, the added value of using two methods for studying the CX while service was delivered by SST versus HI was limited. We see that neurophysiological tools did provide some additional information (arousal), but in the context of our study the contribution of neurophysiological tools was limited. It seems that for measuring the CX of a rather simple

service interaction retrospective self-reports are good enough. Especially, if you consider the high cost and time-investment of neurophysiological tools over self-report measures.

Furthermore, customers often express a preference for either SST or HI, but it remains unclear if they affect CX differently. Although a rich body of literature exists on SSTs and HI in isolation, empirical studies comparing the different service interfaces is scarce. Our research fills this void by directly comparing these service interfaces by means of an experiment, and we find only a limited impact of HI compared with SST on the CX.

6.2. MANAGERIAL IMPLICATIONS

We show that neuroscientific tools could be valuable for managers and service designers to help understand which moments are crucial during a CX because they allow visualizing how emotions vary during its different phases. In other words, these tools can help identify points where interventions might be necessary; however, when the benefits are considered, the effort and costs might not be worthwhile, especially for simple customer experiences. However, we do suggest that for complex customer experiences that take longer (e.g., airport, festival), a neuroscientific approach could be valuable. During these experiences, phases may be less clear and it might be harder to pinpoint important emotion-laden points in time with surveys.

As technology advances, an increasing number of companies are replacing frontline employees with SSTs. At the same time, creating valuable CXs is becoming increasingly important and insights into how to create valuable CXs in SST environments are lacking. Hence, our findings have several implications for managers. First, our results suggest that real moments of truth, according to the customers' self-report data, are indeed during the failure phase.

Lastly, we show that in a relatively simple service encounter, even with a mild failure, a human employee could be easily replaced with an SST; however, in more complex contexts, this approach might not work well. Indeed, in our study both service interfaces were delivered in exactly the same way, whereas in real life, an employee can, for instance, behave in a way that builds rapport, which will potentially make an HI better than an SST (e.g., Giebelhausen et al. 2014). For instance, if rapport (e.g., mutual understanding and good-quality relationship; Gremler and Gwinner 2000) is important in a service context (e.g., doctor's office, hairdresser), we think human employees will make a difference, and we would expect different results in terms of service performance outcomes and emotions (cf. Giebelhausen et al. 2014).

6.3. LIMITATIONS AND FUTURE RESEARCH

We showed that when neurophysiological tools are used, different results can surface compared with self-report measures. We have put forward a plausible explanation, specifically that positive and negative emotions towards a service encounter can be overestimated by use of self-report measures compared with other measures (e.g., Kim and Jang 2014). An overestimation of emotions of self-reports does not have to be a problem, if they predict service performance and/or behavioral outcomes better. It was beyond the scope of this paper, but future studies should compare self-reported versus neuroscientific results and determine which type predicts future customer behavior and performance outcomes best.

To keep the experiment manageable and as realistic as possible, we opted for using only two EEG sensors. Of course, a 16- or 32-sensor cap could have provided us with more in-depth information but it would have made the experiment more uncomfortable for the participants, potentially resulting in generally negative and stressful experiences and decreasing validity.

Another interesting approach would be to use mobile neuroscientific devices during a real (not experimental) CX. This approach would allow offsetting several limitations of our study. First, our study only focused on one touchpoint of the CX, so it does not allow generalizing to a CX that has several touchpoints (e.g., several visits at a store) or assessing long-term effects of service interfaces. Second, the use of mobile neuroscientific devices during a CX would permit investigating real customers instead of only “techy-savvy” students, who generally like SST. Third, a field study would increase the external validity of results. To illustrate, further research could, for instance, measure neurophysiological signals at the airport, starting from when a consumer arrives until boarding their flight. Such data could provide service researcher and practitioners with incredible valuable information about the touchpoints that are crucial throughout the whole CX.

In contrast with prior literature, we did not find strong negative results of the failure. We think that the failure while creating a loyalty card was not considered in a very negative light. Indeed, a computer that temporarily (15 seconds) could not save the data is a rather mild failure or not even considered as a failure at all (conform rather positive scenario valence scores). Creating a loyalty card is perhaps too simple for revealing large big emotional effects, and customers might not perceive it as a particularly important service. However, Schmitt, Brakus,

and Zarantonello (2015) suggested that every service exchange leads to a CX, regardless of its nature and form.

Along the same line, we suggest that other researchers incorporate more severe failures and different types of failures and recoveries and their effects on emotions in future studies. Important to note is that we investigated this type of service and failure because most service encounters are fairly positive or neutral and therefore deserve to receive attention as well.

In line with current trends, another interesting avenue would be to investigate how customers respond to blends of service interfaces where SST is combined with human features (e.g., anthropomorphism) or the impact of technology infusion such as robots (van Doorn et al. 2017). Mixing SST with frontline employees would also be interesting to investigate. Indeed, technology (and SST) can be seen on a continuum from totally replacing an employee to complementing an employee (Marinova et al. 2017). Investigating how SST and employees can work together to bring the CX to new heights is an interesting goal. Going even a step further, our self-report results hinted, in some ways, to a more negative impact of SST versus HI, especially during the failure phase, but our study did not account for the complexities of novel SST systems. SST can be seen as a form of artificial intelligence, in which, for instance, technology could adapt itself throughout an encounter. In our study SST was static and remained the same. Future SST systems will be (and sometimes already are) more intelligent and adaptive toward consumers, which could definitely affect the CX and especially failure in totally different ways (Rust 2017). Artificial intelligence systems or systems that complement employees instead of replacing them may well result in better CX versus HI, especially if technology can start reading and dealing with customers emotions in a more complex way. However, at this point in time, that prospect remains distant.

Our sample is rather small, at least compared to scenario-base studies; however, in comparison with neuroscientific studies, our sample size is reasonable (e.g., Boshoff 2012). Because of sample size, no further moderator analyses were conducted, and future studies could benefit from including moderators suggested by the literature, such as need for HI, culture, habit of using SSTs, and ease of use. This possible of this approach being an interesting avenue to explore also surfaces in our study. Indeed, our control questions (gender, need for HI, habit of using SST) sometimes had an impact on self-reported emotions and some service performance outcomes.

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8. APPENDIX

Appendix A. Text of the script for creating a loyalty card (same for SST and human)

1. Welcome phase

Welcome! Thank you for shopping at company x!

2. Service interaction phase 1

We will now create your loyalty card for 'company x' which will give you interesting discounts all year round in our bookshop.

What is your last name?

What is your first name?

How old are you?

When were you born?

What is your e-mail address?

3. Failure phase (duration 15 seconds)

Something went wrong. Your data could not be saved. Please wait, while we solve the problem.

4. Recovery phase

The problem is solved. We are very sorry for the inconvenience! We will add a 5% discount on your next purchase on your loyalty card to thank you for your patience

5. Service interaction phase 2

Can you please fill out/give your information again?

what is your last name?

What is your first name?

How old are you?

When where you born?

What is your e-mail address?

6. Goodbye phase

You have created your loyalty card for 'company x'. Thank you very much! See you next time at 'company x'

Appendix B. Scales, items, and Cronbach's alphas

	Cronbach's alpha
<i>Emotion general (Ladhari 2009)</i>	
Indicate how you felt during this service encounter	
<i>Emotional valence and arousal (Russell 1980)</i>	
Valence (Pleasure)	.89
Angry-Content	Sad-Joyful
Unhappy-Happy	Disappointed-Delighted
Displeased-Pleased	Bored-Entertained
Arousal	.59
Cheerful-Depressed	Nervous-Relaxed
Anxious-Quiet	Surprised-Indifferent
Enthusiastic-Calm	Active-Passive ^d
<i>Phase-specific valence (for each of the 6 phases; Adapted from Ladhari 2009)</i>	-
How did you feel during the (e.g., greeting) phase?	
<i>Overall satisfaction (Lin and Hsieh 2007; Maxham I2001)</i>	.86
Overall, I am satisfied with the service offered by company x	
The service offered by company x exceeded my expectations	
The service offered by company x is close to my ideal service	
In my opinion, company x provides a satisfactory service for creating a loyalty card.	
How satisfied are you with the quality of the service for creating a loyalty card of company x?	
<i>Purchase intent (Maxham 2001)</i>	.85
I intend to use service of company x again when I want to buy a book	
I will continue using company x buying books.	
How likely are you to purchase your next book from company x?	
<i>WOM positive valence (Zeithaml et al. 1996; Lang 2009; Harrison-Walker 2001)</i>	.64
I will talk positively with others about the service of company x	
I only have good things to say about the experience at the company x	

I will mostly talk negatively about the service experience at company x ^r	
I will warn others not to use the services of company x ^r	
<i>Re-use intention (adapted from Turel et al. 2008)</i>	.90
Assuming I had to create a loyalty card again, I intend to use the same procedure	
Given that I had to create another loyalty card, I would use the procedure again	
To the extent possible, I would use this procedure to create a loyalty card	
<i>Complaint intention (Self-constructed)</i>	-
I would like to complain about the service of company x for creating a loyalty card.	-
<i>Perceived control (Dabholkar 1996)</i>	.67
I had complete control when creating this loyalty card	
I felt in charge when creating the loyalty card	
I felt empowered when creating the loyalty card	
<i>Need for human interaction (Dabholkar 1996)</i>	.71
Human contact in providing services makes the process enjoyable for the consumer	
I like interacting with the person who provides the service.	
Personal attention by the service employee is not very important to me ^R	
It bothers me to use a machine when I could talk to a person instead.	
<i>Habit using SST (self-constructed)</i>	.90
Do you use self-service technology (e.g., bancomat, online shopping)?	
Are you used to using SST (e.g., atm, online shopping)	
<i>Ease of use creating loyalty card (Self-constructed)</i>	.92
It was easy to create the loyalty card	
How difficult was it to create la loyalty card?	
<i>Realism check (Dabholkar 1994)</i>	
I had no difficulty imagining myself in this situation in real life.	

Valence check (Self-constructed)

When I would end up in this situation, I would rate this service as...?

r= item reversed; d= item deleted

**CHAPTER III: Customizing gender? The impact of choice of
frontline employees' gender on customers' emotions**

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1. INTRODUCTION

Nowadays customization is everywhere (Bock, Mangus, & Folse, 2016; Duray, Ward, Milligan, & Berry, 2000; Kotha, 1995). The sandwich franchise Subway, for example, lets you choose your type of bread, sauce, and toppings of your sandwich. Customers value customization and actively look for and even expect customization (Bock et al., 2016; PricewaterhouseCoopers and TNS Retail Forward, 2015; Valenzuela, Dhar, & Zettelmeyer, 2009).

Customization is defined as a process where customers actively make choices or take an active role to adapt the marketing mix according to their own needs and preferences (Arora et al., 2008; Bleier, De Keyser, & Verleye, 2018; Tseng & Piller, 2011; Valenzuela et al., 2009). This normally translates in a better fit between customer preferences and service attributes.

Both customers and companies benefit from offering customers choices about what they want (Arora et al., 2008; Ding & Keh, 2016; Ostrom & Iacobucci, 1995; Surprenant & Solomon, 1987), since it positively affects customers' emotions (e.g., enjoyment, Franke & Schreier, 2008; Hui & Batson, 1991) and relational and service performance outcomes (e.g., loyalty, satisfaction; Arora et al., 2008; Coelho & Henseler, 2012; Franke, Keinz, & Steger 2009; Ostrom & Iacobucci, 1995; Pine, Peppers, & Rogers, 1995; Surprenant & Solomon, 1987; Valenzuela et al., 2009). In addition, customization can lead to a higher willingness to pay (Franke & Schreier, 2008; Roth, Woratschek, & Pastowski, 2006) and likelihood to buy (Ostrom & Iacobucci, 1995).

When thinking about customization, we mostly think about adapting service offerings or products (i.e. customers' choice between offerings; Bleier et al., 2018; Coelho & Hassler, 2012). However, other dimensions of the marketing mix (e.g., price, promotion, people) can also be customized. Customers may be offered to choose a specific service provider, such as the ability to book your favorite massage therapist. In this example, the people dimension of the marketing mix is customized (Bleier et al., 2018). The scarce literature on the people dimension focuses on how companies or frontline employees adapt services to accommodate customers' needs by changing the service process and their interpersonal behavior (e.g., communication style and social behavior) during service interactions (Bettencourt & Gwinner, 1996; Bock et al., 2016; Gwinner, Bitner, Brown, & Kumar, 2005; Vesanen, 2007). Thus, the focus here lies on how companies or

frontline employees adapt services to accommodate customers' needs. For instance, when a supermarket employee decides to walk a confused customer who is asking for a product to an aisle, instead of sticking to the standard response of that supermarket to just say in which aisle the product can be found. Our paper, on the other hand, focusses on the people dimension where an active role is given to the customer (instead of the service employee). This is highly relevant given that this form of customization is often applied by service providers.

Service employees play a chief role during the service delivery process and in customers' service evaluations and emotions (Bitner, Booms, & Tetreault, 1990; Heskett, Jones, Loveman, Earl Sasser, & Schlesinger, 1994; Mattson, 1994; Petzer, De Meyer, Sviri, & Svensson, 2012; Tansuhajm, Randall, & McCullough, 1988). Thus, offering customers a choice between which frontline employees they want to be served by, specifically if they want a male or female employee, could affect customers' emotions and service performance outcomes (e.g., satisfaction) and is easy to implement in on- and offline service delivery. For instance, when customers schedule an appointment at a bank, they can be offered the choice between a male and a female consultant. The same goes for chat boxes and call centers. In some service encounters, customers cannot choose the employee they would prefer, since they are served by the employee that is free at the moment they enter the store. However, there are several service situations in which customers do have a choice between employees. For example, when someone needs a doctor, the customer can choose. Also, when multiple employees are free at the moment you enter the store or arrive at the counter, a customer can choose the employee they prefer. Furthermore, companies sometimes offer customers to choose the specific frontline employee they want to be served by. For instance, the Belgian tailoring company "Café Costume" (www.cafecostume.com) and the Dutch hairdresser company "de Wakko kapper" (<http://online-dewakkokapper.flexxis.nl/>) allow their customers to choose the tailor or hairdresser they want to have an appointment with during their next visit (Bleier et al., 2018). However, academic research on the effect of this approach is yet scarce.

The current paper focusses on the effects of the choice between a male and female service provider. We investigate if giving customers a choice between a male or female service provider has an effect on their emotions and service evaluations. Offering a choice between being served by a male or female could be very valuable, not only because customization in general is seen as something valuable, but also since employee-customer interactions during service delivery have a

substantial effect on performance outcomes (Bitner et al., 1990). The frontline employees' gender can have a big impact on customers' emotions (Petzer et al. 2012). Moreover, customers can have clear preferences for or stereotypes about frontline employees' gender (Mohr & Henson, 1996; Moshavi, 2004; Lieven, 2016), which makes having a gender choice attractive and relevant for customers.

The article continues as follows: first we discuss relevant literature on customization and choice in the context of the customer experience. We then focus on the specific effects of gender preferences for service employees on service evaluations and formulate our hypotheses. Next, we explore the effects of gender choice of a service employee on emotions and service performance evaluations by means of 2 experiments. In the first study we investigate the effect of gender choice on customers' emotions by means of self-report measures in a scenario based study. In Study 2 we use both self-report and neurophysiological measures, and participants interact with a real frontline employee. We discuss each study in detail, including its specific design and results. Lastly, we outline several managerial and theoretical implications, consider the limitations of our studies, and offer some promising directions for further research.

2. CUSTOMIZATION

Having a choice is seen as something nice. Indeed, having a choice can lead to ample positive psychological, affective, motivational, and behavioral outcomes across different contexts (Iyengar & Lepper, 2000; Patall, Cooper, & Robinson, 2008). For instance, having a choice can increase intrinsic motivation, perceived control, task performance, and life satisfaction (Deci & Ryan, 1985; Langer & Rodin, 1976; Patall et al., 2008).

More specifically offering an option to customize, for instance getting a choice of service options, is largely believed to positively affect satisfaction (e.g., Ostrom & Iacobucci, 1995; Meuter, Ostrom, Roundtree, & Bitner, 2000; Valenzuela et al., 2009), evaluations of the service organization (e.g., perceived quality, loyalty; Aroro et al., 2008; Ding & Keh, 2016; Ostrom & Iacobucci, 1995; Pine et al., 1995; Suprenant & Solomon, 1987; Valenzuela et al., 2009), enhance positive emotions (Franke & Schreier, 2008; Hui & Bateson, 1991), perceived control (Hui & Bateson 1991), and a higher willingness to pay (Franke & Schreier, 2008; Roth et al., 2006). For instance, Suprenant and Solomon (1987) showed in their study that option customization increased trust and satisfaction with a bank. A large body of empirical studies

show a clear positive relationship between customization and customer satisfaction (e.g., Ostrom & Iacobucci, 1995; Meuter et al., 2000; Valenzuela et al., 2009). For instance, Valenzuela et al. (2009) demonstrated that when customers can customize a product they report higher satisfaction and willingness to pay.

Obviously, there are emotional consequences of customization (Bagozzi, Gopinath, & Nyer 1999; Hui & Bateson, 1991), which can mediate the impact on service performance outcomes (e.g., Liljander & Stravik, 1997). While not the focus of their study, Hui and Bateson (1991) found a direct and positive effect of having a choice on pleasure. Furthermore, Schmierbach, Limperos, and Woolley (2012) showed that when gamers customized their racecars during a game their enjoyment increased. Furthermore, Bock et al. (2016) show that customization of service offerings can build trust (leading to loyalty) through positive emotions (e.g., gratitude). Thus, positive emotions may account for the positive effects of customization on key relational outcomes, such as trust and loyalty. Customizing the service process by offering a choice of the service provider's gender could lead to similar results, because customizing the people dimension of the marketing mix has the same end goal, namely creating a better fit with the customers' needs and preferences. In addition, the demand for customization is growing (Deloitte research, 2015; Ghosh, 2015; Infor, 2014) so offering customization aligns with current customer needs, hence could evoke positive emotions in itself. Important to note is that attitude toward having a choice or customization can be different for men and women. For instance, Jégou, Saulais, & Ruffieux (unpublished) showed that men were willing to pay a premium for having a choice in coffee in a restaurant.

Past literature pointed out, that when people make decisions they use anticipated emotions and utility resulting from their choice (Knutsen & Geer, 2008; Meller & McGraw, 2001; Mellers, Schwartz, & Ritov, 1999). In the next section we will discuss why anticipated emotions between being served by a male or female employee could be different and why having a choice of gender of the service provider could result in positive outcomes for both customers and firms.

3. GENDER OF THE EMPLOYEE

Imagine you arrive at the bar, do you want to be served by a male or female bartender? Some customers might not care, however there is ample reason to believe that some customers do have a preference for either a male or a female employee in certain service encounters (Lieven, 2016;

Mohr & Henson, 1996; Moshavi, 2004). To illustrate, many women prefer female doctors for treatments such as their gynecological check and feel more at ease to talk to a female doctor about women's health issues (Thompson & Nussbaum, 2000). Furthermore, Poria (2008) showed that both male and female customers generally prefer female massage therapists, for different reasons. However, this preference is less pronounced for therapeutic massages than for relaxing (pleasure) massages. Conversely, in do-it-yourself shops most people prefer to be helped by a male service worker (Foster, 2004).

Psychology and medical literature (e.g., Bowers & Bieschke, 2005; Henderson, Scholle, Weisman, & Anderson, 2004; Thompson & Nussbaum, 2000), and to a lesser extent service or marketing literature (Poria, 2008), offer several plausible explanations why customers may have a preference for a certain gender in a service context: (1) male and female customers or service employees may emphasize different aspects of service interactions; (2) gender stereotypes may intervene with job performance and behavior, and (3) in-group biases may emerge when people anticipate that someone of the same gender will deliver a better service (Byrne, 1971; Byrne & Neuman, 1992).

First, male and female customers may find different facets of service delivery important (Boyd, Leonard, & White, 1994, Laroche, Rosenblatt, & Manning, 1986; Mokhlis, 2012). Male customers tend to focus more on the core service and the outcome of the service interaction (e.g., they want food, did they get a nice meal?), whereas female customers attach more importance to the relational aspect (e.g., they want food, was the server also nice?) and quality of the service interaction (Deaux, 1984; Iacobucci & Ostrom, 1993; Laroche et al., 1986; Mathies & Burford, 2011; Meyers-Levy, 1988). The same pattern can be found for employees. Female employees believe that the quality of the service interaction is most crucial for a good customer experience, whereas male employees are more focused on service outcomes (Mathies & Burford, 2011). Hence, driven by gender expectations, customers may prefer interactions with a certain gender.

Second, there are a lot of stereotypes and expectations about men and women being better suited for certain jobs. For example, women are often perceived to be better skilled for low status and unskilled services (e.g., call center agent; Belt, Richardson, & Webster, 2002). Pinar, Wilder, Shaltoni, & Stück (2017) confirmed that in western cultures (e.g., US) women are perceived as better-suited for a low status service job, whereas in Turkey and Jordan men are perceived as better for a low status service job. These stereotypes can stem from sex-based occupational

segregation (e.g., nurses are often female; Kerfoot & Korczynski, 2005; Williams, 1995) or stereotypes. For example, men are often believed to be better drivers and women are expected to be better suited for social interactions, because of their warm and benevolent personality (Anker, 1998; Cohen, 2013; Koch, D'Mello, & Sackett, 2015; Marchington, 1995; Mattila, Gradey, & Fisk, 2003; McColl-Kennedy, Daus, & Sparks 2003; Moshavi, 2004). These stereotypes result in customers expecting that certain jobs are better done by a certain gender and thus evaluate a service better when served by the 'correct' gender (Fischer, Gainer, & Bristor, 1997; Landy & Farr 1980; Mohr & Henson, 1999; Wu, Han, & Mattilla, 2016). Mohr and Henson (1996) showed that customers reacted more negatively toward a service failure when the frontline employee's gender was not in line with the norm for that occupation. Furthermore, customers' perceptions of service quality differ due to the gender of the service employee (e.g., Iacobucci & Ostrom, 1993; Mattila et al., 2003; Snipes, Thomson, & Oswald, 2006). Previous research also showed that gender stereotypes and gender impact hiring decision and hiring recommendations (Koch et al., 2015; Zebrowitz, Tenenbaum, & Goldstein, 1991). Koch et al. (2015) showed in their meta-analysis that during hiring decisions male employees were preferred for male-dominated jobs.

Another reason why gender preferences exist is the presence of an in-group bias. The similarity-attraction paradigm (Byrne, 1971; Byrne & Neuman, 1992) posits that people prefer to be served by someone of their own gender. Customers might anticipate that someone of the same gender will deliver a better service, just because customers would feel more comfortable to interact with someone of the same gender (e.g., Fischer et al., 1997, p. 364; Mohr & Henson, 1996; Pinar, Schiffel, Strasser, & Stück, 2014). The underlying reasoning is that in-group members (e.g., same gender) relationships are linked to better communication and more trust which translates into greater satisfaction with the interaction (Crosb, Evans, & Cowles, 1990; Strauss, Barrick, & Connerly, 2001). However, several other researchers propose just the opposite. They suggest that customers prefer to be served by the opposite gender (confer flirting theory; e.g., Boshof, 2012; Hall, 1993; Kulik & Holbrook, 2000; Moshavi, 2004). This paper does not aim to solve the debate between the 'similarity-attraction paradigm' and 'flirting theory', but we do argue that customers infer the quality of the service delivery from the gender of service employees during specific service encounters, which will translate in a preference for either a male or female service employee.

Thus, offering customers to choose the gender of a service provider can be beneficial for companies. Indeed, when customers are offered a choice they are more likely to choose the gender that they expect to suit best with for instance their own personality or preferred service delivery orientation. Hence, individual customers' expectations will be better met, resulting in positive emotions and more satisfying service interactions (e.g., Lieven, 2016; Solomon, Surprenant, Czepiel, & Gutman, 1985).

4. HYPOTHESES

This research investigates the effect of being able to choose the gender of the service employee on customers' emotions and service performance outcomes. Both having a choice and being served by an employee that caters to your personal preferences, needs, and expectations has the potential to elicit positive emotions during the customer experience and service performance outcomes (e.g., higher service satisfaction and return intentions, more positive word-of-mouth, and lower negative word-of-mouth). Having the option to choose a male or a female employee gives customers the chance to pick the type of employee that best suits their personal preferences, needs, and expectations. Thus, we hypothesize the following;

H1 Having a choice (versus no choice) of frontline employee gender leads to more positive emotions during the customer experience

H2 Having a choice (versus no choice) of frontline employee gender leads to better service performance outcomes

Drawing from the literature, we expect that emotions mediate the effect between choice and service performance outcomes (e.g., Bock et al., 2016). We investigate this by means of a separate hypothesis because mediation analysis does not allow us to investigate emotions measured by neurophysiological methods across different phases in detail.

H3 Emotions mediate the impact of having a choice (versus no choice) of frontline employee gender on service performance outcomes (e.g., satisfaction, return intention, positive and negative word-of-mouth) and stress and frustration feelings.

5. STUDY 1

5.1. METHOD

5.1.1. Procedure and design

In Study 1 we carried out an online scenario-based between-subjects experiment. Participants were randomly assigned to one of three experimental conditions; a choice condition (=C) in which participants had to choose between being served by a male or female employee, a no choice condition where they were served by a male employee (=NM), and no choice condition with a female employee (=NF). We recruited participants ($n=147$; 39.5 % men, $M_{age}=28$, range 18-74) through our online consumer panel. This panel exists mainly out of students and alumni of the research facility. Participant could win, by means of a raffle, a multimedia coupon to thank them for their participation.

First the participants read the instructions, explaining that they were required to read a scenario about reserving a concert ticket for a certain band and that they will be questioned about that scenario afterwards. The concert ticket-scenario was chosen, because people do not specifically expect a male or a female employee here (see *infra*, pretest Study 1). The instructions of the scenario asked the participants to imagine that they were the customer in this scenario and that it was them talking to the employee. The scenario required participants to read what the employee was saying and to provide several answers by typing their response.

During the service interaction, the name of the service employee, together with his/her picture, was presented. The service employee was either a man (Tom) or a woman (Tina). In the *choice condition*, participants could choose to be served by a male or female frontline employee before the interaction. In the *no choice conditions*, the gender was randomly selected. Tom and Tina's pictures were obtained from the Chicago Face Database (Ma, Correll, & Wittenbrink, 2015) and are perceived as equally attractive and trustworthy. Furthermore, they both smiled with a closed mouth and wore the same t-shirt.

The service scenario was divided in several stages (confer Boshoff, 2012; Nasr, Eshghi, & Ganguli, 2012; see Appendix A for the service scenario). First, the participants were welcomed by the service employee and asked for which band they want to make a reservation (welcome phase). Next, the employee asked their name (personal details 1 phase). After the participants provided their name, a failure occurred ('Just wait a minute, the computer system could not save

your data') that lasted 10 second (failure phase). After waiting for 10 seconds, the employee again asked for their name (personal details 2 phase). Lastly, it was confirmed that the reservation went through and the employee said goodbye (goodbye phase). After the welcome phase, personal details 1 phase and personal details 2 phase, participants had to type in their answers. Immediately after the goodbye phase, participants were required to answer several self-report measures about their emotions, service performance outcomes, and demographics (see Appendix B for an overview).

5.1.2. Measures

Measuring Emotions. We relied on the Pleasure-Arousal-Dominance (PAD) model (Mehrabian & Russell, 1974; Porat & Tractinsky, 2012), which states that environmental factors, such as gender of the service employee, affect customers' emotions. The model theorizes that emotions cover three dimensions: valence (or pleasure), arousal, and dominance. Emotions can in turn affect attitudes toward, for instance, service delivery. Consistent with previous literature (e.g., Bigné et al., 2008), the current study did not consider the dominance dimension, which is a more cognitive rather than emotional response (cf. Russell, 2003).

Self-report measures. All items had to be answered on a 7-point Likert scale and Cronbach's alphas were sufficient ($\alpha > .6$; see Appendix B for Cronbach's alphas and items), unless stated otherwise. First participants had indicated how they felt during this service encounter, ranging from not at all pleasant to pleasant (Ladhari, 2009). Next, they indicated how they felt during the service by using the PAD scale (Mehrabian & Russel, 1974; Russell, 1980), which consists of 12 semantic differential items to assess emotional pleasure (e.g., unhappy-happy) and arousal (e.g., cheerful-depressed). Further, participants rated if the situation was stressful by one self-constructed item and one if it was frustrating (Yi & Baumgartner, 2004). Next, they filled out three items (Adapted from Dabholkar, 1996) about perceived control during the service encounter, because choice can impact perceived control (Hui & Bateson, 1991). Perceived control was included as a control variable. Next, they filled out several items about service performance outcomes; three items about satisfaction (Lin & Hsieh, 2007; Maxham, 2001), two about return intention, two items about positive WOM and one item about negative WOM (adopted from Harrision-Walker, 2001; Zeithaml, Berry, & Parasuraman, 1996;). Further we asked participants if the service situation was realistic, how they would rate the valence of this

scenario (very negative versus very positive), and assessed their socio-demographics. Lastly, we asked how attractive they found the service employees and if they liked it that they could make a choice (e.g., I liked it that I could choose to be helped by either a man or a woman) or not making a choice (e.g., I liked it that I did not have to choose between a male or female employee). In the choice condition, we also asked to explain why they chose a male/female employee, whereas after the no choice conditions we asked the participants if they would pick a male or female if they had the choice and why they would make that choice. We also asked them if they would expect an employee of a small concert venue to be male or female and if they think people should be able to choose if a male or female serves them.

5.2. RESULTS

5.2.1 Pretest

We conducted a pretest to find out if the prototypical service employee in the used scenario is rather male or female by means of a 7-point Likert scale (ranging from 1= definitely male to 7= definitely female). The pretest revealed that people do not have a strong preferences for the gender of service employees in a (small) concert venue ($M= 4.21$, $SD=1.05$; $n = 29$). The mean does not significantly differ from 4, which is the midpoint of the Likert scale used ($t(28) = 1.06$, $p > .05$).

5.2.2 Scenario check

We first tested if the scenario was realistic. An ANOVA revealed that realism was sufficient ($M_C=4.65$, $M_{NF}=4.68$, $M_{NM}=4.18$) for all conditions and realism did not differ significantly between conditions ($F(2, 144) = 1.60$, $p > .05$), indicating that all scenarios were perceived as equally realistic. Furthermore, scenario valence (e.g., positive or negative perceived service) was the same in all conditions ($F(2, 144) = 2.11$, $p > .05$; $M_C=4.23$, $M_{NF}=4.80$, $M_{NM}=4.45$).

5.2.3 Qualitative results

Before discussing the quantitative results, we briefly discuss the open-ended questions and explore participants real choice (choice condition) or their choice if they had the option to choose the gender of the frontline employee (see Table 1). Clearly, if people had or have a choice they prefer to be served by a woman ($n=107$). When we take a closer look to what women prefer, we

see that 63 (out of 99) women choose a woman to be served by. Further, forty-four (out of 58) men also choose a female service provider.

Table 1.
Descriptives choice and no choice conditions

Condition	Gender participants		
	N _{Female}	N _{Male}	N _{total}
Choice	29	19	48
No choice female	27	23	50
No choice male	33	16	49
Total	89	58	147
Gender provider			
Man	43	25	68
Woman	46	33	79
Choice participants			
Man	10	9	19
Woman	19	10	29
If they would have a choice			
Man	16	5	21
Woman	44	34	78
Choice (all three conditions)			
Man	26	14	40
Woman	63	44	107

We also asked our participants why they prefer women or men. Seventy-seven participants (26 men and 51 women) said something like “*I do not really care, I would have picked ‘does not matter’ if it was an option*”, or “*no idea*”. However, out of this 77 people that said they did not care, 53 people choose a woman. If it really did not matter we would expect it to be half-half, a plausible explanation is that a social desirability bias occurred. Four men, but no women, said it was an intuitive choice. Two women did not answer anything. Further, twelve women and one man said they prefer to be served by an employee that has the same gender as them. Furthermore,

about 16 participants had a clear preference for men (12 women and 4 men), for reasons such as women can be bitchy, men are more efficient, have better knowledge about bands, and are more to the point. Thirty-four participants had a clear preference for women (23 men and 12 women), because they think that women are friendlier, sweeter, better in such tasks, more helpful, and they would feel more at ease with a woman. Thus, even though a lot of people said they do not care, a preference for being served by female frontline employees emerged.

Interestingly, the identified reasons are in line with the literature, it is suggested that female employees believe that the quality of the service interaction is most crucial in a good service, whereas for male employees outcomes matter more (Mathies & Burford, 2011). The current data clearly shows that female frontline employees were mostly chosen for relationship reasons, while male employees were choosing for more utilitarian reasons. Furthermore, we do see that our participants have different preferences, however they do not seem to align with the idea that male customers tend to focus more on the core service and the service outcome, whereas female customers attach more importance to the relational aspect (Boyd et al., 1994, Laroche et al., 1986; Mokhlis, 2012). The fact that mainly female service providers were picked could be also explained with past research that suggested that in Western cultures women are perceived as better for a low service job (Belt et al., 2002; Pinar et al., 2017). Furthermore, we see that for several participants, mainly females, picked a certain provider due to in-group bias. Pointing to the idea that, at least in certain context or for certain people, customers might anticipate that someone of the same gender will deliver a better service, just they would feel more comfortable to interact with someone of the same gender (e.g., Fischer et al., 1997, p. 364; Mohr & Henson, 1996; Pinar et al., 2014).

5.2.4 Effect of gender choice on emotions

We conducted several ANCOVA tests to investigate the effects of condition on self-reported emotions (for estimated means see Table 2). For all following analyses, we use perceived control as a control variable. Furthermore, we analyzed the data for men and women separately (confer McColl-Kennedy et al., 2003), since their emotional responses, due to for instance different attitudes toward male or female employee (Mathies & Burford, 2011) or choice (Jégou et al., unpublished), could differ considerably. Hence, analyzing them separately allows to draw more helpful managerial conclusions. For women, we find no significant effect of condition on

pleasure ($F(2, 85) = .44, p > .05$) and arousal ($F(2, 85) = 2.45, p > .05$). For men, we neither find a significant effect of condition on pleasure ($F(2, 54) = .52, p > .05$) and arousal ($F(2, 54) = 1.36, p > .05$). Thus, Hypothesis 1 is not confirmed for both men and women.

Table 2.

Estimated Means for condition: Study 1

	NF	NM	CHOICE
Pleasure	4.87 (4.45)	4.70 (4.76)	4.63 (4.23)
Arousal	4.68 (4.74)	4.66 (4.31)	4.50 (4.31)

Note. ()=estimated means for men; no choice male employee (= NM), no choice female employee (= NF).

5.2.5 Effect of gender choice on service performance outcomes

To test Hypothesis 2, we conducted several ANCOVAs with perceived control as a covariate (Table 3 for estimated means). For both men and women, we conducted one ANCOVA for each service performance outcome variable, and stress and frustration feelings. For women, we find no significant effects of condition on satisfaction, return intentions, word-of-mouth, frustration and stress feelings. Pairwise comparison of the conditions shows a marginally significant difference on satisfaction. When given no choice, women are marginally significantly more satisfied when served by a woman than when served by a man (with $p < .10$). For men, we find no significant effects of condition on satisfaction, return intention, and word-of-mouth, and frustration, while the effect on stress feelings ($F(2, 54) = 2.70, p < .10$) was marginally significant. Furthermore, pairwise comparisons showed that men felt less stressed in the no choice male condition (with $p < .05$) and no choice female condition (with $p < .10$) compared to choice condition. For both men and women, we cannot accept Hypothesis 2, we do see that men are less stressed the no choice conditions compared to the choice condition.

Table 3.

Estimated means of performance outcomes: Study 1

	Choice	NF	NM
Satisfaction	4.74(3.86)	4.60(4.53)	4.22(4.56)
Return intention	5.00(4.28)	5.09(4.49)	4.65(4.49)
Word-of-mouth positive	4.10(3.49)	4.48(3.81)	4.20(3.41)
Word-of-mouth negative	2.41(3.52)	2.23(3.35)	2.52(3.56)
Frustration	3.00(3.82)	3.01(2.97)	2.89(3.07)
Stress	2.82(3.53)	2.97(2.74)	2.70(2.56)

Note. () = means for men, no choice condition male (= NM), and no choice female (= NF)

5.2.6 Mediation

The current results do not show any effects of gender choice on emotions and service performance outcomes, thus it comes as no surprise that we find no mediation effect of pleasure or arousal between conditions (choice versus no choice female, choice versus no choice male) and the service performance outcomes, nor for stress or frustration feelings (see Appendix D for an overview of the conducted mediation analyses).

6. STUDY 2

The results of Study 1 did not show the positive effects of customization that were proposed by our hypotheses and the vast amount of customization literature (e.g., Arora et al., 2008; Bleier et al., 2018; Hui & Bateson, 1991; Valenzuela et al., 2009). A possible explanation can be found in the current use of a scenario-based study and self-report measures to measure emotions. Real-life service interactions are better equipped to study emotions compared to a scenario (Lazarus, 1995). Furthermore, retrospective self-report measures can be subject to bias and do not allow moment-to-moment measurement (Boshoff, 2012; Kahneman & Krueger, 2006). Both retrospective and hypothetical (e.g., scenario) emotions seem to be based on representations about emotion rather than on emotion itself, which could result in different results (Clore et al., 2001; Robinson & Clore, 2001). Thinking about how you felt in the past (retrospective feelings)

or how you would feel in an imagined scenario (hypothetical feelings), does not necessarily reflect how you really felt at that time in the past, or in case the imagined scenario would really emerge. In hypothetical scenarios or during retrospective reconstruction of emotion contextual details that could be important while actually experiencing emotions are absent (Lazarus, 1995). Moreover, when trying to recall experienced emotions or when trying to think about hypothetical feelings, emotions that are reported are already processed by the mind, hence they might be susceptible to various biases (Clore et al., 2001). Another potential cause for differences with real-life experiences in the current research, is that gender differences in emotion are more consistent with gender stereotypes when people are asked to report on retrospective and/or hypothetical experience compared to when people are asked to report on specific concurrent experiences (Shields, 1991; Shields, 2000). For instance, in a study of Feldman Barrett and Morganstein (1996) women reported to experience more and express more emotions in retrospective reports, but no gender differences were found for in-the-moment reports. In other words, people tend to report emotions more in line with what society desires from their personal gender when evaluating a situation retrospectively. Measuring emotions while an experience is occurring by means of neurophysiological measures can overcome these shortcomings, because they measure automatic emotional responses that people cannot control and thus are not susceptible to stereotypical thinking (Boshoff, 2012; Kahneman & Krueger, 2006). Another good reason to apply neurophysiological techniques is to avoid social desirability. Participants in the choice condition of Study 1 were much more likely to pick a female employee. Afterwards, a fair share of the participants reported in the open-ended questions that they did not really care, indicating social desirability.

Therefore, Study 2 extends the results from Study 1 by investigating a real-life service interaction, which allowed to make the service scenario more realistic and increase external validity, instead of reading a scenario. Furthermore, participants' reactions were, next to self-report measures also measured with neurophysiological measures.

6.1. METHOD

6.1.1 Procedure & Design

We invited 92 students (50% men) to participate in between-subject studies. Three participants were deleted due to incomplete neurophysiological or self-report measures (e.g., loss

of signal, stopped to early). Participants were recruited from a marketing course and received extra grades for participating in several studies. Study 2 explores again the effect of frontline employee gender choice on service performants and emotional responses. The study design is very similar to Study 1, with the service scenario being held consistent, however the procedure is partly different due to the use of neurophysiological measures and a real-life service encounter in Study 2, instead of reading a scenario.

Similar to Study 1, participants were randomly assigned to one of three experimental conditions (choice, no choice male employee, no choice female employee). This time, however, participants were also equally divided across conditions based on their gender. First, participants entered the lab and read an instruction letter explaining the neurophysiological tools and study purpose, and signed an informant consent file. As a cover story and to increase the realism of the study, respondents were told that their neurophysiological responses, while participating in a service encounter, will be measured in order to test the ‘service script’ of a concert venue (see Study 1 for pretest). Next participants were seated in a comfortable chair and neurophysiological sensors were installed. The experiment consisted of several steps: (a) measuring baselines, (b) the service encounter, (c) filling out a survey immediately after the service interaction, (d) de-installing sensors, and (e) completing a follow-up survey in another room. We measured a baseline for the neurophysiological signals for each participant before starting the service encounter, to account for individual differences (e.g., Jackson et al., 2003). Baseline measures will be used to correct the experimental responses (Kirk, 1982; Zhang et al., 2014). During the baseline measurements, participants had to relax and watched a white cross on a screen for 2 minutes. The first minute and a half of the baseline measurement was used to relax the participants and have their neurophysiological responses return to their normal resting state after the installation of the sensors. Only the last 30 seconds of the baseline were used for the actual establishment of the baseline. Upon completion of the baseline measurement, the actual experiment started.

First, participants were instructed that they had to make a reservation for a certain music band with the service employee that will arrive soon. We said they had to order a ticket in a small music venue, because of its gender-neutral context (see supra). Participants in the choice condition were asked if they preferred a male or female frontline employee (two research assistants waiting in another room) and to state their choice to the lab supervisor. Next, after

reading the explanation (and if applicable made their choice) a female research assistant went to get the employee (for all conditions). Once the employee was seated behind his/her computer (to increase the realism of this situation) the actual service encounter started. Both the male and female research assistants were extensively trained to behave in the same way during every interaction. Furthermore, they both wore a black t-shirt to avoid effects of their clothing. The script was divided in the same stages as in Study 1 (confer Boshoff, 2012; Nasr et al., 2012), namely a welcome phase, personal details 1 phase, a failure phase (which again lasted 10 seconds), personal details 2 phase, and goodbye phase (see Appendix C for the script). After the welcome, personal details 1 and personal details 2 participants had to speak each time to answer employee questions. Neurophysiological responses during the talking were not included in the analysis, because talking may impact neurophysiological measures (Nacke, 2015). During all the script stages neurophysiological data were collected. Immediately after the interaction participants filled out a first survey. Next, we de-installed the sensors and send the participants to a second room to fill out the second part of the survey.

6.1.2 Measures

Neurophysiological measurers. We used two different neurophysiological measures, galvanic skin response (GSR) and electromyography (EMG), both measured using Biopac Hardware (MT150) and software (Acqknowledge 4.00). Changes in galvanic skin response were measured by means of two Ag/AgCl electrodes placed on the palm of the participants (van Dooren, de Vries, & Janssen, 2012). These changes are used to measure stress reactions and emotional arousal (Dawson, Shell, & Fillion, 1978).

The EMG measured changes in facial muscle activity to register facial expressions that are connected to basic emotional states (Larsen, Norris, & Cacioppo, 2003) by means of 5 Ag/AgCl electrodes. Two electrodes were placed on the corrugator supercilli muscle, two on the zygomaticus major muscle, and one ground electrode on the bone next to the ear, since there is no important muscle activity at that part (Fridlund & Cacioppo, 1986). Existing research has connected facial muscle activity directly to emotional states (Dimberg & Petterson, 2000; Fridlund & Cacioppo, 1986; Larsen et al., 2003). The *corrugator supercilli muscle*, located above the brow, is activated when someone frowns, indicating negative emotions. The *zygomaticus*

major muscle, located on the cheek, is activated when someone smiles and indicates positive emotion.

The raw EMG data was filtered by a high pass FIR filter (with 20hz cut-off) and a 59.5 -60.5 notch filter (full-wave rectified) to remove certain artifacts (e.g., noise, movement) and then averaged over timeframes (e.g., Friedlund & Cacioppo, 1986). To control for individual differences for GSR and EMG we used baseline GSR and EMG signals as covariates in our statistical models (European Medicine Agency, 2015; Pocock, Assmann, Enos, & Kasten, 2002; Zhang et al., 2014).

Self-report measures. The same scales and items were used as in Study 1 (see Appendix B for items and Cronbach's alphas). Participants filled out all items about emotions and service performance outcomes (e.g., satisfaction, return intention) directly after experiencing the service encounter. After de-installing the sensors, participants evaluated the scenario realism and attractiveness of the employee, explained their choice behavior (e.g., "why did you choose a male/female?") and provided socio-demographic information in another room.

6.2. RESULTS

6.2.1. Scenario check

The scenario's realism and valence were tested. An ANOVA revealed that realism was sufficient ($M_C=4.74$, $M_{NF}=4.46$, $M_{NM}=3.93$) for all conditions and did not significantly differ ($F(2, 86) = 1.77$, $p > .05$), indicating that all scenarios were perceived as equally realistic. Furthermore, scenario valence (e.g., positive or negative perceived service) was the same in all conditions ($F(2, 86) = .63$, $p > .05$; $M_C=5.13$, $M_{NF}=4.75$, $M_{NM}=4.93$).

6.2.2. Qualitative data

Before discussing the quantitative results, we again briefly discuss the open-ended questions and explore participants' real choice of frontline employee gender. In contrast with Study 1, we only asked the participants in the choice condition why they made their particular choice. Again, we found that people preferred to be served by a female employee. Twenty-one participants (out of 31 in the choice condition) chose a female service employee indicating that customers do have a preference (see Table 4). Only one woman chose to be served by a male provider, but said

while making the choice that she had no preference to the research assistant. Further six men (out of 15) picked a male service employee. Three of those stated to the research assistant that they did not have a preference.

Table 4.

Descriptives choice and condition: Study 2

Condition	Gender participants		N _{total}
	N _{Female}	N _{Male}	
Choice	16	15	31
No choice female	15	13	28
No choice male	14	16	30
Gender provider			
Man	15	22	37
Woman	30	22	52
Choice participants			
Man	0	3	3
Woman	12	9	21
Said no preference, but picked man	1	3	4
Said no preference, but picked woman	3	0	3
Total man	1	6	7
Total woman	16	9	25

The participants' responses to the open-ended question revealed several reasons why a certain gender was picked. Twelve participants (6 man and 9 women) had a clear preference for a female employee because of reasons such as it is more pleasurable to be served by a female employee, women are friendlier, more patient and easier to communicate with. Furthermore, three women said they would choose a female service employee, because they prefer an employee with the same gender as them. Ten participants (6 women and 4 men) said something like "*I do not really care*" or "*I would have picked does not matter if it was an option*". Six participants (5 men and 1

female) said it was an intuitive choice or they had no idea why. These results are in line with the results from Study 1 and show that most customers prefer to be served by woman in a gender-neutral job.

6.2.3. Effect of gender choice on emotions

For all following analyses, we use perceived control as a control variable. For the neurophysiological analysis, the baseline GSR or EMG was also included as covariate. Again, we will analyze the data for men and women separately, since their emotional responses to choice, and male or female employees could differ considerably (confer McColl-Kennedy et al., 2003).

Neurophysiological results. We conducted several 3 (condition; between-subjects) x 6 (phase; within-subjects) mixed models with participants' perceived control and baseline measurements as covariates to investigate the effect of gender choice of the frontline employee on emotions measured by neurophysiological tools (see Table 5 and 6 for estimated means). A first-order autoregressive variance-covariance matrix (AR (1)) was used to model the within-subjects' covariance on the dependent variable. An autoregressive matrix was chosen, because it allows for the examination of phase-to-phase changes in the dependent variable. We conducted separate analyses for men and women. We first discuss the result for women. The results show a main effect of phase on EMG smile ($F(4, 159.32) = 3.45, p < .05$). The most important finding is that during the welcome phase EMG smile was more activated compared to all other phases (with $p < .05$). The 'details 2 phase' showed the least EMG smile activation, but did only differ significantly from the welcome phase (with $p > .05$). We could not establish a main effect of condition ($F(2, 45.97) = 2.28, p > .05$). However, pairwise comparisons reveal that the no choice female versus no choice male conditions did marginally significantly differ from each other (with $p < .10$). In the no choice female condition, the EMG smile is more activated compared to the no choice male condition. For EMG frown, we find a main effect of condition ($F(2, 54.24) = 5.13, p < .05$), but not for phase ($F(4, 167.30) = 1.09, p > .05$). Pairwise comparisons show that both getting a woman or having a choice have a lower frown activation compared to getting a man (with $p < .05$). Further, we find a significant main effect of phase on GSR ($F(4, 180.318) = 30.57, p < .001$). The pairwise comparisons show that all phases were different from each other, except for the welcome and failure phase (with $p > .05$). Condition did have a marginally significant

main effect on GSR ($F(2, 46.53) = 2.66, p < .10$). Having a choice is less arousing versus being in the no choice male condition (with $p < .05$).

The results for men only show a main effect of phase on EMG smile ($F(4, 150.71) = 3.16, p < .05$). The most important differences are during the welcome phase where EMG smile was more activated compared to all other phases, except the details 1 phase (with $p < .05$). The details 2 phases show the least EMG smile activation, but did only significantly differ from the welcome phase and details 1 phase. We did not establish a main effect between conditions ($F(2, 46.69) = .25, p > .05$). Furthermore, we did not find any significant results of condition ($F(2, 6550) = .38, p > .05$) or phase ($F(4, 185.32) = 2.27, p > .05$) on EMG frown. We find a significant main effect of phase on GSR ($F(4, 174.23) = 24.37, p < .001$) and a marginally significant main effect of condition on GSR ($F(2, 40.63) = 2.81, p < .10$). The pairwise comparisons show that all phases are different from each other, except for the welcome and failure phase (with $p > .05$). Pairwise comparisons show that having a female in the no choice condition is less arousing compared to getting a male without a choice (with $p < .10$). The choice condition and no choice male condition did not significantly differ from each other.

Table 5.

Estimated Means for condition: Study 2

	NF	NM	C
EMG smile	.011 (.005)	.007 (.004)	.007 (.004)
EMG frown	.001 (.001)	.002 (.001)	.001 (.001)
GSR	22.37 (19.90)	25.48 (23.28)	19.51 (21.86)

Note. () estimated means for men, no choice male employee (= NM), no choice female employee (= NF).

Table 6.

Estimated Means for phase: Study 2

	EMG smile	EMG frown	GSR
Welcome	.011 (.005)	.001 (.001)	22.95 (22.35)
Details1	.008 (.005)	.002 (.001)	24.45 (23.71)
Failure	.008 (.004)	.001 (.001)	22.97 (22.12)
Details2	.006 (.003)	.001 (.001)	21.40 (20.60)
Goodbye	.008 (.004)	.001 (.001)	20.48 (19.62)

Note. () estimated means for men, no choice male employee (= NM), no choice female employee (= NF).

Self-reported results. We conducted several ANCOVA tests to investigate the effect of conditions on self-reported emotions with perceived control as covariate, separately for men and women. The results for women show that experienced pleasure differed marginally significantly between conditions ($F(2, 41) = 2.74, p < .10$). Pairwise comparisons show getting a woman without having a choice was significantly more pleasurable versus getting a man without a choice (with $p < .05$; see Table 7 for means). Having a choice was not significantly different for not getting a choice and get a woman. The results for men showed no significant effects of the experimental conditions on pleasure ($F(2, 40) = 2.44; p = .10$), yet pairwise comparisons showed that getting a choice was significantly more pleasurable compared to getting a man without choice (with $p < .05$).

The results for arousal need to be studied with care, given that the Cronbach's alpha for this scale was not satisfactory ($\alpha = .53$). The findings for the female participants show no significant effect on arousal ($F(2, 41) = .016, p > .05$). For men, on the other hand, we find that condition has a significant impact on arousal ($F(2, 40) = .4.21, p < .05$). Being assigned a female employee is significantly more arousing than being assigned a male employee or being able to choose the employee's gender (with $p < .05$).

In sum, we do not find big differences between having a choice or no choice on emotion with both neurophysiological as self-report techniques. Thus, in line with Study 1, Hypothesis 1 cannot be confirmed. However, taking a look at the self-report results we see a hint that for man a choice is more pleasurable compared to being served by a man in the no choice condition. For women it is more pleasurable to be served by a woman in the no choice condition. Similar

findings are provided by the neurophysiological measures. For women, the EMG smile is most activated in the no choice condition with a female employee. Similarly, the EMG frown is the least activated in the choice condition and in the no choice condition with a female employee. Furthermore, the neurophysiological results show that phase of the service encounter has an impact on EMG smile and GSR for both men and women.

Table 7.

Estimated means for pleasure and arousal across conditions: Study 2

	NF	NM	Choice
Pleasure	5.33 (4.88)	4.80 (4.65)	5.18 (5.10)
Arousal	4.73 (5.09)	4.73 (4.64)	4.70 (4.52)

Note. () estimated means for men, no choice male employee (= NM), no choice female employee (= NF).

6.2.4. Effect gender choice on service performance outcomes

To investigate Hypothesis 2, we conducted several ANCOVA's with perceived control as a covariate. For both men and women, we conducted one ANCOVA for each service performance outcome and stress and frustration feelings (see Table 8 for estimated means). For women, we found no significant effects of condition on satisfaction, return intentions, word-of-mouth, frustration and stress feelings. Looking at the pairwise comparisons we only found one marginally significant difference. That is, women tend to be less frustrated in the no choice female condition compared to the no choice male condition (with $p < .10$). For men we found no significant effects of condition on satisfaction, return intention, word-of-mouth, stress and frustration feelings. As in Study 1, Hypothesis 2 cannot be confirmed.

Table 8.

Estimated means of performance outcomes: Study 2

	Choice	NF	NM
Satisfaction	5.02(4.66)	5.02(4.54)	4.55(4.66)
Return intention	5.11(4.89)	4.79(4.83)	4.92(4.93)
Word-of-mouth positive	4.21(4.10)	4.33(3.80)	4.23(4.02)
Word-of-mouth negative	2.55(2.45)	2.09(2.14)	2.70(2.72)
Frustration	2.51(2.59)	1.98(2.73)	2.8(2.60)
Stress	3.00(2.71)	2.70(3.45)	3.15(3.15)

Note. () estimated means for men, no choice male employee (= NM), no choice female employee (= NF).

6.2.5. Mediation

We conducted several mediation analyses for the different performance outcomes, and separately for male and female participants. Further, for self-reported and neurophysiological measures we used separated analyses as well. For the neurophysiological measures emotion measures were averaged across the whole interaction instead of emotion segregated by phase. Thus, GSR, EMG frown, and EMG smile were averaged across the different phases (confer Boksem & Smidts, 2015; Boshoff, 2012). Both perceived control and neurophysiological baseline values were used as covariates. Looking at the neurophysiological data we found no mediation effect of emotions between choice vs the no choice conditions (male or female) on service performance outcomes, nor stress and frustration feelings. See Appendix E for mediation through the neurophysiological results. However, looking at the self-report data we find some significant effects. For women, no significant mediation analyses were found. For men, return intention and positive word-of-mouth was lower and frustration higher in the no choice male condition versus the choice condition, mediated by pleasure. Further, men stress feelings were lower in the no choice female condition compared to the choice conditions, mediated by arousal (see Appendix F for self-reported emotions).

7. DISCUSSION

This article presents two studies on the emotional effect of choosing the gender of the frontline employee studied by means of a multi-method approach. We provide preliminary evidence that, in contrast to what is suggested by the customization and gender literature, no big difference between having the choice to be served by a female or male provider surfaces. In both Study 1 and 2 our Hypothesis 1 and 2 were not confirmed. Having a choice about the gender of the frontline employee did not consistently impact services performance outcomes or emotional responses to the service encounter. There are some exceptions. Women have a lower GSR in the choice condition compared to the no choice male condition. In study 1 for men getting a woman or men in the no choice condition is less arousing compared to having a choice according to the self-report data, whereas in study 2 being assigned a female employee is significantly more arousing than being assigned a male employee or being able to choose the employee's gender (with $p < .05$) also according to the neurophysiological data getting a female in the no choice condition is less arousing compared to the two other conditions.

Furthermore, almost no indirect effects of choice versus no choice conditions, through emotion, were found on the service performance outcomes or feelings of stress and frustration. In Study 1, Hypothesis 3 could not be confirmed. In Study 2, we found only some mediation effects for men, namely return intention and positive word-of-mouth was lower and frustration higher in the no choice male condition versus the choice condition, mediated by pleasure. Further, men stress feelings were lower in the no choice female condition compared to the choice conditions, mediated by arousal. Thus, Hypothesis 3 could be partially excepted for men in Study 2. A plausible explanation for the limited effects of gender choice is that gender alone has only a limited impact on judging a service (Fischer et al, 1997; Reiter, 1991) and other factors during a service interaction are more important. Furthermore, it could also be that customers do not have stable preferences about frontline employee gender or experience information overload (Kramer, 2007).

However, when we take a closer look at the qualitative results and compare the no choice conditions, it becomes apparent that complementing retrospective self-reports with neurophysiological measures deepens our knowledge on certain processes by giving us a wider spectrum of information. For instance, when offered a choice, both men and women choose to be

served be a woman more often. Participants summed up a bunch of reasons in line with the literature (e.g., more warm, easier to talk to; Mathies & Burford, 2011). Participants that did pick a male service provider did so for instance because they think men are more efficient (Mathies & Burford, 2011). A plausible reason for the preference of women is that nowadays women almost have become a “market requirement”, due to their natural communication style and people skills (e.g., more relationship oriented) they are believed to better fit for services interaction (Bradley, Erickson, Stephenson, & Williams, 2000; Mathies & Burford, 2011). Moreover, we investigated a rather low status service job (e.g., reception work in concert venue) and it is possible that people think women are more suitable to do this job (Belt et al., 2002; Pinar et al., 2017).

Furthermore, from the literature we could expect that being served by a male or female service provider could elicit different emotional responses. For instance, due to stereotypes and expectations about men or women being better suited for certain jobs (e.g., Belt et al., 2002; McColl-Kennedy et al., 2003; Mattila et al., 2003; Pinar et al., 2017). Another reason could be the presence of an in-group bias (Byrne, 1971; Byrne & Neuman, 1992).

Surprisingly, when we take a closer look at the emotional effects of male versus female service providers within the no choice conditions, we find almost no emotional differences when looking at the self-reported results. Furthermore, we find no difference on service performance outcomes in both studies (e.g., satisfaction). A possible explanation is that our service encounter is seen as rather gender neutral (see supra; Koch et al., 2015; Mohr & Henson, 1996). Hence, customers will lack clear expectations or preferences that can bias emotions and service evaluations.

When we take a look at the neurophysiological results we find several hints that women find it more pleasurable to be served by another woman, supporting the gender-similarly theory for women. However, these more pleasurable emotions did not transfer to better service performance outcomes. For men we find no such effect. However, it could be the case that since both men and women choose or would choose to be served by a female employee not due to in-group bias or flirting theory, but just because women have become a “market requirement” in the service sector. This could again be explained by the idea that women due to their communication styles and people skills are believed to better fit a service interaction (Bradley et al., 2000).

To wrap up, in contrast with what we could expect from prior literature and the qualitative results, we did not find strong positive effect of customization on customers’ emotions and

performance outcomes. Nor did we find clear difference between being served by a male or female in the no choice conditions, nevertheless when looking at the neurophysiological and qualitative results, we do see several hints that it is more pleasurable (or less stressful) to be served by women. These results show the benefits of a multi-method approach and highlight the need for more research on this topic.

7.1. MANAGERIAL, THEORETICAL, AND METHODOLOGICAL CONTRIBUTIONS

Companies are always thriving to improve their service and servicescapes in order to satisfy customers and an increasing number of companies rely on customization to achieve this. The current research investigated the potential benefits of letting customers choose the gender of a service employee. The most important take-away for managers is that, at least in the context of buying a concert ticket (or other gender-neutral or low-skilled jobs), offering a gender choice may be not necessary and it may not matter if you have a male or female employee providing the service when it comes to service performance outcomes. Hence, managers may be well advised to focus on job skills rather than gender for these types of jobs.

This study contributes to the literature in several ways. First, we used empirical results to help deepen our understanding on customizing frontline employee gender. This study was the first to explicitly test if having a choice in the gender of service employee has an impact on emotions and service performance outcomes. Thus, we complement customization and gender literature by shedding light on the often-overlooked research topic of customizing the people dimensions of the marketing mix. Studying customization of the people dimension is highly relevant since it often happens in service practice. Yet, its impact on customers' emotions during a service encounter and service performance outcomes is still unclear.

The current study relied on a multi-method approach that allowed overcoming several issues with self-report measures, such as customers' inability to tell what they really feel sometimes and avoid social desirability bias (Podsakoff, Mackenzie, Lee, & Podsakoff, 2003; Poels & Dewitte, 2006). This is especially important when investigating gender, which is a topic prone to be susceptible to social desirability bias (Krumpal, 2013). However, in looking at both methods, we do not find substantial differences situations where customers can and cannot choose the employees' gender. It should be noted that we applied a conservative design. That is, using a low involvement scenario and a gender-neutral service job, yet we still find (some) differences. This

is promising and deserves more attention. The neurophysiological data provide us insights into some differences between being served by a male or female in the no choice conditions that did not emerged with the self-report measures. For instance, when looking at the self-reports we do not find big differences between emotion, while the neurophysiological results suggest that women tend to prefer female employees in the no choice condition. For women it seems that their physiological emotional responses are more in line with the choice they make compared to self-reported emotion, for men we did not see this. Finding different results for different methods is not uncommon, particularly when comparing neurophysiological and self-report measures because they are both subjected to different biases and/or imperfections (e.g., Boshoff, 2012). Combining these two methods did allows a deeper comprehension of customers' preference for male or female employees. Additional research is needed to broaden our understanding of this aspect.

Although not the focus of our paper, the current research illustrated the value of neurophysiological tools for managers and service designers to help understand which moments are most critical during service encounters. During customer experiences it is often unclear which phases matter during a specific service encounter, neurophysiological tools can help to pinpoint key emotion-laden points in time. As such, these tools can help pinpoint moments where interventions might be necessary. For instance, we found that EMG smile was most activated during the welcome phase, indicating that our participants were more positive during the welcome phase than in all following phases. This might indicate possibilities to improve the customer experiences in these later stages. While applying a neurophysiological approach takes effort and is costlier compared to self-reports, the insights provided might make it more worthwhile.

7.2. LIMITATIONS AND FUTURE RESEARCH

Having a choice is often conceived a good thing. Nevertheless, we find no difference between having a choice or no choice in our studies. A reason why no differences are found could be that the service encounters used in our studies are not stereotypical perceived as female or male. Furthermore, moderators such service importance or involvement with the service could result in different outcomes (Ostrom & Iacobucci, 1995). Indeed, Franke et al. (2009) suggest that the benefits of customization are higher when a customer's product or service involvement is higher.

Therefore, we suggest that future research take a look at more stereotypical service jobs (e.g., construction workers, nurse) and incorporate high and low involvement services to investigate if results also hold for those services.

Along these lines, we did not focus on studying the service context or culture. However, the service provider's gender could become more relevant in service encounters including for instance close personal physical or psychological contact (e.g., Thompson & Nussbaum, 2000; Chur-Hansen, 2002). In addition, culture may be an important moderator. Pinar et al. (2017) showed that reaction toward the gender of service providers was very different in Western vs. Middle-Eastern countries. They showed that in western cultures women are perceived as better for a low service job, whereas in Middle-Eastern men are perceived as better for a low service job. So, when interpreting our results one should definitely keep in mind that these studies were conducted in Belgium, a Western country with relatively low stereotypes about women and good conditions for women. Belgium has a high WPS index, indicating that women have a high-income participation and that discrimination against women is very low (Georgetown Institute for Women, Peace and Security, 2017; OECD, 2014; World economic forum, 2017).

Choice of gender did not seem to be an important antecedent of enhanced service outcomes and positive emotions. This does not mean that gender related attributes of the gender of a service provider are not important. Indeed, we only offered our participants a choice from a fully pre-determined choice set (e.g., gender of the frontline employee). Future research could investigate if offering customers a choice to pick service styles (instead of gender), such as a warm versus goal-oriented service, could be beneficial.

Furthermore, it seemed our participants did not like to make this choice. We asked participants what they thought of having a gender choice and if they like it. In Study 1, both male ($M=1.43$) and female participants ($M=1.74$) thought that customers should not have a choice in the gender of the service employee that will serve them. We also asked participants in the choice condition if they liked having a choice, both men ($M= 3.42$) and women ($M= 2.97$) did not really like it. These negative feelings might overshadow the perceived benefits of interacting with a preferred employee. We believe an interesting approach, to investigate this further, is to study gender personalization, were the company decides for the customer if they should be served by a male or female. Companies could make these decisions based on big data or individual consumer data.

Compared to scenario-based studies (e.g., Van Vaerenbergh, Larivière, & Vermeir, 2012) our sample size in Study 2 is rather small (approximately 15 men and 15 women for each condition). However, in comparison with neuroscientific studies, our sample size is reasonable (e.g., Boshoff, 2012, Vecchiato et al., 2014). Because of sample size, no further moderator analyses were conducted and the match between the gender of the customer and the employee was neglected. Future studies could take a closer look to the effects of matching the gender of employees with customer.

Participants in the choice condition were forced to make a choice. Our study did not offer the participants option to pick '*I do not care about the gender*', since some participants said this before making a choice (in Study 2) it becomes apparent that future studies should allow participants to make no choice in the choice condition. Furthermore, the current study does not allow to draw conclusions on the emotional effect of spontaneous gender choice in service encounter. For instance, when you are in the supermarket and two counters are open, one with a male and one with a female, you can make a spontaneous gender choice. We believe this is also an interesting avenue to explore in future research.

Future research could consider to compliment experimental research with field studies using mobile neuroscientific devices during a real service encounter. This approach would permit investigating customers' emotions across a whole experience which would increase the external validity of results. To illustrate, further research could measure neurophysiological signals at the supermarket while making a choice and during the whole interaction. Such data could provide service researcher and practitioners with incredibly valuable information, including customer annoyance and pleasure during their shopping trip.

We only used GSR and EMG, which kept the experiment manageable and realistic. However other neurophysiological tools such as EEG and fMRI, could also contribute to study the topic of customization. For instance, recent advances in fMRI now allow researchers to visualize changes in neural activity seconds before a choice occurs and changes in activation of specific brain circuits occurs during anticipation of, for instance, monetary incentives (Knudsen & Geer, 2008).

Both the female and male employee (research assistants) were trained to react in the same way, used the same pre-written service script, and were wearing the same neutral t-shirts. Nevertheless, we cannot dismiss that some things were still not exactly the same (e.g., facial micro expressions). A solution for future studies is using avatars (preferably combined in a

virtual reality context), with everything held absolutely constant, except for gender. Avatars can be designed to be identical on attractiveness level, facial symmetry, and their use of facial micro expressions.

Taken together this paper offers insight in an understudied yet promising domain. Furthermore, applying a multi-method approach in this context proved interesting, and might encourage future research.

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9. APPENDIX

Appendix A. Service script: Study 1

Welcome phase

Tina/Tom: "Hallo, for which concert you want to make a reservation?" Type your answer below.

Participants type answer

Personal details phase 1

Tina/Tom: "Can you give me your name?" Type your name below.

Participants type answer

Failure phase

Tina/Tom types your name in on the computer. Next Tina says: "Oh no, the data is not saved, can you wait a moment?" (10 seconds wait programmed in the script)

Personal details phase 2

You waited about 10 second, Next Tina/Tom says: "Ok we can continue, can you give your name again?" Type your name below.

Participants type answer

Goodbye phase

Tina types your name in on the computer. Then Tina/Tom says: "Ok, it worked. They reservation is ok. We will see you on Monday May 20th, you will have to give your name at the cashier and pay 10 euro in cash that day. Thanks

Appendix B. Scales, items, and Cronbach's alphas: Study 1-2

	Study 1	Study 2
<i>Emotional pleasure and arousal (Russell, 1980)</i>		
Pleasure	.91	.82
Angry-Content		
Unhappy-Happy		
Displeased-Pleased		
Sad-Joyful		
Disappointed-Delighted		
Bored-Entertained		
Arousal	.73	.53
Cheerful-Depressed		
Anxious-Quiet		
Enthusiastic-Calm		
Nervous-Relaxed		
Surprised-Indifferent		
Active-Passive ^d		
<i>Frustration general (Yi & Baumgartner, 2004)</i>		
I would feel frustrated about this situation (totally agree-totally disagree)	/	/
<i>Stress general (self-constructed)</i>		
Ordering the ticket was stressful	/	/
<i>Overall satisfaction (Lin & Hsieh, 2007; Maxham, 2001)</i>		
Overall, I am satisfied with the service offered by the concert venue	.88	.91
The service offered by the concert venue is close to my ideal service		
In my opinion, the concert venue provides a satisfactory service for ordering a concert ticket		
<i>Return intention (Maxham, 2001)</i>		
I intend to use service of concert venue again when I want to reserve a ticket	.93	.95
I will continue using the concert venue to reserve concert tickets		
<i>WOM positive valence (Zeithaml et al., 1996; Lang, 2009; Harrison-Walker, 2001)</i>		
I will talk positively with others about the concert venue	.88	.79
I only have good things to say about the experience at the concert venue.		

	Study 1	Study 2
<i>WOM negative valence (Zeithaml et al. 1996; Lang, 2009; Harrison-Walker 2001)</i>	/	/
I will mostly talk negatively about the service experience at concert venue		
<i>Perceived control (Dabholkar, 1996)</i>	.77	.68
I had complete control while reserving the concert tickets.		
I felt in charge while reserving the concert tickets.		
I felt empowered while reserving the concert tickets.		
<i>Realism check</i>	/	/
The situation to reserve tickets was realistic		
<i>Valence check (Self-constructed)</i>	/	/
When I would end up in this situation, I would rate this service as... (Very negative to very positive)		
<i>Demographics</i>		
Age – gender - sexuality		
<i>Attractiveness employee</i>		
How attractive did you find that employee of the concert venue		
<i>Question about having a choice or not (self-constructed)</i>		
Choice condition:		
I picked a man/woman, because...		
I found it pleasant that I could choose between a male or female.		
No choice conditions (Study 1):		
If I had a choice between a male or female serving me I would pick...		
Because....		

Appendix C. Service script: Study 2

Soon an employee of company x will come along, this company sells concert tickets.
You want to reserve tickets for Band Z in a small concert hall. Remember the name BAND Z well.

Do you prefer a male or female employee? (only in choice condition)

Please wait, the employee will arrive shortly

Employee enters and starts the script

Welcome phase

Employee: "Hallo, for which concert you want to make a reservation?"

Participants answer Band z

Personal details 1 phase

Employee: "Can you give me your name?"

Participants answer with their name

Failure phase

Employee types name in on the computer. Next the employee says: "Oh no, the data is not saved, can you wait a moment?" (10 seconds wait programmed in the script)

Personal details 2 phase

Employee: "Ok we can continue, can you give your name again?"

Participant answers their name

Goodbye phase

Employee: "Ok, it worked. They reservation is ok. We will see you on Monday May 20th, you will have to give your name at the cashier and pay 10 euro in cash that day. Thanks.

Appendix D. Panel A: Relative indirect effects of mediation analysis for woman: Study 1

	Woman Choice= 0 No choice female =1	Woman Choice= 0 No choice male =1
Mediation through pleasure		
Satisfaction	$\beta = .18, CI (95\%) = -.2103 \text{--} .6251$	$\beta = .05, CI (95\%) = -.3399 \text{--} .4661$
Return intention	$\beta = .18, CI (95\%) = -.1808 \text{--} .5765$	$\beta = .05, CI (95\%) = -.3374 \text{--} .4635$
Word-of-mouth positive	$\beta = .16, CI (95\%) = -.2119 \text{--} .5045$	$\beta = .05, CI (95\%) = -.2813 \text{--} .3833$
Word-of-mouth negative	$\beta = -.16, CI (95\%) = -.5651 \text{--} .1469$	$\beta = -.45, CI (95\%) = -.4203 \text{--} .2584$
Frustration	$\beta = -.24, CI (95\%) = -.8090 \text{--} .2872$	$\beta = -.07, CI (95\%) = -.5985 \text{--} .3850$
Stress	$\beta = -.16, CI (95\%) = -.5690 \text{--} .1383$	$\beta = -.04, CI (95\%) = -.4364 \text{--} .2882$
Mediation through arousal		
Satisfaction	$\beta = .11, CI (95\%) = -.1608 \text{--} .4393$	$\beta = .10, CI (95\%) = -.1577 \text{--} .4055$
Return intention	$\beta = .12, CI (95\%) = -.1428 \text{--} .4596$	$\beta = .11, CI (95\%) = -.1669 \text{--} .4039$
Word-of-mouth positive	$\beta = .11, CI (95\%) = -.1018 \text{--} .4296$	$\beta = .10, CI (95\%) = -.1334 \text{--} .4328$
Word-of-mouth negative	$\beta = -.12, CI (95\%) = -.4375 \text{--} .1502$	$\beta = -.10, CI (95\%) = -.4215 \text{--} .1918$
Frustration	$\beta = -.17, CI (95\%) = -.6336 \text{--} .1743$	$\beta = -.15, CI (95\%) = -.5755 \text{--} .2685$
Stress	$\beta = -.17, CI (95\%) = -.6268 \text{--} .2124$	$\beta = -.15, CI (95\%) = -.6243 \text{--} .2025$

Appendix D. Panel B: Relative indirect effects of mediation analysis for Men: Study 1

	Men Choice= 0 No choice female =1	Men Choice= 0 No choice male =1
Mediation through pleasure		
Satisfaction	$\beta = .21, CI (95\%) = -.2012 \text{--} 1.2301$	$\beta = .51, CI (95\%) = -.0321 \text{--} 1.5451$
Return intention	$\beta = .19, CI (95\%) = -.2563 \text{--} 1.0655$	$\beta = .45, CI (95\%) = -.1812 \text{--} 1.5457$
Word-of-mouth positive	$\beta = .09, CI (95\%) = -.1585 \text{--} .4952$	$\beta = .21, CI (95\%) = -.1443 \text{--} .7241$
Word-of-mouth negative	$\beta = -.25, CI (95\%) = -1.0451 \text{--} .4520$	$\beta = -.60, CI (95\%) = -1.5218 \text{--} .2919$
Frustration	$\beta = -.18, CI (95\%) = -.7565 \text{--} .3702$	$\beta = -.42, CI (95\%) = -1.1144 \text{--} .1990$
Stress	$\beta = -.16, CI (95\%) = -.6616 \text{--} .2790$	$\beta = -.37, CI (95\%) = -1.0217 \text{--} .1696$
Mediation through arousal		
Satisfaction	$\beta = .19, CI (95\%) = -.1267 \text{--} .9947$	$\beta = .00, CI (95\%) = -.4407 \text{--} .5235$
Return intention	$\beta = .13, CI (95\%) = -.2006 \text{--} .9083$	$\beta = .00, CI (95\%) = -.5128 \text{--} .5042$
Word-of-mouth positive	$\beta = .14, CI (95\%) = -.0909 \text{--} .7371$	$\beta = .00, CI (95\%) = -.3547 \text{--} .4095$
Word-of-mouth negative	$\beta = -.44, CI (95\%) = -1.1905 \text{--} .2467$	$\beta = -.00, CI (95\%) = -.8121 \text{--} .9057$
Frustration	$\beta = -.21, CI (95\%) = -.8136 \text{--} .1838$	$\beta = -.00, CI (95\%) = -.5337 \text{--} .6051$
Stress	$\beta = -.45, CI (95\%) = -1.248 \text{--} .2236$	$\beta = -.00, CI (95\%) = -.7784 \text{--} .9458$

Appendix E. Panel A: Relative indirect effects of mediation analysis for woman: Study 2 Neuro-data

	Woman Choice= 0 No choice female =1	Woman Choice= 0 No choice male =1
Mediation through GSR		
Satisfaction	$\beta = .02, CI (95\%) = -.1250 \text{--} .2212$	$\beta = .05, CI (95\%) = -.1882 \text{--} .4225$
Return intention	$\beta = -.01, CI (95\%) = -.2142 \text{--} .2246$	$\beta = -.02, CI (95\%) = -.3419 \text{--} .3741$
Word-of-mouth positive	$\beta = .03, CI (95\%) = -.0925 \text{--} .1986$	$\beta = .06, CI (95\%) = -.0925 \text{--} .1986$
Word-of-mouth negative	$\beta = -.11, CI (95\%) = -.4800 \text{--} .0949$	$\beta = -.2336, CI (95\%) = -.8610 \text{--} .0743$
Frustration	$\beta = -.10, CI (95\%) = -.4031 \text{--} .0757$	$\beta = -.20, CI (95\%) = -.6969 \text{--} .0647$
Stress	$\beta = .06, CI (95\%) = -.1017 \text{--} .2822$	$\beta = .12, CI (95\%) = -.1274 \text{--} .5752$
Mediation through EMG smile		
Satisfaction	$\beta = -.10, CI (95\%) = -.4740 \text{--} .4008$	$\beta = .01, CI (95\%) = -.2935 \text{--} .1479$
Return intention	$\beta = -.04, CI (95\%) = -.3171 \text{--} .3766$	$\beta = .00, CI (95\%) = -.2081 \text{--} .1076$
Word-of-mouth positive	$\beta = -.07, CI (95\%) = -.4083 \text{--} .2566$	$\beta = .01, CI (95\%) = -.2382 \text{--} .0968$
Word-of-mouth negative	$\beta = .11, CI (95\%) = -.2403 \text{--} .4558$	$\beta = -.01, CI (95\%) = -.2403 \text{--} .4558$
Frustration	$\beta = .09, CI (95\%) = -.6150 \text{--} .1346$	$\beta = .01, CI (95\%) = -.1601 \text{--} .3208$
Stress	$\beta = -.12, CI (95\%) = -.4134 \text{--} .2199$	$\beta = .01, CI (95\%) = -.1736 \text{--} .2313$
Mediation through EMG frown		
Satisfaction	$\beta = .01, CI (95\%) = -.1343 \text{--} .2797$	$\beta = .03, CI (95\%) = -.3150 \text{--} .6577$
Return intention	$\beta = .00, CI (95\%) = -.1308 \text{--} .2891$	$\beta = .00, CI (95\%) = -.3613 \text{--} .5612$
Word-of-mouth positive	$\beta = -.05, CI (95\%) = -.2438 \text{--} .1882$	$\beta = -.17, CI (95\%) = -.6583 \text{--} .3327$
Word-of-mouth negative	$\beta = .05, CI (95\%) = -.2021 \text{--} .2417$	$\beta = .17, CI (95\%) = -.4043 \text{--} .5217$
Frustration	$\beta = .02, CI (95\%) = -.2010 \text{--} .1927$	$\beta = .07, CI (95\%) = -.5244 \text{--} .4055$
Stress	$\beta = -.04, CI (95\%) = -.2943 \text{--} .1003$	$\beta = -.12, CI (95\%) = -.5828 \text{--} .2375$

Appendix E. Panel B: Relative indirect effects of mediation analysis men: Study 2 Neuro-data

	Men	Men
	Choice= 0 No choice female =1	Choice= 0 No choice male =1
Mediation through GSR		
Satisfaction	$\beta = -.02$, CI (95%) = -.2991 -.1852	$\beta = .01$, CI (95%) = -.2546 -.2515
Return intention	$\beta = .02$, CI (95%) = -.1989 -.2127	$\beta = -.02$, CI (95%) = -.2631 -.1467
Word-of-mouth positive	$\beta = .03$, CI (95%) = -.2171 -.2650	$\beta = -.03$, CI (95%) = -.2874 -.1867
Word-of-mouth negative	$\beta = -.07$, CI (95%) = -.3450 -.1575	$\beta = .06$, CI (95%) = -.1160 -.4155
Frustration	$\beta = .02$, CI (95%) = -.2277 -.3413	$\beta = -.02$, CI (95%) = -.2464 -.2635
Stress	$\beta = -.00$, CI (95%) = -.2860 -.2924	$\beta = .01$, CI (95%) = -.2452 -.3012
Mediation through EMG smile		
Satisfaction	$\beta = .00$, CI (95%) = -.1552 -.1734	$\beta = -.00$, CI (95%) = -.1147 -.1445
Return intention	$\beta = .02$, CI (95%) = -.1286-.2774	$\beta = -.0220$, CI (95%) = -.1713 -.1683
Word-of-mouth positive	$\beta = .00$, CI (95%) = -.1567 -.1853	$\beta = -.00$, CI (95%) = -.1701 -.1168
Word-of-mouth negative	$\beta = .00$, CI (95%) = -.1208 -.1939	$\beta = -.00$, CI (95%) = -.1188 -.1375
Frustration	$\beta = -.01$, CI (95%) = -.2572 -.2409	$\beta = .01$, CI (95%) = -.1562 -.2670
Stress	$\beta = .00$, CI (95%) = -.2424 -.2352	$\beta = -.00$, CI (95%) = -.1416 -.2410
Mediation through EMG frown		
Satisfaction	$\beta = -.06$, CI (95%) = -.2345 -.2182	$\beta = -.03$, CI (95%) = -.4160 -.1940
Return intention	$\beta = -.03$, CI (95%) = -.2073 -.2120	$\beta = -.01$, CI (95%) = -.5861 -.1292
Word-of-mouth positive	$\beta = -.03$, CI (95%) = -.1549 -.2474	$\beta = -.02$, CI (95%) = -.4082 -.1782
Word-of-mouth negative	$\beta = .06$, CI (95%) = -.1642 -.2875	$\beta = .03$, CI (95%) = -.2107 -.4500
Frustration	$\beta = .01$, CI (95%) = -.3463 -.1491	$\beta = .00$, CI (95%) = -.3085 -.2750
Stress	$\beta = -.05$, CI (95%) = -.4513 -.1051	$\beta = -.03$, CI (95%) = -.2174 -.4944

Appendix F. Panel A: Relative indirect effects of mediation analysis for woman: Study 2 self-report data

	Woman Choice= 0 No choice female =1	Woman Choice= 0 No choice male =1
Mediation through pleasure		
Satisfaction	$\beta = .08, CI (95\%) = -.0975 \text{--} .4391$	$\beta = -.18, CI (95\%) = -.7149 \text{--} .1023$
Return intention	$\beta = .06, CI (95\%) = -.0896 \text{--} .3745$	$\beta = -.14, CI (95\%) = -.5917 \text{--} .1238$
Word-of-mouth positive	$\beta = .11, CI (95\%) = -.1307 \text{--} .4995$	$\beta = -.27, CI (95\%) = -.7987 \text{--} .0700$
Word-of-mouth negative	$\beta = -.08, CI (95\%) = -.4457 \text{--} .1309$	$\beta = .21, CI (95\%) = -.1042 \text{--} .7914$
Frustration	$\beta = -.12, CI (95\%) = -.5538 \text{--} .1144$	$\beta = .30, CI (95\%) = -.0875 \text{--} .9107$
Stress	$\beta = -.05, CI (95\%) = -.2967 \text{--} .0704$	$\beta = .13, CI (95\%) = -.1142 \text{--} .5158$
Mediation through arousal		
Satisfaction	$\beta = -.01, CI (95\%) = -.2005 \text{--} .1234$	$\beta = -.01, CI (95\%) = -.1724 \text{--} .2382$
Return intention	$\beta = -.01, CI (95\%) = -.3167 \text{--} .1483$	$\beta = -.01, CI (95\%) = -.2648 \text{--} .3046$
Word-of-mouth positive	$\beta = .00, CI (95\%) = -.0931 \text{--} .1173$	$\beta = .00, CI (95\%) = -.0937 \text{--} .1797$
Word-of-mouth negative	$\beta = .01, CI (95\%) = -.1301 \text{--} .2405$	$\beta = .01, CI (95\%) = -.2509 \text{--} .1836$
Frustration	$\beta = -.01, CI (95\%) = -.1823 \text{--} .1139$	$\beta = -.01, CI (95\%) = -.1551 \text{--} .1812$
Stress	$\beta = -.03, CI (95\%) = -.4814 \text{--} .3351$	$\beta = -.03, CI (95\%) = -.5436 \text{--} .4385$

Appendix F. Panel B: Relative indirect effects of mediation analysis for men: Study 2 self-report data

	Men Choice= 0 No choice female =1	Men Choice= 0 No choice male =1
Mediation through pleasure		
Satisfaction	$\beta = -.10, CI (95\%) = -.5102 \text{--} .1767$	$\beta = -.20, CI (95\%) = -.5102 \text{--} .1767$
Return intention	$\beta = -.21, CI (95\%) = -.8159 \text{--} .2798$	$\beta = -.42, CI (95\%) = -.9035 \text{--} -.0464^*$
Word-of-mouth positive	$\beta = -.13, CI (95\%) = -.6656 \text{--} .1688$	$\beta = -.26, CI (95\%) = -.7933 \text{--} -.0043^*$
Word-of-mouth negative	$\beta = .13, CI (95\%) = -.2072 \text{--} .5731$	$\beta = .27, CI (95\%) = -.0235 \text{--} .8045$
Frustration	$\beta = .20, CI (95\%) = -.1821 \text{--} .1.006$	$\beta = .41, CI (95\%) = .0261 \text{--} 1.1163^*$
Stress	$\beta = .16, CI (95\%) = -.1858 \text{--} .9264$	$\beta = .33, CI (95\%) = -.0099 \text{--} 1.1845$
Mediation through arousal		
Satisfaction	$\beta = .05, CI (95\%) = -.4295 \text{--} .4506$	$\beta = .01, CI (95\%) = -.2019 \text{--} .1961$
Return intention	$\beta = .06, CI (95\%) = -.3303 \text{--} .4683$	$\beta = .01, CI (95\%) = -.1880 \text{--} .1558$
Word-of-mouth positive	$\beta = .02, CI (95\%) = -.4261 \text{--} .4659$	$\beta = .00, CI (95\%) = -.2240 \text{--} .1495$
Word-of-mouth negative	$\beta = .02, CI (95\%) = -.4096 \text{--} .4203$	$\beta = .01, CI (95\%) = -.1820 \text{--} .1721$
Frustration	$\beta = -.09, CI (95\%) = -.6504 \text{--} .4430$	$\beta = -.02, CI (95\%) = -.2527 \text{--} .2344$
Stress	$\beta = -.83, CI (95\%) = -1.5271 \text{--} -.2505^*$	$\beta = -.1831, CI (95\%) = -.7369 \text{--} .4269$

Note. (*) = significant

**CHAPTER IV: The effect of pre-consumption bodily responses on
service performance outcomes and complaining**

CHAPTER IV: The effect of pre-consumption bodily responses on service performance outcomes and complaining

1. INTRODUCTION

Recent neuroscientific and psychological research shows that changes in bodily states (e.g., in neurotransmitters, hormones, peripheral physiological reactions such as sweating and heart rate) impact behavior (e.g., buying behavior; Lichters, Brunnlieb, Nave, Sarstedr, & Vogt, 2016), emotions (Blascovich & Mendes, 2010; Critchley & Nagai, 2012; James, 1884, Laird & Lacasse, 2014), and even cognitive processes (e.g., decision-making; Bechara, Damasio, & Damasio, 2000). Mainly due to advances in neuroscience and technology, which now allow researchers to study bodily changes without intervening the behavioral, emotional, or cognitive process itself (Falk, Berkman, Mann, Harrison, & Lieberman, 2010; Plassmann, Yoon, Feinberg, & Shiv, 2011), researchers started to investigate bodily states also in other domains such as marketing. For instance, Boksem & Smidts (2015) and Lichters et al. (2016) have used changes in bodily states as predictors for consumer preferences and consumer behavior fruitfully. However, most studies focused on studying the impact of a certain stimulus (e.g., advertisement) on bodily changes to derive the emotional reaction toward that stimulus (e.g., Ohme, Wiener, Reykowska, & Choromanska, 2009).

Surprisingly, the impact of consumers' bodily changes on the service experience has received little attention (Krishna, 2012; Loewenstein, 2000). Studies that do include bodily states (e.g., Boshoff, 2012) focus on the effect of a stimulus (e.g., the service encounter) on bodily changes to derive the emotional reaction toward that stimulus, but fail to investigate what the effect of a different bodily states is on the service experience. However, since bodily changes could subconsciously trigger different reactions toward service encounters they are important to investigate. Further, bodily changes are malleable; service providers can trigger certain bodily changes by implementing external cues such as showing an emotional movie (Barraza, Alexander, Beavin, Terris, & Zak, 2015), playing certain music (Zimny & Weidenfeller, 1963), or introducing something new and exciting (Harrison et al., 2000; Kreibig, 2010). Furthermore, bodily changes are an observable window of emotions and certain cognitive processes, thus studying them can offer us deeper insights in individual differences and how the consumers' mind works (Plassmann Venkatraman, Huettel, & Yoon, 2015). For instance, Correa, Stone, Stikic, Johnson, and Berka

(2015) showed that bodily responses are different for people that donate versus not donate after watching a certain movie, and Bechara, Tranel, Damasio, and Damasio (1996) showed that successful players in a risky card game started to generate an anticipatory bodily response after a number of games, prior to selecting a card, whereas unsuccessful players did not.

In examining the effects pre-consumption bodily changes on services performance outcomes, this article makes a unique contribution to the general service domain. This research opens a new avenue of inquiry that allows for a novel and deeper comprehension of customer behavior in service encounters (Plassmann et al., 2015). Furthermore, our research responds to several recent service research priorities related to enhancing the service experience, improving service outcomes, and leveraging service design (Ostrom, Parasuraman, Bowen, Patrício, & Voss, 2015).

The article proceeds as follows: We first discuss the impact of bodily changes on emotions and behavior in general, before zooming on two sensitive markers of bodily arousal, namely sweat secretion and heart rate (Poels & Dewitte, 2006). Before formulating our hypotheses, we discuss the pre-test of two videos used to induce bodily changes in our further experiments. Next, we discuss two scenario-based experiments exploring the effects of bodily changes on service evaluations such as satisfaction, return intention, word-of-mouth, and general complaint intentions. Subsequent, we examine the effect of those bodily changes on specific types of complaint behavior (e.g., confrontative complaining) in one scenario-based experiment. We discuss each study in detail, including its specific design and results, and we offer a brief discussion of the findings of each study. Finally, we present several implications of our paper, consider the limitations of our studies, and offer some promising directions for further research.

2. BODILY CHANGES

Our brain controls our body by means of neural (autonomic) and hormonal systems, similarly these systems send information about bodily states back to our brain and can trigger automatic processes that modify conscious and unconscious processes such as approach or avoidance behavior (Bechara, et al., 1996; Jänig, 2003). Ample academic literature (e.g., Barrett, Mesquita, Ochsner, & Gross, 2007; Damasio & Carvalho, 2013; James, 1894; Laird & Lacasse, 2014) points out that emotion-related bodily changes (e.g., changes in the hormones, autonomic nervous system) have a vast impact on our behavior and emotions (Bechara et al., 2000; James 1894; Laird & Lacasse, 2014) and have been linked to or can be used to predict objective outcomes (Bracken,

Alexander, Zak, Romero, & Barraza, 2014; Berkman & Falk, 2013; Barraza, McCullough, Ahmadi, & Zak 2011; Cacioppo, Berntson, Larsen, Poehlmann, & Ito, 2000; Falk, Berkman, & Lieberman, 2012). For instance, increased sweating can motivate our desire to walk in the shade on a warm day or inhibits socializing (Critchley & Harrison, 2013).

Many emotion- related bodily changes can be examined, such as hormones and neurotransmitter levels, we will focus on two peripheral nervous system responses often used in emotion research, namely galvanic skin response (GSR) and heart rate (HR). GSR gives an indication of electrical conductance of the skin related to the level of sweat in the sweat glands (Grings & Dawson, 1978). Both GSR and HR are an indication of physiological arousal. They are both not only widely used sensitive measures of arousal, but also relatively easy to use, affordably, and allow moment-to-moment measuring (Dawson, Shell, & Filion, 2000; Poels & Dewitte, 2006). Furthermore, HR is not only linked to arousal, but can also be linked to positive and negative affect (Lang, Greenwald, Bradley, & Hamm, 1993; Palomba, Angrilli, & Mini, 1997; Poels & Dewitte, 2006). GSR and HR are under control of the (para)sympathetic nervous system and their interaction stimulates dynamic changes in bodily states in response to environmental stimuli (Brading, 1999). Bodily changes of arousal associated with fight and flight responses due to extreme emotional or physical states are mainly characterized by increased sympathetic activity and decreased parasympathetic activity (Cannon, 1929; Jansen, Nguyen, Karpitskiy, Mettenleiter, Loewy, 1995). Sympathetic activity fuels for instance an increase in HR and GSR, dilation of pupils, and reduction of blood supply to the gut. Conversely, parasympathetic activity triggers recuperative functions such as heart rate reduction or lower blood pressure (Grings & Dawson, 1978; Noback, Strominger, Demarest, & Ruggiero, 2015). Evidence from previous research shows that feedback from the peripheral nervous system helps creating emotional experiences and catalyzes other psychological processes such as cognition and memory (Barrett & Lindquist, 2008; Blascovich & Mendes, 2010; Critchley & Nagai, 2012; Niedenthal, 2007).

GSR is mainly affected by high intensity emotional stimuli, for instance something that makes you angry or feel very amused (Kreibig, 2010), indeed it does not distinguish between positive and negative emotions but indicates how arousing the stimuli is for you (Poels & Dewitte, 2006). Several studies show that GSR affects behavior. Bechara et al. (1996), for example, showed that a GSR leads to a better performance in a card game. When starting a card game, both patients with numbed GSR and controls with well-functioning GSR showed a GSR response after selecting

cards that were followed by reward or penalties. Interestingly, the controls started to generate GSR after a number of trials prior to selecting a card. Patients did not develop such an anticipatory GSR, which lead to making disadvantageous decisions over and over again. This indicates that GSR correlates with sensitivity toward future outcomes. Another study showed that people who performed badly in gambling tasks had decreased GSR toward performance outcomes, which resulted in less efficient updating of context information necessary to adjust future performance strategies (Bechara & Damasio, 2002).

When taking a look at HR, we see that in general, decreased HR occurs while people are presented with negative stimuli (e.g., Lang et al., 1993; Winton, Putnam, & Krauss, 1984). Indeed, Somsen, Van der Molen, and Orlebeke (1983) revealed that a slowing anticipatory HR was more common while individuals were preparing for an unavoidable aversive event (a shock threat), which could indicate that individuals restrict attention to potentially aversive stimuli. However, not all negative stimuli always lead to a HR deceleration, for instance when you feel fear or anxiety your HR rises (for an overview see Kreibig, 2010). Furthermore, being exposed to stimuli that elicit positive feelings increases HR (Lang et al., 1993), however feeling empathic concern (which is classified as a positive emotion; Condon & Feldman Barrett, 2013) is associated with HR deceleration (Eisenberg et al., 1988), which in turn affects behavior. For instance, children that showed a HR deceleration after seeing an empathy evoking movie were more willing to help others or donate something (Eisenberg et al., 1989). Indeed, fluctuations in HR interact with emotional processing, experience, and thoughts (Critchley, 2009; Gilbey, 2007; Jänig, 2006) and HR changes are expected during almost all emotional states (Palomba et al., 1997).

GSR and HR can act in the same 'direction' such as when you are angry, both increase, but they also change in opposite directions (e.g., Kreibig, 2010). For instance, Crone, Somsen, Beek (2004) showed good performers in a card game displayed higher anticipatory GSR and slowing HR preceding a disadvantageous choice compared to an advantageous choice.

Next to playing a risky card game or being confronted with an electric shock, there is a manifold of internal and external stimuli that trigger bodily changes in the peripheral autonomic nervous system. For instance, engaging in physical exercise, emotional stress, thermic stress, engaging in a hard task, being tired, listening to music, consuming food, drugs, or alcohol (e.g., Acharya, Joseph, Kannathal, Lim, & Suri, 2006; Grings & Dawson, 1987). Furthermore, experiencing specific emotions and emotion-inductions procedures can impact both GSR and HR

(for overview see Kreibig, 2010), such as being confronted with an emotional story could elicit changes in both GSR and HR (Eisenberg et al., 1988).

Clearly bodily changes in the peripheral nervous system can be triggered by several stimuli, however in our study we rely on two movies previously shown to alter bodily responses (e.g., Barraza et al., 2015; Barraza & Zak, 2009; Bracken et al., 2014; Zahedzadeh, Barraza, & Zak, 2015). In the following section we discuss the movie stimuli we will use and discuss results from studies that previously used these movies.

3. MOVIE STIMILI

To test the effect of bodily changes on service evaluations two movie stimuli (experimental and control movie) will be used. The experimental movie has been shown to affect GSR and HR (Barraza et al., 2015; Barraza & Zak, 2009; Bracken et al., 2014; Zahedzadeh et al., 2015). Further, the experimental movie elicits empathic concern (Barraza & Zak, 2009). In the experimental movie, a dad talks about his feelings with his young son who has brain cancer and who will die soon (experimental movie; Barraza et al., 2015; Barraza & Zak, 2009; Bracken et al., 2014; Zahedzadeh et al., 2015). The control movie featured the same characters. However, the dad describes a day at the zoo with his son (Barraza & Zak, 2009). Research shows that the experimental movie could elicit different bodily changes. In the studies of Barraza et al. (2015), Bracken et al. (2014), and Zahedzadeh et al. (2015) participants watched only the experimental movie. These papers show that GSR while watching the experimental movie was always elevated compared to baseline GSR measures. However, it did decline while the movie was proceeding. Furthermore, Barraza et al. (2015) and Bracken et al. (2014) also found that averaged HR (across the whole movie) was higher during the movie compared to baseline. Important to note, HR decreased during the movie in both studies. Although the previous studies showed that the experimental movie increased GSR and HR compared to the baseline, these studies did not test whether GSR and HR levels differ between the experimental and control movie. However, drawing from the study of Barraza and Zak (2009), that did use both the control and experimental movie, we can expect that the two movies will elicit different bodily responses. Barraza and Zak (2009) found that oxytocin (a neurotransmitter that is a key driver of empathy, prosocial behavior, and trust) significantly increased after watching the experimental movie, unless the participants also played an ultimatum game after watching the movie. However, in Barraza et al. (2015) they

could not replicate this finding due to unreliable oxytocin results. The movies differ in the empathic concern they elicit (Barraza & Zak 2009), but to be able to set up hypotheses over the specific effects of the bodily changes triggered by watching these movies we first have to establish which specific bodily changes both movies evoke. Before we discuss our hypotheses, we discuss the pretest we conducted to further validate that the experimental and control movie induce bodily changes, as previously found/suggested in the literature (e.g., Barraza & Zak, 2009).

3.1. PRETEST

3.1.1 Method

Participants. Participants ($n = 56$; 21.8 % female; $M_{age} = 20$; range 20-29) watched either the experimental movie or the control movie while we measured their GSR and HR. Participants were randomly assigned to one of the movie conditions. Participants were students following a course at the university at which the research was performed. Participants got a course credit when they participated. All participants came to the laboratory individually.

Design and procedure. When participants entered the lab, they were seated in a comfortable chair, read an instruction letter explaining the study set-up and use of neurophysiological tools, and signed an informed consent file. The cover story of the study was the same in both conditions, we told the participants that we wanted to measure their physiological responses while watching a movie. Then we installed 2 sensors on their left palm to measure GSR and one sensor around their index finger to measure HR. The pretest consisted out of several steps: a) filling out a mood scale, b) baseline measurement of HR and GSR, c) watching the movie while measuring HR and GSR, and d) filling out a survey in which they filled out the previously administered mood scale again and demographics.

First, participants completed a mood scale. Then, according to standard practices (Boshoff, 2012), we measured HR and GSR to establish a baseline for the physiological state for each participant before starting the real experiment. The default HR and GSR are different for each individual (e.g., Jackson et al., 2003), and baseline results can be used to correct experimental responses (Kirk, 2003; Pocock, Assmann, Enos, & Kasten, 2002; Zhang et al., 2014). To measure the baseline, participants relaxed and watched a white cross on a screen for 2 minutes. The first

minute and a half was only to ensure that the participants' GSR and HR returned to their normal resting state because the placement of the sensors can be arousing in itself.

The actual pretest started upon completion of the baseline measurements. The participants watched either the experimental movie or the control movie (both lasted approximately 100 seconds). After participants watched the movie a laboratory assistant stopped the recording of neuropsychological measures and opened the retrospective self-report survey.

Neurophysiological measures. We used two different neurophysiological measures, GSR and HR, both measured using Biopac Hardware (MT150) and software (Acqknowledge). Changes in GSR were measured by means of two Ag/AgCl electrodes placed on the palm (Van Dooren, de Vries, & Janssen, 2012). These changes are used to measure stress reactions and indicate emotional arousal (Dawson et al., 2000).

Secondly, we measured HR by means of a photoplethysmogram (PPG) sensor placed on the index finger. PPG measures blood penetration into small veins. Because the pumps blood through the whole body, blood penetration, and thus heart beats, can be measured at a finger (Elgendi, 2012). Each heart beat appears as a peak in the PPG data. From this incoming PPG signal, heart beats per minute were immediately derived by means of a virtual channel in the acknowledge software. The data was cleaned with the software 'Matlab'. After visual inspection of the tachogram, we decided to correct for movement artifacts by interpolation (or replacing) HR values under 60 and above 140 by the last HR value above 60 or below 140 (Berntson et al., 1997; Biopac; Dunn, Evans, Makarova, White, & Clark, 2012).

Self-report measures. Mood was measured twice, both before and after watching the movie. We measured mood before they watched the movie (mood_{before}) to be able to control for the mood state the participants were in when starting the experiment. We also measured mood state after watching the movie (mood_{after}) to check if the experimental video was considered negative and the control movie positive as intended. Mood was measured with the Dutch version of the Brief Mood Introspection Scale (Mayer & Gaschke, 1988). Participants rated 16 mood adjectives, half of which represented a pleasant mood (e.g., "happy," "lively") and half represented an unpleasant mood (e.g., "nervous," "sad"). Participants indicated how well each adjective described their present mood. To score mood, unpleasant adjectives scores were reversed and summed with the pleasant mood scores (see Appendix B for full list of items). The Cronbach's alphas were

satisfactory ($mood_{before} \alpha=.78$ and $mood_{after} \alpha=.84$). Furthermore, we asked participants by means of 1 item how they felt during the movie (“How did you feel during the movie”) on a 7-point Likert scale (1= very negative, 7= very positive).

3.1.2 Results

Neurophysiological results. We first divided the movies in 5 timeframes. We averaged HR and GSR values over 5 ‘episodes of about 20 seconds (part 1 –part 5) each instead of averaging over the whole movie because previous research showed that GSR and HR decreased as the movie proceeds. Next, we calculated change scores between baseline and movie bodily responses (calculated as movie bodily response – baseline bodily response; ΔGSR ; ΔHR).

We conducted several 2x5 mixed model analyses (with repeated covariance type= AR(1)) to explore the effect of movie (between subjects) and part of movie (within subject) on ΔGSR and ΔHR . The mixed model analysis for GSR showed that only part of the movie had a significant effect on GSR ($F(4, 216.02) = 4.042, p < .05$), thus GSR is not different between the two movies (see Figure 1). Complementary, several one-way ANOVAs confirmed that none of the phases was significantly different between experimental and the control movie (see Table 1). Further when we compare overall GSR during the movies with baseline GSR values we find a significant effect (B_{gsr} vs film $t(55) = -.5.78, p < .05$). So, watching a movie (either the experimental or the control) enhances GSR.

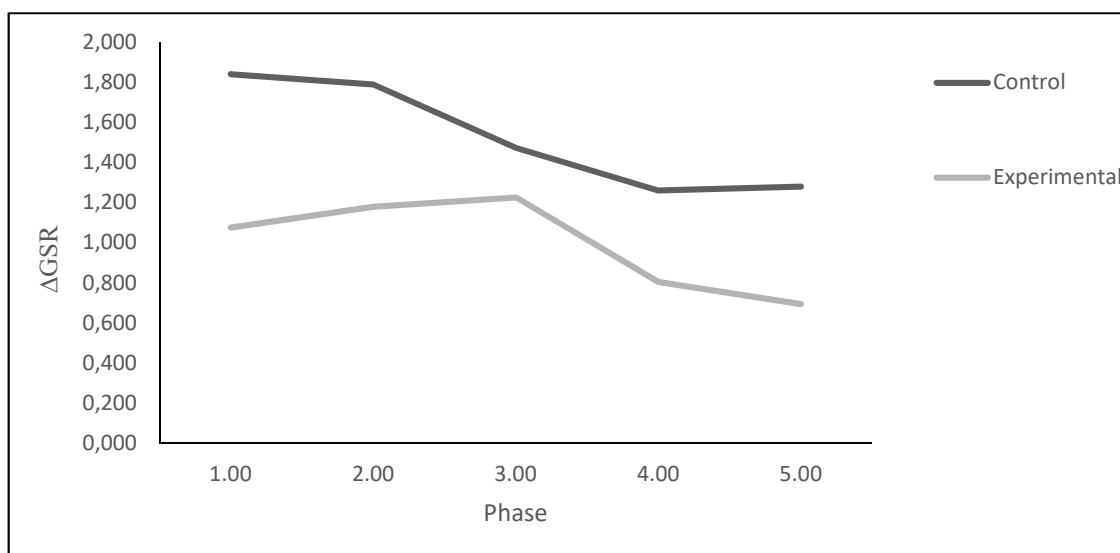


Figure 1. Estimated means for ΔGSR across the movies: pretest

Table 1.

Differences on $\Delta\text{GSR}/\Delta\text{HR}$ between control and experimental movie

	$\Delta\text{GSR}_{\text{Control}}$ VS $\Delta\text{GSR}_{\text{experimental}}$	$\Delta\text{HR}_{\text{Control}}$ VS $\Delta\text{HR}_{\text{experimental}}$
Phase 1	$F(1, 54) = 1.07, p > .05$	$F(1, 54) = 7.46, p < .05$
Phase 2	$F(1, 54) = .60, p > .05$	$F(1, 54) = 5.15, p < .05$
Phase 3	$F(1, 54) = .10, p > .05$	$F(1, 54) = 4.76, p < .05$
Phase 4	$F(1, 54) = .37, p > .05$	$F(1, 54) = 7.58, p < .05$
Phase 5	$F(1, 54) = .63, p > .05$	$F(1, 54) = 8.62, p < .05$

The mixed model analysis for HR showed that only movie type had a significant effect on ΔHR ($F(1, 63.88) = 10.48, p < .05$; see Figure 2). HR decreased compared to baseline during the experimental movie ($M = -2.31$), whereas HR increased during the control movie ($M = 2.43$). Indeed, several one-way ANOVAs confirmed that during all phases HR was different for the control movie versus the experimental movie (see Table 1).

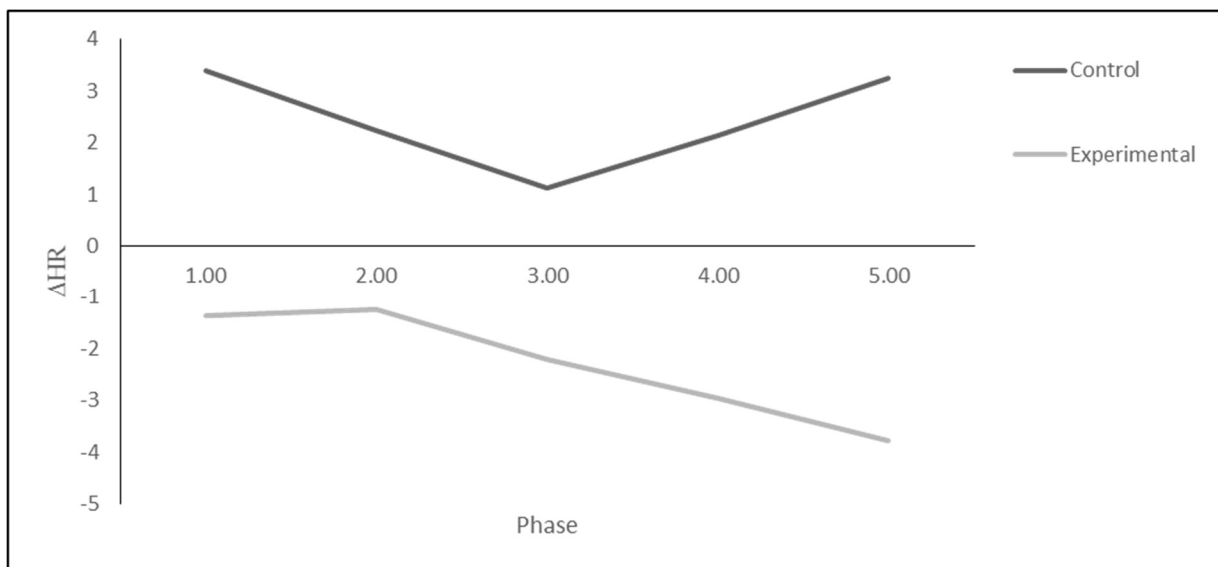


Figure 2. Estimated means for ΔHR across the movies: pretest

Supplementary, we conducted an ANCOVA with baseline HR as covariate. The results showed that the average during the experimental movie ($M = 84$) was lower compared to during the control movie ($M = 87.91$; $F(1, 53) = 6.85, p < .05$). An ANCOVA with baseline GSR as covariate did not show a significant difference between the two movies on GSR ($F(1, 53) = .001, p > .05$).

Results self-report measures. An ANCOVA showed that movie type had marginal significant effect on mood_{after} ($F(1, 53) = 3.51, p < .10$) with mood_{before} as a covariate. After watching the control movie participants had a more positive mood compared to after watching the experimental movie (estimated $M_{\text{control}} = 80.54$, estimated $M_{\text{exp}} = 76.43$; $M_{\text{control}} = 81, SD = 10.99, M_{\text{exp}} = 75.94$; $SD = 10.19, M_{\text{total}} = 78.48, SD = 10.80$). Furthermore, when looking at the change from Mood_{before} to mood_{after}, we see that compared to mood_{before} mood improves after watching the control movie ($M = -1.25$), but drops after the experimental movie ($M = 2.5$; $F(1, 54) = 2.69, p = .108$). The participants also reported the general feelings they had during the movie, an ANOVA showed that the feeling during the control movie was much more pleasant than the experimental movie ($M_{\text{control}} = 81, M_{\text{exp}} = 75.96$; $F(1, 54) = 11.46, p < .05$). Mood_{before} had no impact on feeling during the movie thus was not included as a covariate.

In sum, the impact on HR is different for both movies, the experimental movie decreases HR whereas the control movie increases HR. Further the movies also impact self-reported mood differently, the experimental movie has a negative impact on self-reported mood whereas the control movie a positive impact. The results are not completely in line what was expected from previous research. Barraza et al. (2015) and Bracken et al. (2014) found a higher average HR during the experimental movie compared to baseline, however throughout the whole experimental movie HR did decrease. We found a lower average HR during the experimental movie compared to baseline, but we also found that HR is decreasing throughout the whole movie (cfr. Barraza et al., 2015). In fact, a decrease of HR during the experimental movie is a logical finding due to several reasons. Indeed, our results confirm previous work showing that feelings of empathic concern (which is classified as a positive emotion; Condon & Feldman Barrett, 2013) is associated with HR deceleration (Eisenberg et al., 1988). Furthermore, previous research shows that decreased HR occurs while people are presented with stimuli that elicit unpleasant feelings (e.g., Winton et al., 1984, Lang et al., 1993; Somsen et al., 1983). Also confirming previous research, we found that the experimental movie increased GSR compared to the baseline. We did however find no difference in GSR between the experimental and control movie. Although these results are not fully in line with previous research on these movies, we do argue we can use the movies in further studies. The aim of the pretest was to confirm whether these movies could elicit different bodily changes, which they do: HR is lower when watching the experimental movie compared to the control movie.

4. HYPOTHESES

This article investigates the effect of pre-consumption bodily changes on services encounters for both positive and negative service encounters. To get a broad view on the influence of pre-consumption bodily changes and because valence of a service encounter also fluctuates in real settings (Bitner, Booms, & Tetreault, 1990), we investigate several encounters ranging in valence from positive to very negative (see overview Table 2). To evaluate service performance outcomes, we focus on overall satisfaction, return intentions, WOM valence, complaint intentions, and different types of complaint behavior.

In our studies, we focus on inducing bodily changes by means of an experimental video that has been shown to elicit a decrease in heart rate related to empathic concern (see pretest under the method section; Barraza & Zak, 2009). To hypothesize the specific effect of these movies on service evaluations, we consider the results of our pretest and what previous studies concluded on this experimental movie. Our pretest shows that the experimental (vs control) video decreases HR while GSR levels triggered by the experimental and control movie are similar. Previous research has shown that reactions of the peripheral nervous system like HR helps creating emotional experiences (Barrett & Lindquist, 2008; Blascovich & Mendes, 2010; Critchley & Nagai, 2012; Niedenthal, 2007) and decreased HR is linked to parasympathetic activity (Grings & Dawson, 1978; Noback et al., 2015). Previous research suggests that decreased HR is associated with feelings of empathic concern (Eisenberg et al., 1988). For instance, children that showed a HR deceleration after seeing an empathy evoking movie were more willing to help others or donate something (Eisenberg et al., 1989). Previous research on the experimental movie that we use, also suggest that the experimental movie is associated with the emotional experience of empathic concern (Barraza & Zak, 2009). The experimental movie, showing the sick kid, triggers empathic concern while the control movie does not express any concern about the boy, neither talks about the health state of the son (Barraza & Zak, 2009). To back up their suggestion that the experimental movie triggers empathic concern, Barraza and Zak (2009) found that oxytocin (a neurotransmitter that is a key driver of empathy, prosocial behavior, and trust) significantly increased after watching the experimental movie, unless the participants also played an ultimatum game after watching the movie.

In sum, previous research shows that decreases HR is associated with a feeling of empathetic concern. Hence, we expect that consumers will transfer these feelings of empathic concern toward the service encounter and use a more *positive prism* to evaluate service encounters. Indeed, customer empathic concern can exert an influence on their perspective-taking, feelings of compassion, and evaluations of the service encounter (Berry, Seiders, & Grewal 2002; Wieseke, Geigenmüller, & Kraus, 2012). We expect that the bodily changes (decreased HR) and the related empathic concern affect service performance outcomes. We make a distinction between positive and negative service encounter. We expect, if a service encounter is perceived as a threat or seems hostile, such as in a negative or very negative service encounter (Schneider & Bowen, 1999), empathic concern can backfire, thus the positive prism will not be able to neutralize the negative feelings triggered by the (very) negative scenario and negative effects will surface on service performance outcomes (Batson et al., 1997; Konrath & Grynberg, 2013; Voraue & Sasaki, 2009). We argue that, after watching a movie that decreases HR and hence increases feelings of empathic concern, experiencing a moderately negative service encounter can still help to create a better service evaluation. Indeed, when customers are feeling empathy during a service encounter they are more likely to forgive encountered mistakes and reframe unfavorable experiences into something more positive, which can help to mitigate certain mild negative effects of customer dissatisfaction (Thompson et al., 2005; Wieseke et al., 2012). Thus, we hypothesize the following:

Hypothesis 1a inducing bodily changes (decreased HR) related to empathic concern has a positive effect on customers' service performance evaluations (i.e., satisfaction, return intentions, and WOM valence) after experiencing a positive service encounter.

Hypothesis 1b inducing bodily changes (decreased HR) related to empathic concern has a negative effect on customers' service performance evaluations (i.e., satisfaction, return intentions, WOM valence, and complaint intentions) after experiencing a (*very*) *negative* service encounter.

Hypothesis 1c: inducing bodily changes (decreased HR) related to and empathic concern has a positive effect on customers' service performance evaluations (i.e., satisfaction, return intentions, WOM valence, and complaint intentions) after experiencing a *moderately negative* service encounter.

Furthermore, we expect that type of complaint behavior after experiencing a moderately or very negative service encounter may be altered by pre-consumption bodily changes and that these effects depend on the valence of the service encounter (e.g., positive, negative). Before formulating our hypotheses on complaint behavior, we briefly discuss the types of complaint behavior that are important in the context of service failure. Complaining after an unsatisfying service encounter is a way of coping with what has happened (Folkman & Lazarus, 1988; Mattila & Wirtz, 2004). Two types of coping (i.e., complaining behaviors) are relevant for evaluating coping behavior after a failed service encounter: support-seeking coping and confrontative coping (Gelbrich, 2010; Grégoire & Fisher, 2008). Confrontative coping (also called “retaliatory behavior”; see Grégoire & Fisher, 2008) refers to a situation in which a consumer verbally attacks the service provider (Folkman, Lazarus, Dunkel-Schetter, DeLongis, & Gruen, 1986; Gelbrich, 2010) to try to make the provider change policy or reverse a given course of action and/or to vent negative emotions (Yi & Baumgartner, 2004). Prior research has shown that anger during or after service encounters fosters confrontative coping (Gelbrich, 2010). Support-seeking coping occurs when people, during stressful situations, not only rely on their own resources but also try to rely on those in their social environment. Gelbrich (2010) argues that frustration (rather than anger) during a service experience elicits support-seeking coping behavior. In general, it is accepted that negative emotions that lack an external attribution stimulate support-seeking behaviors (Gelbrich, 2010; Grégoire & Fisher, 2008; Yi & Baumgartner, 2004).

We reason that when experiencing a moderately negative service encounter, the bodily changes related to empathetic concern induced by the experimental video will prevent consumers from becoming angry, because of the positive-prism effect (e.g., by stimulating empathic feelings toward the employee and not wanting to do harm), which in turn leads to support-seeking complaining. Instead, when experiencing a very negative service encounter, the positive prism disappears, and we expect customers to use a more aggressive style (De Dreu et al., 2010; Konrath, & Grynberg, 2013; Voraue & Sasaki, 2009) and thus engage in more confrontative complaining behaviors. In sum, we expect that service valence moderates the effect of bodily changes (decreased HR) related to positive feelings and empathic concern induced on complaint behavior. Formally, we hypothesize the following:

Hypothesis 2a: inducing bodily changes (decreased HR) related to empathic concern leads to more support-seeking coping after a *moderately negative* service encounter.

Hypothesis 2b: inducing bodily changes (decreased HR) related to empathic concern leads to more confrontative coping after a *very negative* service encounter.

Table 2.

Overview of Hypotheses

Valence of Scenario	Study	Hypothesis	Effect of exp. movie
Positive	Study 1	H1a	++
Moderately negative	Study 2-3	H1c-2b	+
Negative	Study 1	H1b	-
Very negative	Study 2-3	H1b and H2c	--

5. STUDIES

In three scenario-based experiments (see Gelbrich, Gräthke, & Grégoire, 2015; Van Vaerenbergh, Larivière, & Vermeir, 2012), we tested the effect of bodily changes on service encounter evaluations (service satisfaction, return intentions, WOM valence, general complaint intentions) and complaint behaviors. In all three studies participants watch the control or experimental video before starting reading service scenarios. Study 1 tests the effect on service encounter evaluations and complaint intentions, after both a *positive and a negative service encounter*. Study 2 focuses on service evaluations and general complaint intentions in *negative service encounters* and distinguishes between a moderately negative and a very negative service encounter. Study 3 examines the influence of bodily changes on different types of complaint behavior (confrontative coping and support-seeking coping) after a moderately negative and very negative encounter.

5.1. STUDY 1

5.1.1. Method

Participants. In total 55 participants (30.9% men; $M_{\text{age}} = 22$ years, range 19–30 years), mostly university student, were recruited from a university research panel and invited to the research lab. They participated in 50-minute lab sessions containing multiple unrelated studies, of which our study was one; they received €8 in compensation.

Design & procedure. Study 1 used a scenario-based mixed design. The participants were randomly assigned to the two conditions (experimental video vs control video). Participants first rated their current mood. We assessed mood before the scenarios were presented because mood has the potential to influence service evaluations (Liljander & Mattsson, 2002). Second, participants watched a video in English either about a very ill child that will die soon (experimental condition, $n = 29$) or about the same child at the zoo (control condition, $n = 25$). All participants were proficient in English in order to fully understand the video used, the rest of the study was in Dutch. In both videos, the father is talking about his son, and the viewer sees the son in either a hospital or a zoo (see pretest). Then, participants were asked to read two restaurant service scenarios and to imagine themselves as the customer in the scenario. All participants read two scenarios in random order, a positive scenario with four positive incidents (e.g., friendly waiter, fast service) and no failure and a negative scenario with three failures (e.g., unfriendly waiter, long waiting time) and no positive incidents (see Appendix A for scenario). After reading each scenario, participants rated the restaurant service performance outcomes (e.g., service satisfaction); they rated complaint intentions only after reading the negative scenario.

Measures. All measures (for items, see Appendix B; for Cronbach's alpha values, see Table 3) used 7-point Likert scales (e.g., 1 = "I do not agree at all/very unlikely," and 7 = "I totally agree/very likely"). We measured mood with the Dutch version of the Brief Mood Introspection Scale (Mayer & Gaschke, 1988). Participants rated 16 mood adjectives, half of which represented a pleasant mood (e.g., "happy," "lively") and half represented an unpleasant mood (e.g., "nervous," "sad"). Participants indicated how well each adjective described their present mood. To score mood, unpleasant adjectives scores were reversed and summed with the pleasant mood

scores. Most items were adopted from prior research and translated into Dutch. We measured service satisfaction using two items from Maxham (2001) and one self-constructed item. To measure return intentions, we used four items (adapted from Maxham, 2001). We measured WOM positive valence (WOM_{pos}) and WOM negative valence (WOM_{neg}) using one item each (Bougie Pieters, & Zeelenberg, 2003; Harrison-Walker, 2001; Lang, 2009). We used two items adopted from Singh (1990) and Kim, Kim, Im, & Shin (2003) and one self-constructed item to measure general complaint intentions. After watching the video, participants filled out several questions in all the studies to ensure that they watched the movie attentively (examples include: “Where did the child go to?” and “Which language was used in the video?”). For study 1, we deleted 1 participant from further analysis who answered the control question incorrectly.

Table 3.

Cronbach’s Alphas: Studies 1–3

	Study 1		Study 2	Study 3
	PS	NS		
Satisfaction	.96	.84	.93	
Mood	.83	.83	.80	
Return intentions	.90	.92	.95	
Complaint intentions	—	.70	.79	

Types of Complaint Intentions

Support-seeking coping	.84
Confrontative coping	.85

Note. PS = positive scenario, NS = negative scenario.

5.1.2. Pretest scenarios

We designed scenarios as experimental manipulations to generate variance in valence of received service quality because valence also fluctuates in real settings (Bitner et al., 1990). All scenarios (see Appendix A) were pretested and completed by our online consumer panel, which consisted mainly of students, employees, and alumni of a Belgian university. All participants

could voluntarily enter a raffle to win several gift vouchers. Participants rated one realism item (“This scenario was realistic”) and one pertaining to scenario valence (“When I would end up in this situation, I would rate this service as...”) on 7-point Likert scales (1 = “totally not agree/very negative,” and 7= “totally agree/very positive”). We ensured that the valence (i.e., very negative vs. moderately negative) of all scenarios used in the studies differed significantly from each other and that realism was sufficient. For Study 1, the valence of the positive ($M = 6.25, n = 28$) and negative ($M = 2.86, n = 28$) scenarios significantly differed sufficiently in the desired direction (with $t(27) = 11.78, p < .05$). Realism did not differ significantly (with $t(27) = -.81, p > .05$) between the positive ($M = 5.18$) and the negative ($M = 4.86$) scenarios.

5.1.3. Results

We conducted a series of 2 (control vs. experimental, between subjects) \times 2 (service valence: positive vs. negative, within subjects) generalized mixed linear model analyses, one for each dependent variable (service satisfaction, return intention, and WOM) to investigate Hypothesis 1a and 1b. We found a significant main effect of service valence on WOM_{pos} ($F(1, 104) = 158.06, p < .01$), WOM_{neg} ($F(1, 104) = 164.88, p < .01$), satisfaction ($F(1, 104) = 259.84, p < .01$), and return intentions ($F(1, 104) = 201.99, p < .01$). Scenario valence significantly affected all dependent variables ($p < .05$) in the desired direction. Consequently, all means for satisfaction, return intention, and WOM_{pos} were higher after participants read the positive scenario than the negative scenario; WOM_{neg} was higher after they read the negative scenario (for means, see Table 4). We also found significant main effects of movie type on satisfaction ($F(1, 104) = 11.03, p < .05$), return intentions ($F(1, 104) = 3.87, p < .05$), and WOM_{pos} ($F(1, 104) = 4.137, p < .05$). Furthermore, we found no significant effect of movie type ($p < .10$) on WOM_{neg} in neither the positive nor the negative scenario. The results show a marginally significant interaction (see Figure 3) between movie type and service valence on service satisfaction ($F(1, 104) = 2.89, p < .10$), but not on return intentions ($F(1, 104) = 1.30, p > .10$), WOM_{pos} ($F(1, 104) = 2.53, p > .10$), or WOM_{neg} ($F(1, 104) = .35, p > .10$). Contrast tests revealed that the experimental movie positively affects service satisfaction ($t(52) = 3.37, p < .05$), return intentions ($t(52) = 1.99, p = .05$), and WOM_{pos} ($t(52) = 2.06, p < .05$) when participants imagined a positive service encounter but not when they imagined a negative service encounter ($t_{sat}(52) = 1.22, p > .05$; $t_{ri}(52) = .67, p > .05$; $t_{WOM_{pos}}(52) = .76, p > .05$). We repeated the same analyses while controlling for mood, but

this did not change the results. In addition, an analysis of variance (ANOVA) on complaint intentions showed no significant effect of movie type on complaint intentions ($p > .05$) after participants read the negative scenario.

Table 4.

Estimated Means: Study 1

	Positive Scenario		Negative Scenario	
	Experimental	Control	Experimental	Control
Satisfaction	6.28	5.33	2.93	2.63
Return intentions	5.41	4.81	2.43	2.27
WOM positive	5.16	4.56	2.50	2.30
WOM negative	1.78	2.22	4.53	4.46
General complaint intentions	—	—	2.86	2.88

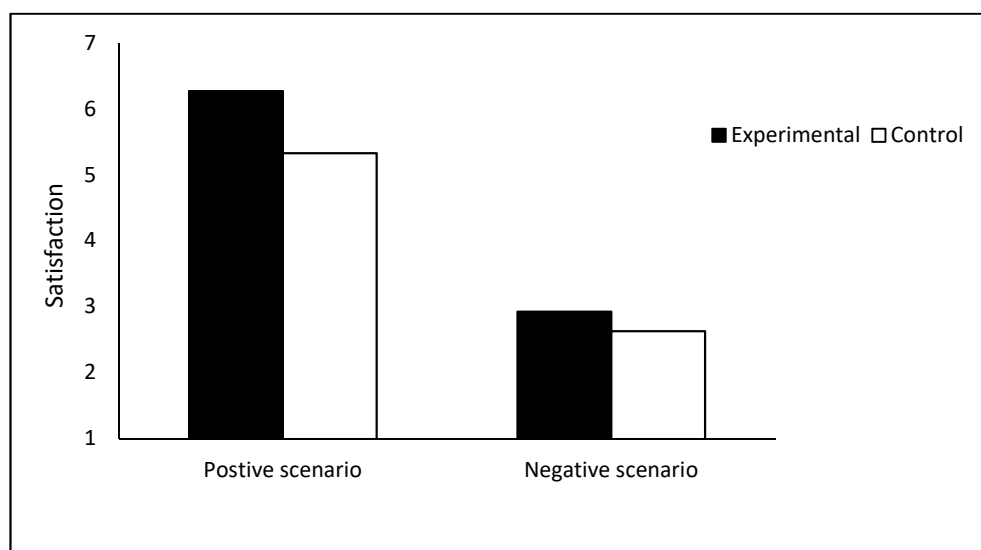


Figure 3. Interaction Effect: Study 1

5.1.4. Discussion

We demonstrate that the experimental movie lead to higher service satisfaction, return intentions, and positive WOM after a positive service encounter. However, we did not find a significant effect of watching the experimental movie on negative WOM. Since the movie pretest showed that the different bodily changes are triggered by the two movies we find partial support

for Hypothesis 1a stating that watching a movie that induces bodily changes affects customers' service performance evaluations.

Furthermore, we observed no significant differences of watching the two movies after a negative service encounter on complaint intentions, thus disconfirming Hypothesis 1b. The negative scenario was possibly not negative or threatening enough for the positive prism to disappear completely, but at the same time, too negative to benefit from the positive-prism effect that the bodily changes after the experimental video can induce. To follow up on these results, we set up study two in which we compare effects of bodily changes on customer outcomes for a moderately and very negative service encounter.

5.2. STUDY 2

Study 2 aims to further clarify the role of bodily changes on service evaluations and complaint intentions in the context of service failures by including a very negative (many service failures) and a moderately negative (a few service failures) service encounter.

5.2.1. Method

Participants. In total 117 participants (50.5% men; Mage = 21 years, range 18–45 years) were recruited by the same procedure as in study 1.

Design & procedure. The design of Study 2 was identical to Study 1, except participants evaluated only one scenario. The participants either read the very negative ($n_{exp} = 25$; $n_{control} = 31$) or the moderately negative ($n_{exp} = 24$; $n_{control} = 31$) service encounter. The setting of the scenarios was a mobile phone shop (see Appendix A). In the very negative scenario, six service failures were described (e.g., long waiting, unfriendly); in the moderately negative scenario, three failures were described (e.g., waiting, not helpful); there were no positive incidents in either scenario.

Measures. The measures used are identical to Study 1 (for items, see Appendix B; for Cronbach's alpha values, see Table 3). We deleted 5 participants who answered the control questions incorrectly and 1 outlier from further analysis.

Pretest scenarios. The procedure used to conduct this pretest is identical to Study 1. The valence between the very negative ($M = 1.59$, $n = 29$) and the moderately negative ($M = 3.53$, $n = 19$) scenarios differed significantly in the desired direction (with $t(46) = 7.25$, $p < .05$). Realism

was sufficient for both scenarios and did not differ significantly between scenarios ($M_{\text{very neg}} = 4.79$, $M_{\text{moderately neg}} = 4.68$; $t(46) = -.26$, $p > .05$).

5.2.2. Results

We conducted a series of 2 (experimental movie vs control) \times 2 (very negative vs. moderately negative) ANOVAs, one for each dependent variable (service satisfaction, return intentions, WOM, and complaint intentions) to investigate Hypothesis 1b and 1c. We found significant main effects of scenario valence on satisfaction ($F(1, 107) = 180.69$, $p < .01$), return intention ($F(1, 107) = 53.65$, $p < .01$), WOM_{pos} ($F(1, 107) = 36.57$, $p < .01$), and WOM_{neg} ($F(1, 107) = 70.42$, $p < .01$) and a marginally significant effect on complaint intention ($F(1, 107) = 3.67$, $p < .10$). When comparing the means from the very negative and the moderately negative scenarios, we find that all means are in line with our expectations (see Table 5). That is, in the moderately negative scenario, satisfaction, return intentions, and WOM_{pos} are higher, while WOM_{neg} and complaint intentions are lower than the means in the very negative condition. We did not find any main effect of movie on return intentions, WOM_{pos} , or complaint intentions ($p < .05$). The results show a marginally significant interaction effect (see Figure 4) between movie type and service valence on both service satisfaction ($F(1, 107) = 2.98$, $p < .10$) and WOM_{neg} ($F(1, 107) = 3.35$, $p < .10$). Contrast tests revealed that satisfaction ($t(107) = 2.037$, $p < .05$) was significantly higher in the experimental condition than in the control condition after participants read the moderately negative scenario. Furthermore, the contrast test for WOM_{neg} ($t(107) = 1.81$, $p < .10$) was marginally significant in the moderately negative scenario, showing that WOM_{neg} was lower after the experimental condition than in the control condition. The results did not change after we controlled for mood.

Table 5.

Estimated Means: Study 2

	Moderately Negative Scenario		Very Negative Scenario	
	Exp.	Control	Exp.	Control
Satisfaction	3.46	3.08	1.45	1.53
Return intentions	3.35	3.10	1.88	1.98
WOM positive	2.88	2.81	1.80	1.77
WOM negative	4.50	4.97	6.36	6.16
General complaint intentions	2.82	2.71	2.95	3.04

Note. Exp. = experimental movie

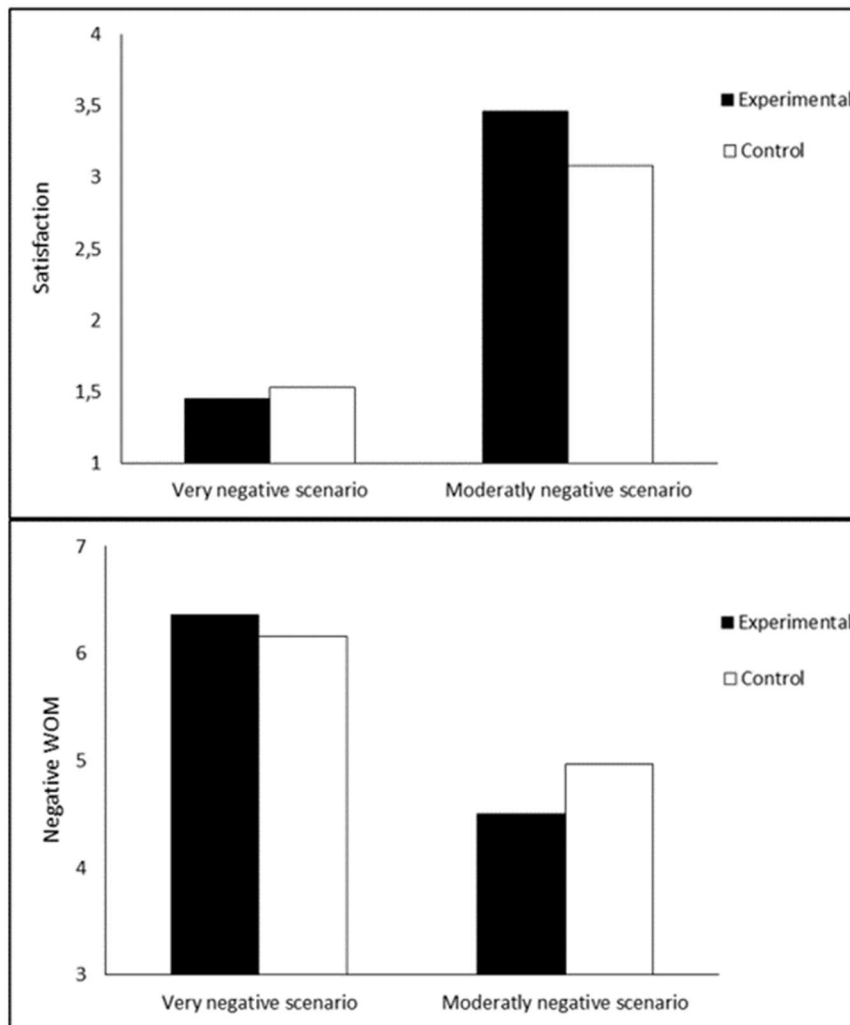


Figure 4. Interaction Effects: Study 2

5.2.3. Discussion

We found that satisfaction is higher and WOM_{neg} lower after watching the experimental video when participants experienced a moderately negative encounter. This partially confirms Hypothesis 1c, showing that bodily changes also play a role in evaluations after a moderately negative service. However, after participants experienced a very negative encounter, (or negative encounter as in Study 1), no significant effect of bodily state surfaced. Thus, Hypothesis 1b is again not confirmed. Furthermore, we found no significant effects on complaint intentions. We measured general complaint intentions in the first two studies, but as put forward in Hypotheses 2a and 2b, it is possible that bodily changes affect specific subtypes of complaining. Therefore, we conducted Study 3 in which we measure specific types of complaining.

5.3. STUDY 3

5.3.1. Method

Participants. Participants were recruited through an online university research panel ($n = 114$; 29.8% men; $M_{age} = 31$ years, range 18–73 years). The participants in this online experiment could take part in a raffle to win a multimedia store coupon.

Design & procedure. Study 3 uses a scenario-based between-subject design to explore the effect of changes on different types of complaining (support-seeking coping and confrontative coping) after a very negative or a moderately negative service failure. The procedure was in line with Studies 1 and 2. First, the participants watch the movie. After watching the movie, the participants read a hotel service scenario (see supplementary material) and were instructed to imagine themselves as the customer in the scenario. They read either a moderately negative scenario ($n_{exp} = 26$, $n_{control} = 32$) with two moderate failures (e.g., waiting a bit, staff cannot answer all questions) or a very negative scenario ($n_{exp} = 28$, $n_{control} = 28$) with five failures (e.g., unhelpful hotel staff, long waiting time). No positive incidents occurred in either scenario. After reading the scenario, participants indicated which (if any) type of complaining they would engage in after receiving this service.

Measures. Study 3 assessed different types of complaint behaviors: confrontative coping, which we assessed by 6 items, and support-seeking coping with 7 items (Gelbrich, 2010; Grégoire & Fisher, 2008). The control questions were identical to Study 1 and 2 (for items, see Appendix B;

for Cronbach's alpha values, see Table 5). We deleted 3 participants who answered control questions incorrectly.

Pretest scenario. The valence between the very negative ($M = 1.59, n = 17$) and the moderately negative ($M = 3.9, n = 20$) scenarios differed significantly in the desired direction (with $t(35) = -5.87, p < .05$). Realism was again sufficient for both scenarios ($M_{\text{very neg}} = 4.82, M_{\text{moderately neg}} = 5.2$) and did not differ significantly (with $t(35) = -.94, p > .05$).

5.3.2. Results

We conducted two 2 (experimental video vs control) \times 2 (very negative vs. moderately negative) ANOVAs to investigate the effect of bodily changes on different types of complaining as formulated in Hypothesis 2a and 2b. The first ANOVA explored the effect of bodily changes on support-seeking coping behavior. We found a main effect of scenario valence on support-seeking coping ($F(1, 110) = 7.41, p < .01$) but no main effect of movie type ($p > .05$). Support-seeking coping was higher after participants experienced a moderately negative service encounter (for means, see Table 6). We found a significant interaction effect of movie type and scenario valence on support-seeking coping ($F(1, 110) = 5.57, p < .05$). In the moderately negative scenario, support-seeking coping was higher in the experimental condition and lower in the control condition, while the opposite occurred after a very negative service encounter (see Figure 5), thus confirming Hypothesis 2a. The second ANOVA explored the effects of movie type on confrontative coping behavior. We found only a significant main effect for scenario valence ($F(1, 110) = 37.65, p < .01$). Neither the main effect of movie type nor the interaction between bodily changes and scenario valence reached significance. In other words, confrontative coping is higher after a very negative service, but bodily changes does not affect this (for means, see Table 6), thus disconfirming Hypothesis 2b. Controlling for mood did not change the results.

Table 6.

Estimated Means: Study 3

	Moderately Negative Scenario		Very Negative Scenario	
	Exp.	Control	Exp.	Control
Support-seeking coping	3.22	2.47	3.30	3.59
Vindictive coping	2.19	1.75	3.11	3.04

Note. Exp. = experimental movie

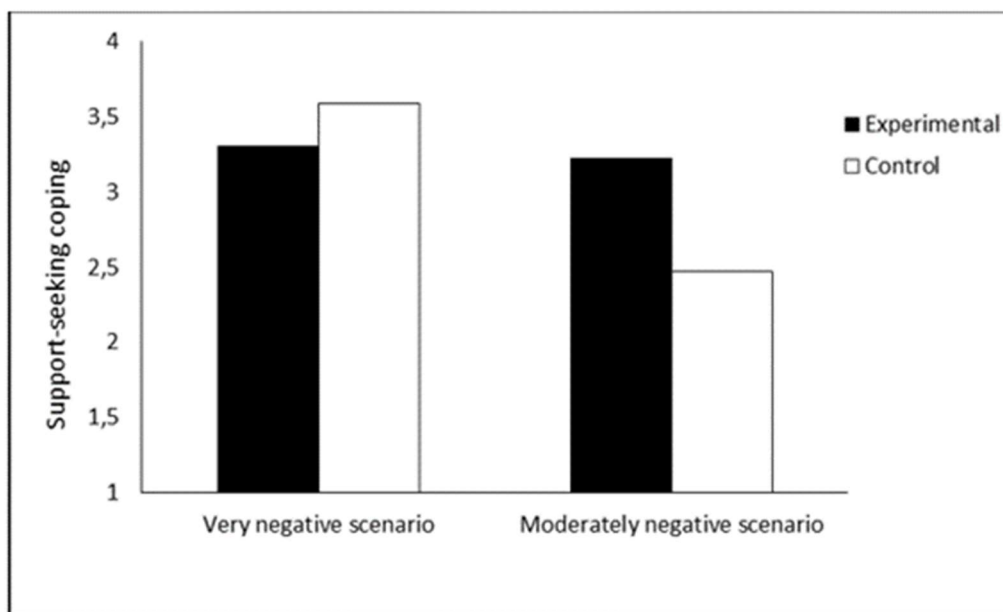


Figure 5. Interaction Effect: Study 3

5.3.3. Discussion

We found that support-seeking coping is higher after the experimental video (vs control video) when experiencing a moderately negative encounter confirming Hypothesis 2a, whereas support-seeking is lower after a very negative scenario. Also, no differences between bodily signals on confrontative complaining were found for the very negative scenario, disconfirming Hypothesis 2b.

6. GENERAL DISCUSSION

This article represents a series of studies on the effects of bodily changes on service performance evaluations and complaint behavior. We provide preliminary evidence that bodily changes play a role during service encounters. A key finding, as predicted in Hypothesis 1a, is that bodily changes (decreased HR) related to feeling empathic concern increases overall satisfaction, return intentions, and WOM_{pos} after a positive service encounter. We observed no significant differences after participants experienced a (very) negative service, and as such, we could not confirm Hypothesis 1b. In other words, we could not establish that decreased HR related to increased empathic concern has a positive or negative impact on service evaluations after a (very) negative service. With respect to Hypotheses 1b and 1c, we found that the distinction between a very negative and a moderately negative service encounter is important because after participants experienced a very negative service encounter, bodily changes linked to empathic concern did not harm, nor did they help overcome negative feelings associated with the service failure. However, after experiencing a moderately negative service, satisfaction was higher and WOM_{neg} was lower after watching the experimental movie, partially confirming Hypothesis 1c. These results suggest that stimulating bodily changes linked to empathic concern in customers can be valuable most of the time because positive effects occur in case of positive and moderately negative service encounters and no negative effects surfaced after a (very) negative service encounter. In other words, inducing bodily changes linked to empathic concern will not turn an extreme service failure into a more negative experience. The results provide full support for Hypothesis 2a: support-seeking coping was higher after participants experienced a moderately negative service when bodily changes linked to empathic concern were induced.

6.1. MANAGERIAL & THEORETICAL CONTRIBUTIONS

This study contributes to both service practice and the literature in several ways. The main conclusion of this research for managers is that they should take notice of the possible the impact of customers' bodily changes. Especially, since companies are always on the lookout for ways to improve their service and servicescapes. We show that one way to do so, may be to stimulate certain bodily states in their consumers. It could be influential tool, especially because bodily changes can be manipulated by a wide array of external stimuli, such as sensory or emotional

stimuli (e.g., music, scents, movies) or employee behaviors (e.g., touch, eye contact)(e.g., Barraza & Zak, 2009; Eisenberg et al., 1988; Grings & Dawson, 1987; Kreibig, 2010; Zimny & Weidenfeller, 1963). Especially, exposing customers to certain emotional content can be easily done in many on- and offline service experiences. However, more research is necessary in this vein. In addition, customers' bodily states can influence important antecedents of long-lasting relationships, such as increased satisfaction, as shown in our studies. Thus, we suggest that service providers should attempt to stimulate optimal bodily states in customers to maximize their chances of building long-term relationships with them. Generally, we caution that when designing service delivery processes and advertising, firms should keep the effects of bodily changes in mind.

Furthermore, service providers should create awareness among their frontline staff about the importance of bodily states or biological processes in customers and in themselves. Service providers could offer training on how to read bodily states in customers and in themselves. For example, employees could be trained to read customers bodily changes (e.g., physiological arousal, facial expression) and learn how to react toward certain bodily changes in an appropriate way. Another important takeaway from this research is that stimulating bodily changes related empathic concern has either a positive effect or no effect depending on the valence of the service, thus bodily changes linked to empathic concern can be safely induced in a service environment. This is partly in contrast with previous literature that suggested that empathic concern can also backfire in very negative situations (Batson et al., 1997; Konrath & Grynberg, 2013; Voraue, & Sasaki, 2009).

In examining the effects pre-consumption bodily changes on services encounters, this article makes several unique contributions to the service literature. This research opens a new avenue of inquiry that allows for a novel and deeper comprehension of customer behavior in service encounters. Furthermore, we used empirical results to help deepen our understanding of the underlying mechanisms that enhance the service experience. This need for empirical validation was proposed by Ostrom et al. (2015) as one of the key research priorities in service research.

Furthermore, a growing group of scholars have realized that understanding bodily states in customers better is valuable for understanding customers (Plassmann et al., 2015). Therefore, studying the effects pre-consumption bodily changes is valuable for the service domain. Nevertheless, research regarding physiology still needs to address several obstacles (e.g., measurement, interactions between physiological changes), and it remains unclear how different

physiological changes work in different people and across different contexts. Similarly, investigating bodily changes in relation to a service encounter is complex. This research does not aim to tackle all these complexities, but it does serve as initial empirical evidence that pre-consumption bodily changes play a role in service encounters evaluations. Essentially, this research offers a new perspective that, in combination with what is known about psychological processes, can help explain many service outcomes (e.g., loyalty, satisfaction).

Lastly, we show that watching a negative video clip does not necessarily lead to for instance negative appraisals of a situation, this result diverges from previous literature that often reports affective congruence effects after mood-induction procedures (e.g., Becker & Leininger, 2011; Tamir & Robinson, 2007). A possible explanation is that people in our studies tried to get rid of negative feelings after the movie and focused their attention on more positive things (e.g., Schwager & Rothermund, 2013).

6.2. LIMITATIONS AND FUTURE STUDIES

As the first attempt to study pre-consumption bodily changes in the context of the service domain, our study has several limitations and provides ample opportunities for further research. We addressed several different outcome variables (e.g., satisfaction) in an attempt to explore the effects of pre-consumption bodily changes; consequently, we did not consider contextual factors (e.g., type of service) and individual factors (e.g., interoception- awareness which refers to the sensing of internal bodily changes; dispositional empathy; personality). A particularly notable extension of our studies would be to include commitment level (preattachment level) to companies or employees. First, if levels of commitment to the service provider are high, customers are more likely to voice complaints (Evanschitzky, Brock, & Blut, 2011). Second, already feeling attached to someone or something moderates oxytocin effects (which is linked to feeling empathic concern) in a positive way (Fürst, Thron, Scheele, Marsh, & Hurlmann, 2015). In addition, including service recovery behaviors when a negative service encounter occurs could be worthwhile. We expect that when an employee tries to resolve a negative situation that has just occurred—for example, by offering a discount (cf. service recovery; Van Vaerenbergh et al., 2012)—different results of decreased HR rate and empathic concern might surface. It would be worthwhile to investigate this in greater depth, as bodily changes can be different or altered by/due to contextual effects and personality.

Furthermore, we focused only GSR and HR, however these are not the only bodily states that are worthwhile to investigate. There are ample of other systems in the body (e.g., neurotransmitters, hormones, brain changes) that could prove useful to investigate in the service context. For instance, changes in serotonin (e.g., impact on mood), dopamine (e.g., impact on reward feelings), cortisol (e.g., impact on stress), vasopressin (e.g., impact on stress), and testosterone (e.g., impact on aggression) (von Bohlen & Halbach, 2006) could be very interesting.

Another fruitful line of research would be using other measures to observe how customers respond during a service encounter. For example, using an electroencephalogram measures (EEG) or measure facial muscle activity (EMG) to obtain a better understanding of valence and activity of emotion during service encounters (e.g., Boshoff, 2012).

This study focused only on decreased HR which is linked to empathic concern, thus we cannot make claims about other bodily changes. We believe that future researchers could benefit from inducing bodily changes linked to other feelings or emotions. For instance, what would happen if fear was induced? Bodily changes linked to different emotions could result in different service performance outcomes. In sum, this research delivers the first empirical evidence that pre-consumption bodily changes (decreased HR) have an impact on how consumers evaluate a service encounter.

7. REFERENCES

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8. APPENDIX

Appendix A. Scenarios Study 1–3.

Study 1

Positive

You and a friend go out for a dinner at “La dolce pizza”. The waiter comes to your table quickly to take orders. You order a rare steak and a glass of wine. The waiter brings you your order fast. Immediately you taste that your steak is cooked perfectly. You finish your meal and ask for the bill. The waiter helps you to put on your coat and then you dive into the city.

Negative

You and a friend go out for a dinner at “La dolce pizza”. You have to wait 10 minutes before the waiter comes by to take orders. You order a rare steak and a glass of wine. After some time the waiter brings you your order. Immediately you taste that your steak is overdone. You finish your meal and ask for the bill. You pay the bill, pull on your coat, and dive into the city.

Study 2

Moderately negative

You have just decided to buy a new mobile phone. You and a friend go to the mobile store “Place2be” to buy one. After looking around, you ask for assistance of a salesperson. The sales person says that you have to wait for a moment. After a few minutes he comes to you. He is trying to advise you on what is the best buy, but he cannot answer all your questions. After you made your choice, you walk to the checkout and pay. Then you walk out of the store.

Very negative

You have just decided to buy a new mobile phone. You and a friend go to the mobile store “Place2be” to buy one. After looking around, you ask for assistance of a salesperson. The sales person says that you have to wait. After ten minutes he comes to you. He barely helps you with questions and he can't give good advice to help you decide. After you made your choice, you walk to the checkout. At the checkout you have to wait again, moreover the staff is unfriendly. As you walk out, you look in the direction of the sales person, but he does not give a single sign of recognition.

Study 3

Moderately negative

You and a friend are on a weekend with one overnight stay. After breakfast you guys go to the lobby to ask information about activities and to pay. In the lobby you guys first look around a bit to see the information about possible day activities. Afterwards you guys ask an employee of the hotel/ someone of the hotel staff for help. The employee says you have to wait a bit. After a few minutes he comes to you. He tries to give you some tips about what you can do in this town, but he cannot answer all your questions very well. After the explanation you go to the reception to pay for your stay. Afterwards, you walk outside.

Very negative

You and a friend are on a weekend with one overnight stay. After breakfast you guys go to the lobby to ask information about activities and to pay. In the lobby you guys first look around a bit to see the information about possible day activities. Afterwards you guys ask an employee of the hotel/someone of the hotel staff for help. The employee says you have to wait a bit. After waiting for a long time the employee comes to you. He barely helps you with your questions and he cannot give any good tips about what you can do in this town. After the explanation you go to the reception to pay for your stay. At the reception you have to wait again. While you are walking outside you watch in the direction, of the hotel staff, but they do not give any sign of recognition.

Appendix B. Scales and items for study 1-2

Mood (Brief mood introspection scale; Mayer & Gaschke, 1988)

Lively	Drowsy ^f
Happy	Grouchy ^f
Sad ^f	Peppy
Tired ^f	Nervous ^f
Caring	Calm
Content	Loving
Gloomy ^f	Fed up ^f
Jittery ^f	Active

Satisfaction (Maxham, 2001)

- I am satisfied with the service of ...
- How satisfied are you with the quality of ... service?^a
- How satisfied are you with this service.

WOM positive (Harrison-Walker, 2001; Lang, 2009)

- I have only good things to say about this service organization.

WOM negative (Bougie, Pieters, & Zeelenberg, 2003; Lang, 2009)

- I would not recommend this service to others.

Return intentions (Maxham, 2001)

- I intend to go to ... for my next restaurant/shop/... visit.
- I will continue going to
- How likely are you to go to ... for your next restaurant/shop/...visit?
- Will you continue to use the service of the company?

Complaint intentions (Kim et al., 2003; Singh, 1989)

- Will you formulate a complaint?^a
- I will complain to the employee or manager right after (or on my next visit to ...) experiencing dissatisfaction.
- I will make the company take proper action right after experiencing the dissatisfaction.

Study 3

Complaint behavior (Gelbrich, 2010; Grégoire & Fisher, 2008)

Support-seeking coping

- I would talk to other people about my negative experience in to order to....
 - ...share my feelings with other.
 - ...get some comfort.
 - ...reduce negative feelings.

...feel better.

I complained to the hotel to...

...find an acceptable solution for both parties.

...work with its representatives to solve the problem.

...constructively discuss the problem.

Confrontative coping

I will spread negative word-of-mouth about the hotel.

I will denigrate the hotel to my friends.

When my friends are looking for a hotel, I will tell them not to go to this hotel.

I will complain to the hotel to...

...be unpleasant with the representative(s) of the company.

...make someone from the organization pay for its poor service.

...give the representative(s) a hard time.

Note. ^R= reversed, ^a=Self-constructed.

**CHAPTER V: Boosting service performance by dark chocolate
seduction**

CHAPTER V: Boosting service performance by dark chocolate seduction

1. INTRODUCTION

As child I always had to hand out chocolates to my parents' customers in their hairdressing salon. I wondered does a small thing like this makes a difference? Both practitioners and academics are constantly looking for ways to improve customers' service satisfaction, increase positive word-of-mouth, and stimulate customers to return to their businesses, especially by interventions that can be easily implemented (Ostrom et al., 2010; Ostrom, Parasuraman, Bowen, Patricio, & Voss, 2015). Something that could be easily implemented, especially in the retail environment, and small or personal businesses (e.g. hairdresser, lawyer's office) is offering customers a piece of chocolate. Think about how small business often serve candy at the counter, a mint with your restaurant bill, or the Marriott hotel that puts little pieces of dark chocolate on customers' pillows.

In the current highly competitive marketplace, where a good quality service has become the standard (e.g., Barwise & Meehan, 2004), small details not related to the core service can have a big impact on the overall customer experience (e.g., Bolton, Gustafsson, McColl-Kennedy, Sirianni, & Tse, 2014; Oliver, 1999; Ostrom et al., 2015). Just offering decent service quality is not enough anymore to delight your customers, since your competition most likely offers that as well. Retailers have come to the same conclusion (Grewal et al., 2009), in order to grow and stay profitable little things make the difference. For instance, sensory stimulating small details seem to have an advantageous influence on customers' holistic service performance evaluations (e.g., service satisfaction; Schmitt, 2003; Bolton et al., 2014). One important reason why small details can have such an effect is through their impact on the emotional experience of customers (Bolton et al., 2014).

In the present paper, we investigate if offering your customers dark chocolate at beginning of a service experience is a small detail that can be used to improve holistic customers' performance outcomes such as satisfaction and return intentions. We focus on the impact of dark chocolate because it can not only stimulate a sensory experience, but mainly because popular press, common beliefs, and academic literature suggest that eating dark chocolate makes people happier or elevates mood (Macht & Dettmer, 2006), and thus could impact the emotional experience during a service. Moreover, offering dark chocolate to elevate mood is something a service provider can

easily do, whereas the service provider has less control on other mood-influencing factors such as physical environment (e.g., weather conditions; Keller et al., 2005), the activities the customers engaged in before (s)he entered the store, and simple daily events (e.g., doing an annoying chore; Poon, 2001). Importantly, also the cost related to offering dark chocolate to customers is rather limited.

Elevating customers' mood can prove important to improve customer outcomes, since when people are in a good mood they tend to make more positive cognitive appraisals (Schwarz, 2010). Service literature shows that customers' mood can have a significant impact during a service experience, on overall firm assessment, and service performance outcomes (Gardner, 1985; Liljander & Mattsson, 2002; Mattila & Enz, 2002), such as satisfaction with an experienced service or return intentions (Barlow & Maul, 2000).

Drawing on the 'small details can make a huge impact'- literature, this study is designed to introduce and test the impact of offering dark chocolate on service performance outcomes (e.g., satisfaction, return intentions, word-of-mouth, complaint intentions), thereby investigating their impact during differently perceived service valence or quality (e.g., very negative, positive) and different types of service contexts (restaurant, shoe shop, cell phone store). We conduct three scenario-based studies (Study 1 and Study 2a-2b), and one field study (Study 3). The first study investigates if dark chocolate improves service performance outcomes (through mood) compared to two other types of food which are also high in sugar, namely grapes (sugary and healthy) and cookies (sugary and vice) after both a negative and positive valenced service scenario. Study 2 focuses on the different impact of dark chocolate versus milk chocolate to investigate if dark chocolate has something unique compared to chocolate in general. Furthermore, it explores the moderating role of service valence in a moderately positive and positive valenced service scenario. Study 2a compares the effect of dark chocolate, milk chocolate, and a control condition where no food is sampled. Study 2b goes a step further by investigating if taste moderates the relation between type of sampled chocolate and mood. Study 3 was conducted to increase external validity and test if the effect of dark chocolate holds in real-life. Study 3 investigates the effect of dark chocolate (compared to milk chocolate and a control condition) in a real shoe shop. In Table 1 you find a summary of the studies, including scenario valence, scenario context, when mood was measured, and type of food sampled in each study.

This paper makes a unique contribution, by testing if changing a small detail in the beginning of a service experience, in this case offering dark chocolate, toward customers is an interesting external stimulus to improve mood and in turn customers' outcomes in different service quality contexts (e.g., negative, very positive) and different service context (shoe shop, restaurant, cell phone store). Furthermore, we contribute to literature on dark chocolate by exploring the impact of dark chocolate compared to other types of food to come closer to an explanation why dark chocolate is special and explore the impact of dark chocolate also outside the (biology) lab.

In what follows, we discuss the properties of dark chocolate and key mood literature. Afterward study design, method, and results are discussed for each study. Lastly, theoretical, methodological, and managerial implications are laid out before discussing limitations and future research ideas.

Table 1.

Overview of experiments

Study	Type of experiment	Scenario context	Scenario valence	Type of food	Mood measure
1	Scenario-based	Restaurant	1 positive 1 negative	Dark chocolate Grapes Cookies	Before tasting After encounter
2a	Scenario-based	Cellphone shop	1 positive 1 moderately positive	Dark chocolate Milk chocolate Nothing	Before tasting After encounter
2b	Scenario-based	Cellphone shop	1 positive 1 moderately positive	Dark chocolate Milk chocolate	Before tasting After encounter
3	Field experiment	Shoe store	-	Dark chocolate Milk chocolate Nothing	Before tasting After encounter

2. DARK CHOCOLATE AS A MOOD-ENHANCER

For centuries it is widely believed in popular press and common beliefs that eating dark chocolate¹ has ample of health benefits and elevates mood (Wilson, 2010; Scholey & Owen, 2013). Also in academic literature we find evidence of the mood-enhancing effect of dark chocolate (Macht & Dettmer, 2006; Scholey & Owen, 2013) and several health benefits. For instance, dark chocolate is seen as a comfort food consumed during depressive moods (Macdiarmid & Hetherington, 1995; Phase et al., 2013) and has positive effects on cardiovascular health (Serafini et al., 2003). More importantly for our research, is the mood-boosting effect of dark chocolate. Scholey and Owen (2013) showed in small meta-analysis that dark chocolate (or its constituents) has the potential to influence mood, and even cognitive function. Five out of eight included studies showed either an improvement in mood state or reduction in negative mood.

For instance, Macht and Dettmer (2006) showed that when woman eat dark chocolate or an apple mood (a food item that is considered as a healthy alternative to sweets for snacking) is elevated, but this effect was bigger for dark chocolate. Further, Macht and Mueller (2007) showed that for both men and woman eating dark chocolate had reduced induced negative mood. Some studies did not find any effect of dark chocolate on positive mood, a possible reason suggested by the literature is that the mood-enhancing effect of eating dark chocolate, is most likely only a short-lived effect (Parker, Parker, & Brotchie, 2006).

Several reasons have been put forward as explanations for the mood-enhancing impact of dark chocolate such as its psychoactive properties and link with neurotransmitters (e.g., Parker et al., 2006). First, dark chocolate has the potential to influence several neurotransmitters such as serotonin (Bruinsma & Taren, 1999; Parker et al., 2006; Sokolov, Pavlova, Klosterhalfen, & Enck, 2013), which plays a role in mood regulation. Serotonin is a very influential neurotransmitter impacting people's behavior, mood, and thought processes. For instance, changes in serotonin levels have an impact on pro-social behaviors, harm aversion, moral judgment (Crockett, Clark, Hauser, & Robbins, 2010), economic decision-making (Doya, 2008), and consumer behavior (e.g., Lichters, Brunnlieb, Nave, Sarstedt, & Vogt, 2016). For example, Lichters et al. (2016) showed

¹ Dark chocolate consists out of cocoa liquor, containing cocoa butter and cocoa solids, and added sugar (Parker, Parker, & Brotchie, 2005). A minimum of 35% of cocoa solids (i.e. cocoa powder) is generally seen as minimum threshold to be defined as dark chocolate in the European Union, in the US this percentages is lower (Eur-lex, 2000).

that serotone levels affected customers choice deferral and customers' product preference for options positioned as a compromise versus more extreme alternatives (i.e., the compromise effect).

Also, cocoa (a component of dark chocolate) contains flavonoids which have several beneficial results on the brain (Nehlig, 2013). Flavonoids in cocoa can results in an acute improvement in visual and cognitive functions (Field, Williams, & Butler, 2011; Sokolov et al., 2013). Interestingly, Phase et al. (2013) showed that flavonoids in cocoa have a mood-enhancing effect. Also, Knasko (1995) showed that the scent of chocolate increases pleasure and arousal.

Furthermore, chocolate in general is a frequently craved food (Hill & Heaten-Brown, 1994) and getting (dark) chocolate might be like getting drugs, which can lead to psychopharmacologic and behavioral reactions similar to taking drugs (Bruinsma & Taren, 1999). Why people crave (dark) chocolate is still unclear and several ideas have been put forward (e.g., balance neurotransmitter levels, self-medicating against dietary deficiencies, hormonal reasons, evolutionary reasons; (see Bruinsma & Taren, 1999; Parker et al., 2006). It also has been suggested that this craving might be due to dark chocolates' psychoactive ingredients such as caffeine, but Parker et al. (2006) point out that the concentrations of several psychoactive ingredients in dark chocolate are most likely too low to play a role. Indeed, if these substances were truly involved, then cocoa powder should equally satisfy chocolate craving and dark chocolate should be preferred over milk chocolate, since milk chocolate does not contain the same psychoactive ingredients, which is not the case (Michener & Rozin, 1994).

Furthermore, eating any type of chocolate increases sugar levels (Macht & Müller, 2007) which potentially can increase mood as well (Parker, Parker, & Brotchie, 2005). Think back to the study of Macht and Dettmer (2006) that showed the mood-enhancing effect of dark chocolate and apples, nevertheless the chocolate effect was bigger. Further, although not directly related to chocolate, eating in general can have a comforting effect as well (Christensen, 2001).

We discussed several possible reasons of why (dark) chocolate and some other types of food can have a positive effect on mood, such as craving, pleasure of eating, and sugar levels. However, dark chocolate does seem to have something extra over other types of food. The academic literature is still in debate on which reasons are contributing the most to the mood-enhancing effect of dark chocolate (e.g., Scholey & Owen, 2013), but generally it is assumed that dark chocolate has a positive impact on mood.

3. CONSEQUENCES OF MOOD

Enhanced mood is linked to eating in general and more specifically eating dark chocolate (see *supra*). In the following paragraphs we elaborate on consequences of mood and how mood can impact service performance outcomes.

Mood state is defined as mild temporary affective state that can be easily induced (Gardner, 1985; Mattila & Enz, 2002; Schwarz & Clore, 1983). Mood functions at an automatic level, and can bias for instance memory, evaluation, and general everyday thought processes (Bower, 1981; Clark & Isen, 1982; Luomala & Laaksonen, 2000). Generally, a positive mood leads to more positive evaluations, including more positive customer judgments.

It is widely established that mood and emotions play a chief role in an enormous amount of processes and behaviors (Clark & Isen, 1982; Luomala & Laaksonen, 2000; Isen, 2001) such as consumer behavior (e.g., product and brand evaluations; Bagozzi, Gopinath, & Nyer, 1999), memory information processing and cognitive processes in various domains related to decision-making and problem-solving (e.g., Clark & Isen, 1982; Gardner, 1985; Isen, 2008), making evaluations (Bagozzi et al., 1999; Gardner, 1985), task performance (e.g., Miner & Glomb, 2010), and even attention (Pourtois, Schettino, & Vuilleumier, 2013; Vanlessen, De Raedt, Koster, & Pourtois, 2016). For instance, people in a positive mood tend to have an increased attentional preference for positive stimuli (Pourtois et al., 2013; Wadlinger & Isaacowitz, 2006). Furthermore, mood can impact product evaluations (e.g., Gorn, Goldberg, & Basu 1993; Mano & Oliver, 1993) and even brand attitudes (Miniard et al., 1992).

Also during service interactions mood can have a powerful influence on customers' behavior and service evaluations (Gardner, 1985; Isen, 2001; Knowles, Grove, Pickett, 1993; Mattila & Enz, 2002; White, 2006), and it affects long-term effects such as loyalty (De Ruyter & Bloemer, 1999). Indeed, previous literature showed that positive and negative mood have an impact on a wide variety of service performance outcomes or evaluations, such as satisfaction, return intentions, and word-of-mouth intentions (Barlow & Maul, 2000; Liljander & Mattsson, 2002; Mattila & Enz, 2002; Oliver, 1993). For example, Mattila and Enz (2002) showed that hotel guests' post-consumption mood was positively related to both the general evaluation of the hotel, the company, and their stay (e.g., global stay satisfaction) as well as the evaluation of service encounter (e.g., mutual understanding). White (2006) showed that mood state plays a role in the

formation of customers' service judgements or evaluations. In summary, improving consumers' mood with a small detail might prove useful to improve customers' holistic service performance outcomes.

Mood effects have been studied extensively in psychology and several psychological mechanisms have been identified that can explain why mood affects customers cognitive and evaluation processes (Seta, Hayes, & Seta, 1994). More specifically, these explanations shed light on why bringing customers in a positive mood might prove important to improve service performance outcomes (e.g., satisfaction). Firstly, in a direct way, if a customer is just in good mood during a service experience this positive mood can transfer to positive evaluations of the service, perceiving the whole experience as more positive (Mattila & Enz, 2002; Mattila & Wirtz, 2000). Further the affect-as-information hypothesis posits when service experience evaluations are formed, customers are prone to use their mood state as an input for making judgments, their evaluation process and cognitive processing (e. g., Hirt, McDonald, & Melton, 1996; Mattila & Wirtz, 2000; Schwarz, 2010; Schwarz & Clore, 1983). An example is when in a positive mood, people experience the environment as safe, leading to more heuristically information processing.

Secondly, the mood maintenance hypothesis (Andrade, 2005; Clark & Isen, 1982) suggests that people in a positive mood want to keep their positive mood and therefore avoid factors that form a threat for their good mood.

Thirdly, from a more interpersonal or dynamic view, customers can consciously or unconsciously signal affective states during a service encounter. This can be picked up by frontline employees who can on the one hand purposely react on these affective states, which can impact the provided service. Or they could unconsciously act differently if a customer is in a positive or negative mood, and this different behavior could shape the encounter in general (Bailey, Gremler, & McCollough, 2001; Luong, 2005; Mattila & Enz, 2002; Menon, 2001; Menon & Dubé, 2000). In this sense customers could trigger a chain reaction (confer emotional contagion) resulting in a positive or negative service experience aligned with their mood. For instance, customers who are in a good mood could unconsciously trigger employees to get in a better mood as well, which can make them for instance more likely to help or smile, which in turn can result in a better service interaction and a better perceived service by the customer (Pugh, 2001).

4. HYPOTHESES

We propose that consuming dark chocolate before a service interaction enhances the mood before you step in to the service encounter, which positively colors the consumption experience; hence post experience mood is positive and enhances reported holistic service performance evaluations such as satisfaction. This mediating role of mood between environment or stimuli and behavior or other outcomes as discussed earlier (e.g., satisfaction, cognitive processes) is consistent with the Mehrabian and Russell's S-O-R model (1974). For example, a customer enters a store (stimulus or environment) and his mood (organism) is enhanced by some nice music, this improved mood than can lead to a better service experience, post-consumption mood and overall better service satisfaction (response). Figure 1 shows our proposed working model. We argue that eating dark chocolate (stimulus) will have a positive effect on several service performance outcomes (outcome; satisfaction, return intention, word-of-mouth, complain intention) mediated by post-consumption mood (mood_{after}; organism). However, a direct effect of dark chocolate cannot be out ruled so is included in our model.

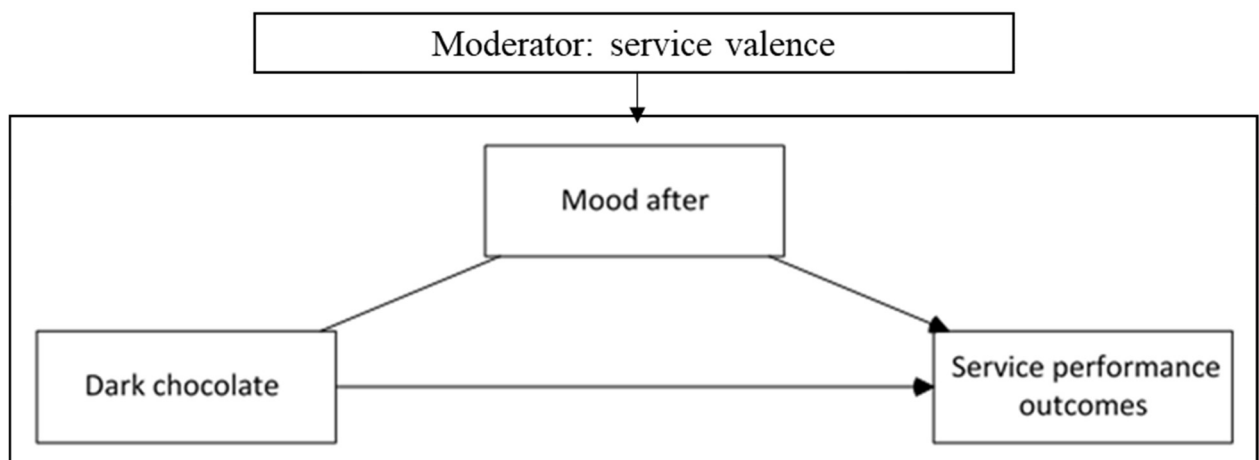


Figure 1. Proposed model controlled for mood_{before}

To study the effect of dark chocolate on service performance outcomes we use scenarios with different contexts (e.g., restaurant, shoe shop, cell phone store), but more importantly also with service scenarios ranging in service quality (e.g., very negative versus positive; see Table 1 for an overview of context and scenario valence). We suggest that perceived service valence (or quality) is an important 'moderator' in the relation between the impact of eating dark chocolate through

mood on service performance outcomes. When a service is positively perceived generally customers' expectations are met (e.g. Schneider & Bowen, 1999; Parasuraman, Berry, & Zeithaml, 1993) and thus a small detail can elevate this experience. Whereas if a service is perceived as very negative it will be very hard to turn this around with a small detail not related to the core service (Schneider & Bowen, 1999). In order to have a positive effect of a small detail, we argue that the minimum requirement is a decent service (i.e. positively perceived). Hence, we propose;

H1 Dark chocolate has a positive effect on service performance outcomes (satisfaction, return intention, word-of-mouth, complain intention) mediated through mood after a positive service encounter

H2 Dark chocolate has *no effect* on service performance outcomes (satisfaction, return intention, word-of-mouth, complain intention) mediated through mood after a negative service encounter

Furthermore, we distinguish between positive and moderately positive to confirm that minimum requirement for a small detail to be successful is a decent service were customer' expectations are met. We could assume that during a moderately positive scenario a small detail like dark chocolate will still have a positive effect since it falls in the 'expected range' of what is acceptable (e.g. Schneider & Bowen, 1999; Parasuraman, Berry, & Zeithaml, 1993), however it could also be the case that the positive effect of a small detail does not occur if the core service is not perfect (e.g., Bolton et al., 2014). Therefore, we will explore what happens during a moderately positive encounter. To investigate what the minimum requirement for the core service is for a small detail like dark chocolate to work. Thus;

RQ1 Does dark chocolate has a positive or no effect on service performance outcomes (satisfaction, return intention, word-of-mouth, complain intention)?

5. STUDIES

5.1. PRETEST

According to the literature, eating dark chocolate has a mood-enhancing effect (Macht & Dettmer, 2006; Scholey & Owen, 2013). Before carrying out our studies we conducted a pretest to confirm the mood-enhancing effect of dark chocolate. Our pretest confirmed that eating dark chocolate improves mood (see Appendix B for detailed description of the pretest).

5.2. STUDY 1

5.2.1. Design and procedure

The second study investigates if dark chocolate improves service performance outcomes (through mood) compared to two other types of food which are also high in sugar, namely grapes (sugary and healthy) and cookie (sugary and vice) after both a negative and positive valenced service scenario. One hundred thirteen participants (44.2% men, $M=22.83$ years, range 18-49), mainly students, participated in this scenario-based experiment which took place in a consumer lab where they were paid 8 euros to participate in several studies. For the mediation analyses one participant was excluded due to missing data. The study consisted of two parts, a taste test and a service scenario task. Before starting the taste test; participants rated their mood. Next, participants were invited to take part in a taste test. The participants ate either dark chocolate ($N=40$), grapes ($N=36$) or cookies ($N=37$) (between subjects). Each product was offered on a particular day over the course of three days, so all products were consumed at all different parts of the day. Eating dark chocolate has been thought of as a mood elevating special type of food compared to other types of food, but dark chocolate also increases sugar levels which potentially can enhance mood. Thus, we incorporated two other products (grapes and cookies) in our experiment that can increase sugar level and/or mood (see Table 2 for an overview of important attributes of each type of food used). Eating grapes increases blood sugar levels but does not increase mood (O'Connor, Carvalho, Freese, & Cureton, 2013). We picked grapes (instead of for instance an apple as in previous research) because of its high sugar amount and it is easier to dosage (e.g., apple takes longer time to eat and their weight is high). Since eating a vice or unhealthy snack could potentially also be pleasurable and elevated mood (Raghunathan, Naylor, & Hoyer, 2006). We also used cookies. Eating cookies also influences blood sugar level and is a

vice, but it does not have the same psychochemical properties as dark chocolate (Smith & Wilds, 2009). This design allows us to rule out that found effects could be attributed to an increase in blood sugar level or an increase in mood due to just eating a nice vice. To make the taste test credible, participants rated the taste of the sampled products (e.g., 'Did you like the cookie/chocolate/grape you ate earlier?') immediately after tasting. General liking of grapes, cookies and dark chocolates was assessed as well because (dis)liking a certain food could impact mood. After the taste test, participants read, in random order, two restaurant service scenarios (within subject), one about a positive service encounter and one about a negative service encounter. After reading each scenario, participants rated the restaurant on different service performance indicators (e.g., satisfaction, intention to return) and scenario realism. Finally, participants completed the mood scale for a second time.

Table 2.

Overview specific attributes of the types of food sampled

	Vice- virtue	Sugar level	Craving	Other specific attributes
<i>Study 2</i>				
Dark chocolate	Vice	High	Yes	- link with neurotransmitters - psychoactive properties
Grapes	Virtue	High	No	
Cookies	Vice	High	Yes	
<i>Study 3- Study 4</i>				
Dark chocolate	See supra			
Milk chocolate	Vice	High	Yes	

5.2.2. Pretest scenarios

All scenarios were pretested (see Appendix A) and completed by our online consumer panel, which consisted mainly of students, employees, and alumni of a Belgian university. All participants could voluntarily enter a raffle to win several gift vouchers. Participants rated one realism item ("This scenario was realistic") and one pertaining to scenario valence ("When I

would end up in this situation, I would rate this service as...”) on 7-point Likert scales (1 = “totally not agree/very negative,” and 7= “totally agree/very positive”).

In Study 2, the valence of the positive ($M = 6.25$, $n = 28$) and negative ($M = 2.86$, $n = 28$) scenarios differed sufficiently in the desired direction ($t(27) = 11.78$, $p < .05$). Realism did not differ significantly ($t(27) = .81$, $p > .05$) between the positive ($M = 5.18$) and the negative ($M = 4.86$) scenarios.

5.2.3. Measures

All Cronbach’s alphas were satisfactory (with $\alpha > .6$; see Appendix C for Cronbach’s alphas and items). Before ($mood_{before}$) and after the taste test ($mood_{after}$) mood was assessed by means of the Dutch version of the basic mood introspection scale (BMIS; Mayer & Gaschke, 1988). Participants rated 16 mood adjectives (e.g., drowsy, calm, active) on a 7-point Likert scale (1= I do not feel this at all, 7= I feel this very strong) twice. After the taste test participants answered question about the taste of the sampled food, and different questions on for instance their fondness of chocolate/grapes/cookies in general on 7-point Likert scales. All scales measuring service outcomes used 7-point Likert scales (e.g., 1= I do not agree at all, very unlikely, 7= I totally agree, very likely). To measure positive word-of-mouth, we employed four items (Harrison-Walker, 2001; Lang, 2009; Singh, 1990). Overall satisfaction with the service of the restaurant was assessed by means of two items from Maxham (2001), complemented with one self-constructed item. Participants also reported their return intentions by means of four items (Maxham, 2001). In addition, after reading the negative scenario the participants answered four items about their intention to complain (Singh, 1990; Kim, Kim, Im, & Shin, 2003). Lastly, a question about scenario realism was answered.

5.2.4. Results

First of all, general liking of the sampled grapes, cookies, and chocolates was assessed as well because (dis)liking a certain food could impact mood. Paired samples t-tests revealed that participants equally liked all three products (with $p > .05$). Furthermore, both the positive scenario ($M = 4.75$) and negative scenario ($M = 4.99$) were realistic and no difference between conditions was found considering realism.

We first conducted two mediation analyses, one for each scenario, to explore the effect of food type on service satisfaction. Since display order of scenario type (positive versus negative)

had no effect on mood_{after} nor on satisfaction it was excluded from further analysis. Mood_{before} the service encounter was included as covariate in our mediation models. In the positive service scenario, the mediation analyses revealed that participants who ate dark chocolate reported higher service satisfaction than participants who ate grapes or cookies and that this effect was fully mediated by mood (see Figure 2, β indirect effect = .0008, CI (95%) = .0001–.0024). The dark chocolate–cookie difference as well as the dark chocolate–grape difference, was mediated by mood after food intake, β = .0861 CI (95%) = .0038- .2443 and β = .1761, CI (95%) = .0589 - .3426, respectively.

A second mediation analysis, again controlling for pre-mood, replicated the omnibus test effect for return intention (β = .0010, CI (95%) = .0008–.0030). Eating dark chocolate increases return intention for positive service experience and this effect is mediated by mood. The dark chocolate–cookie difference as well as the dark chocolate–grape difference regarding return intention was mediated by mood after food intake, β = .0974 CI (95%) = .0056 - .3072 and β = .1992, CI (95%) = .0521- .4199, respectively. This effect on mood cannot just be attributed to the idea that getting a vice food (dark chocolate or cookies) or increased sugar levels could elicit a better mood, because dark chocolate increased a good mood more than cookies and grapes. I could not establish any effect on word-of-mouth or after reading the negative scenario.

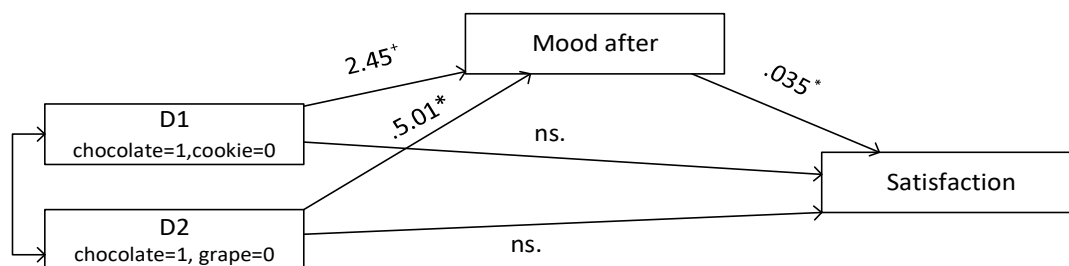


Figure 2. Mediation model for satisfaction: Study 1
 Note. * $p < .05$, + $p < .10$

5.3. STUDY 2a

5.3.1. Design & procedure

Study 3a is conducted to exclude a general chocolate effect. Eating chocolate in general has been thought of special type of food, compared to other types of food, which is mood elevating

(see Table 2 for attributes of milk and dark chocolate). Therefore, we incorporate also milk chocolate in this study. Study 3a focuses on the different impact of dark chocolate versus milk chocolate and this in a moderately positive and positive valenced service scenario. Ninety-five participants ($n = 95$) mainly students, participated in this scenario-based experiment which took place in a consumer lab where they were paid 8 euros to participate in several studies ($M_{\text{age}} = 22$, age range 18-54; 40 % men). The study design was very similar to Study 2, except that participants tasted different food and the scenarios were different as well. The participants ate either dark chocolate ($n = 30$), milk chocolate ($n = 32$) or nothing ($n = 33$) (between subjects). Each type of food (experimental conditions) or no food at all (control condition) were offered on a particular day over the course several days, so all conditions took place at all different parts of a day (e.g., near lunch hour). Furthermore, we include a control condition. To make the taste test credible, participants rated the taste of the sampled products (e.g., 'Did you like the cookie/chocolate/grape you ate earlier?') immediately after tasting. General liking of dark and milk chocolate was assessed as well because (dis)liking a certain food could impact mood. In the control condition they answered only the mood scale in an unrelated task instead of the taste test. After the taste test or filling out the mood scale for the control condition, participants read two retail service scenarios (mobile phone shop) in random order, a positive service encounter or a moderately positive service encounter that was the same as positive scenario except that it included one failure (waiting for 10 minutes). We included only one failure, since Study 2 showed that effect of dark chocolate did not surfaced after a very negative scenario. We argue that the scenario in Study 2 was too negative and that even eating dark chocolate could not help to overcome this dissatisfaction with the service, however if the general service is good with just a limited amount of failure, dark chocolate might still be useful. After reading the scenario participants rated their mood for the second time. Next, they filled out service performance indicators (e.g., satisfaction, intention to return), demographics, and scenario realism.

5.3.2. Pretest scenarios

In Study 3a the valence of the positive ($M = 6.53$, $n = 30$) and moderately positive ($M = 5.52$, $n = 31$) scenarios differed sufficiently in the desired direction ($t(59) = 3.49$, $p < .05$). Realism did not differ significantly between the positive ($M = 5.37$) and the negative ($M = 5.90$) scenarios ($t(59) = 1.48$, $p > .05$).

5.3.3. Measures

The measures used were the same as in Study 2 and all Cronbach's alphas were satisfactory (see Appendix C). Of course, questions about the tasted food were adapted for this study (e.g., milk chocolate instead of cookie).

5.3.4. Results

First of all, general liking of dark and milk chocolate was assessed as well because (dis)liking a certain food could impact mood. Participants liked milk chocolate ($M = 5.61$) better compared to dark chocolate ($M = 4.83$; $t(47.54) = -2.18, p < .05$). Furthermore, both the positive scenario ($M = 5.44$) and moderately positive scenario ($M = 5.45$) were realistic and no difference between conditions was found considering realism ($t(61) = -.13, p > .05$).

We conducted a series of mediation analyses to explore the effect of food type on service performance outcomes, namely satisfaction, return intention, and word-of-mouth. First, we discuss the results for the positive scenario. Mood before the service encounter was included as covariate in our mediation models, since display order of scenario valence had no effect on mood_{after} it was excluded from further analysis. In the positive service scenario, there was no significant direct effect of food intake (types if chocolate or nothing) on service satisfaction, however we did find a mediating effect of mood between food intake and service satisfaction (see Figure 3).

The mediation analyses revealed that participants who ate dark chocolate and milk chocolate had an (marginally) significant effect on mood_{after} and mood_{after} had a marginally significant effect on service satisfaction. The indirect effect of the dark chocolate–nothing difference was significant ($\beta = .0691, CI(90\%) = .0054-.2024$), as was the milk chocolate–nothing difference regarding satisfaction was mediated by mood after food intake (β indirect effect = $.0691, CI(90\%) = .0054-.2024$). The effect milk chocolate vs dark chocolate difference was not significant.

Next, we conducted a mediation analysis to explore the effect of return intention. We found the same results as with satisfaction, however only the indirect effect of the milk chocolate–nothing difference was significant ($\beta = .0840, CI(90\%) = .0016-.2469$). We did not find any significant mediation effects for word-of-mouth.

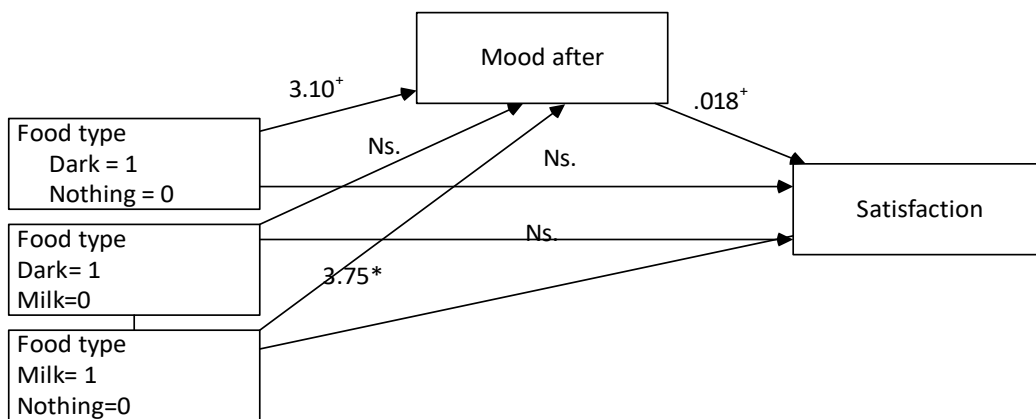


Figure 3. Mediation model for satisfaction: Study 2a
 Note. * $p < .05$, + $p < .10$

Furthermore, we conducted a series of mediation analyses to explore the effect during the moderately positive scenario. We used display order and mood_{before} as covariates in the analysis. We found no significant effects on satisfaction. For return intentions we found that only the milk chocolate versus nothing had a significant indirect effect on return intention (with $\beta = .1664$, CI (90%) = .0231-.4712). The effect of mood_{after} on return intentions was significant (with $p < .05$). For word-of-mouth valence we found no mediation effects.

This design, due to the control condition did not allow to study taste of the sampled food as a moderator, which could explain the insignificant result of dark chocolate vs milk chocolate. Indeed, people prefer milk chocolate over dark chocolate, therefore we conduct Study 3b.

5.4. STUDY 2b

5.4.1. Design and procedure

We conducted Study 3b to investigate the moderating the role of taste in the relation between eating milk or dark chocolate and its impact on mood. One hundred sixteen participants ($n_{\text{pos}} = 58$; $n_{\text{mod.}} = 58$, mainly students, participated in this scenario-based experiment which took place in a consumer lab where they were paid 8 euros to participate in several studies ($M_{\text{age}} = 21$, age range 19 -24; 43.1 % men). The study design was exactly the same as Study 3a, except that there was no control condition included and participants only read one scenario each. The scenarios used were the same. The participants ate either dark chocolate ($n_{\text{pos}} = 29$; $n_{\text{mod.}} = 29$) or milk chocolate ($n_{\text{pos}} = 29$; $n_{\text{mod.}} = 29$) (between subjects). Also, the measures used were the same (see Appendix C for items and Cronbach's alphas).

5.4.2. Results

Paired samples t-tests revealed that both the positive scenario ($M = 5.52$) and moderately positive scenario ($M = 5.74$) were realistic and no difference between conditions was found considering realism ($t(57) = -1.23, p > .05$). Scenario valence was significantly different in the desired direction ($t(57) = 2.50, p < .05; M_{\text{pos}} = 5.78; M_{\text{mod}} = 5.28$).

We first conducted several mediation analyses to explore the effect of food type on satisfaction with mood_{before} as covariate and taste of sampled chocolate as a moderator (see Figure 4). We first explore the effects for the positive scenario. The index of the moderated mediation is significant (index -0.063 , CI (90%) = $-0.1967 - -0.0032$). Conditional indirect effects only significant with taste low (taste = 3.85) and medium (taste = 5.22) are significant, with respectively ($\beta = .1531$, CI (90%) = $.0173 - .4173$) and ($\beta = .0666$, CI (90%) = $.0010 - .2292$). This means that when the taste of chocolate is low or mediocre the dark chocolate has a more positive effect on mood compared to milk chocolate, if the taste is very good this effect changes. However, the conditional indirect effect of the dark chocolate-milk chocolate difference is not significant ($\beta = -.02$, CI (90%) = $-.2186 - .0558$). Further we conducted a mediation analysis to explore the effect on return intention and word-of-mouth valence, but we found no significant effect moderated mediation effects.

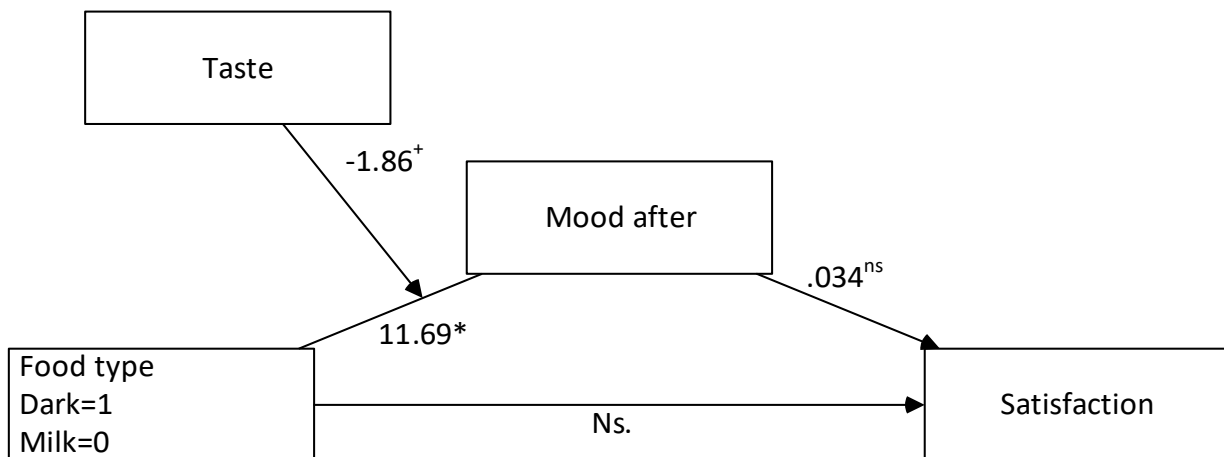


Figure 4. Moderated mediation model for satisfaction: Study 2b

Note. * $p < .05$, + $p < .10$

Next, we conducted several moderated mediation analyses to explore the effect on return intention, satisfaction, and positive word-of-mouth after the moderately positive scenario. We

found no significant effect of type of chocolate (milk vs dark) on mood after, and consequently also no (moderated) mediation.

5.5. STUDY 3

5.5.1. Design and procedure

Study 3 was conducted to investigate if our results from previous studies hold in-store. We conducted a field experiment in a shoe shop. All participants ($M_{\text{age}} = 42$, range age = 15-82, missing $n = 11$; 10.1 % man; 13.5 % missing) participated voluntarily at a big shop mall in Europe, note that not all participants filled out their age and gender. Participants that wanted to enter the shoe store were asked to participate. Of course, we ensured that all data was analyzed and stored anonymously.

The experiment consisted out of three conditions, were visitors either had to taste milk chocolate or dark chocolate before entering the shop (experimental conditions) or tasted chocolate after their visit (control condition). The dark chocolate contained 80% cocoa components, the milk chocolate only 33% components. The dark and milk chocolate were both from the same brand.

We recruited 91 customers of the shoe shop (some were excluded for not filling out important information). After removing participants that not filled out all mood-items we had a sample of 74 participants left. The true meaning of the experiment was not revealed. When the customers arrived in front of the shop a research assistant asked if they wanted to participate in a taste test, and fill out one small survey before entering the shop and one after. If they agreed to participate they first gave their age and gender and filled out several items about their goal of this shop visit. Next, they answered question about their general mood at the moment (M_{before}). Next participants tasted dark ($n = 23$) or milk chocolate ($n = 26$) before entering the shop, the customers in the control condition ($n = 25$) however entered the shop immediately after filling out the mood scale and tasted the chocolate after their visit and filling out the questionnaire. For the taste test the dark or milk chocolate was presented on a plate without the package, so the brand name and packaging would not influence our results. Participants from both chocolate groups ate a piece of chocolate of approximately 20 grams. Although the participants could decide how much chocolate they wanted to eat themselves. After tasting the chocolate the participants answered several questions about the taste of the chocolate and their general liking of chocolate (e.g., how much do you like dark/milk chocolate). After the taste test (or filling out the mood items for the control

condition) the customers entered the shop. The customers participating in this study got the same treatment from the retail employees in the shop than other customers. After the shop visit all participants had to fill out the mood scale again (mood_{after}). Next customers had to answer several questions about the service quality of the shop and service performance outcomes (e.g., satisfaction), and answered several questions about their shop visit itself (e.g., Did you buy shoes?). For the experimental condition the experiment ended here. The participants in the control condition got to taste chocolate and answered questions about this chocolate, before continuing their shopping trip.

5.5.2. Measures

All Cronbach's alphas were satisfactory (with $\alpha > .6$). See Appendix D for items and Cronbach's alphas. All items were answered on a 7-point Likert scale unless states otherwise. Before the participants filled the mood scale for the first time we asked several questions about their shop intentions in the store such as "I am here because I need shoes" or "I am just here to see the collection" or "I do not need anything". After their visit we also asked several questions about if they bought something during their visit or if this visit was their first visit to this shoe shop. They could answer these items with yes, no, or not applicable. To measure mood_{before} and mood_{after} the service experience we used the Dutch version of the PANAS-scale (Watson, Clark, & Tellegen, 1988; Engelen, De Peuter, Victoir, Van Diest, & Van den Bergh, 2006). This scale uses 10 items that describe a positive mood (e.g., strong, energized) and 10 items describing negative mood (e.g., sad, tensed). Participants indicated if these items relate to their current mood (1= not at all; 7= totally). Participants filled out this scale twice; once before entering the shop, for the two chocolate conditions before taste test, and once immediately after the shop visit. After the tasting participants had to answer several items about how much they liked the chocolate they tasted and about chocolate in general. To assess service performance outcomes participants had to answer 3 items Word-of-Mouth items (Price & Arnould, 1999; Harrison-Walker, 2001), 2 items about service satisfaction, 1 item about overall attitude towards the company and one items about their repurchase intention (Maxham, 2001).

5.5.3. Results

General liking of dark and milk chocolate was assessed as well because (dis)liking a certain food could impact mood. Paired samples t-tests revealed that participants generally liked dark

chocolate (M=4.47) less compared with milk chocolate (M=5.23; ($t(70) = -1.76, p < .10$). However, the taste of the sampled chocolate was not significantly different between dark (M= 5.45) and milk chocolate (M = 5.84; with $t(45) = -1.01, p > .05$).

We conducted several mediation analyses to investigate the effect of dark chocolate on several performance outcomes. First, we discuss satisfaction (see Figure 5), two participants were not included in the analyses due to missing data on the satisfaction items. The mediation analyses revealed that participants who ate dark chocolate had a higher mood_{after} compared to the participants that ate nothing or milk chocolate. Mood_{after} had no significant effect on service satisfaction. However, the omnibus test was significant when dark chocolate versus nothing (Omnibus ($\beta = .0008$ CI (90%) = .0000-.0037) and dark with milk (Omnibus ($\beta = .0008$ CI (90%) = .0000-.0034) were compared. The indirect effect of the dark chocolate–nothing difference was significant ($\beta = .1883$, CI (90%) = .0027-.4971), as was the dark chocolate–milk chocolate difference ($\beta = .1647$, CI (90%) = .0005-.4358). The effect milk chocolate vs nothing difference was not significant.

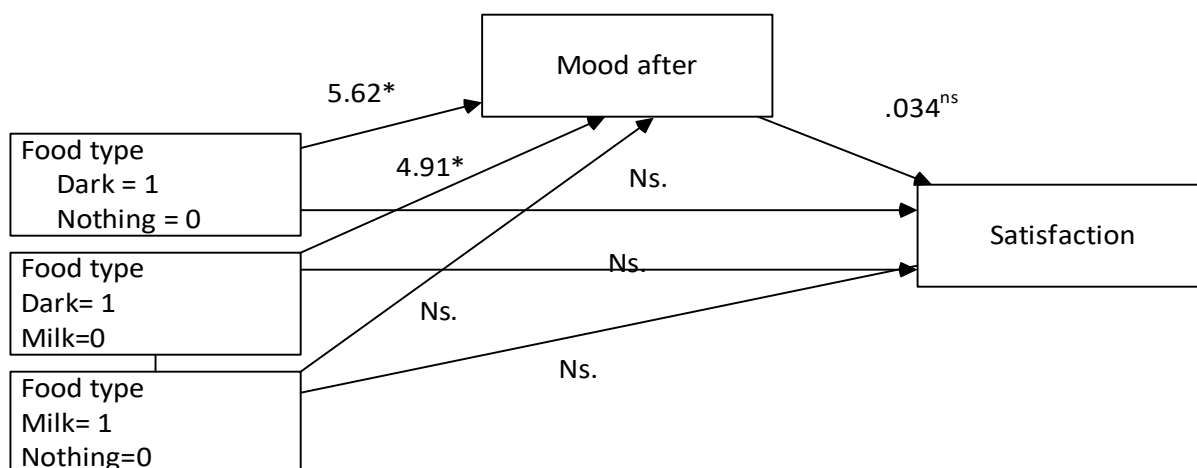


Figure 5. Mediation model for satisfaction: Study 3

Note. * $p < .05$, + $p < .10$

Next, we conducted a mediation analyses to assess the effect of general satisfaction with the company (see Figure 6). The analysis revealed that participants who ate dark chocolate had a higher mood_{after} compared to the participants that ate nothing or milk chocolate. Mood_{after} a marginally significant effect on general satisfaction with the company. The omnibus test was significant when dark chocolate versus nothing (Omnibus: $\beta = .0010$ CI (90%) = .0000-.0038) and dark with milk (Omnibus: $\beta = .0010$ CI (90%) = .0000-.0038) were compared. The indirect effect

of the dark chocolate–nothing difference was significant ($\beta = .2382$, CI (90%) = .0395-.5102), as was the dark chocolate–milk chocolate difference ($\beta = .1897$, CI (90%) = .0032-.4358). The effect milk chocolate vs dark chocolate difference was not significant.

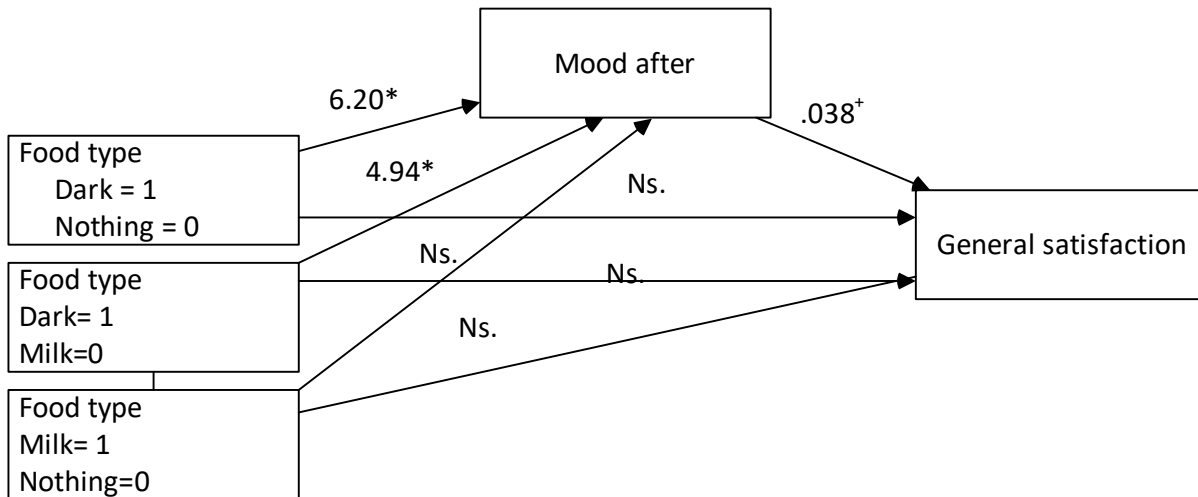


Figure 6. Mediation model for general satisfaction: Study 3
 Note. * $p < .05$, + $p < .10$

For return intentions the mediation analysis revealed that participants who ate dark chocolate had a higher mood_{after} compared to the participants that ate nothing or milk chocolate (see Figure 7). Mood_{after} no significant effect on return intentions. However, the omnibus test was significant when dark chocolate versus nothing (Omnibus: $\beta = .0010$ CI (90%) = .0000-.0038) was compared, but not for the dark with milk (Omnibus: $\beta = .0010$ CI (90%) = .0000-.0038) difference. The indirect effect of the dark chocolate–nothing difference was significant ($\beta = .2844$, CI (90%) = .0119-.8107), the dark chocolate–milk chocolate was not ($\beta = .2265$, CI (90%) = -.0002-.6137). The effect milk chocolate vs nothing difference was not significant.

Lastly, for positive word-of-mouth, one participant was deleted for this analysis due to missing data on the word-of-mouth items. The mediation analysis revealed that participants who ate dark chocolate had a higher mood_{after} compared to the participants that ate nothing or milk chocolate. Mood_{after} had a significant effect on word-of-mouth (see Figure 8). The omnibus test was significant when dark chocolate versus nothing (Omnibus: $\beta = .0011$ CI (90%) = .0001-.0046) was compared, as for the dark with milk (Omnibus: $\beta = .0011$ CI (90%) = .0001-.0042) difference. The indirect effect of the dark chocolate–nothing difference was significant ($\beta = .2631$, CI (90%) = .0697-.6253), the dark chocolate–milk chocolate was not ($\beta = .2102$, CI (90%) = .0440-.4929). The effect milk chocolate vs dark chocolate difference was not significant.

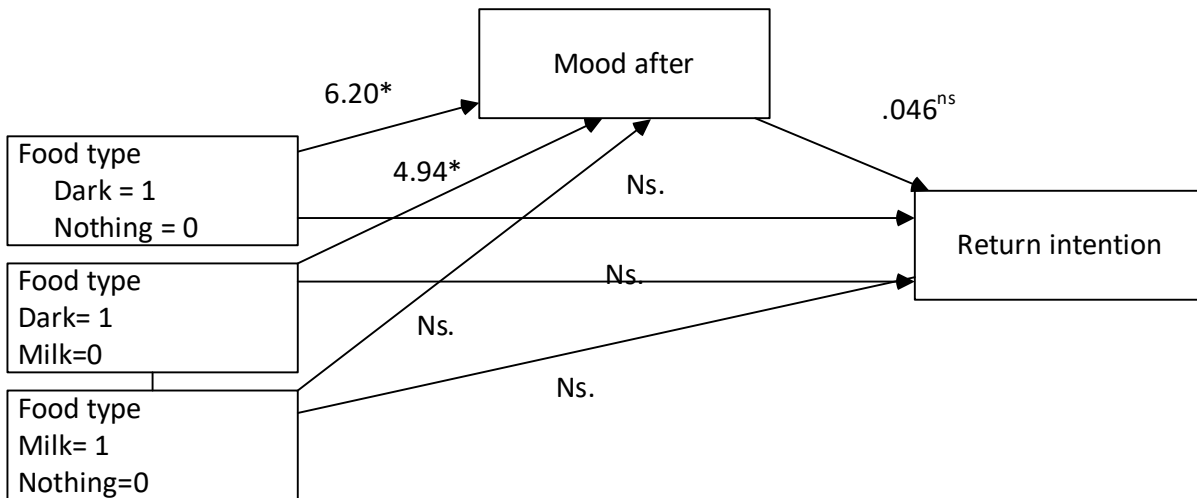


Figure 7. Mediation model for return intention: Study 3
 Note. * $p < .05$, + $p < .10$

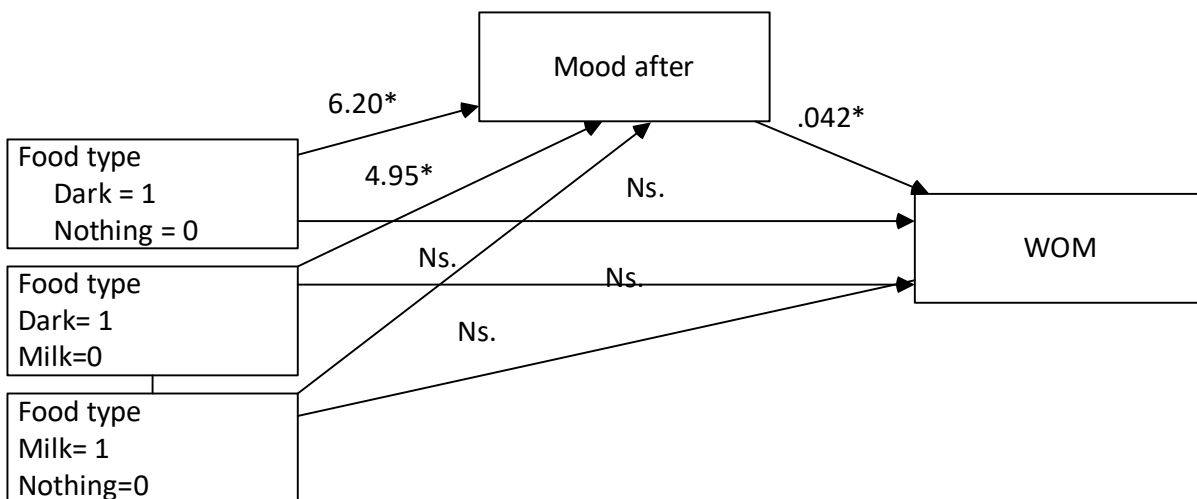


Figure 8. Mediation model for word-of-mouth: Study 3
 Note. * $p < .05$, + $p < .10$

6. DISCUSSION

This article represents the first series of studies on the effects of eating dark chocolate on the service performance outcomes. To our knowledge, this is the first time eating dark chocolate has been examined in the context of the service domain (see Table 3 for an overview of our results). We conducted several studies to test Hypothesis 1-2 and Research question 1 while altering the studies features in varies ways (see Table 1 for an overview); a) different service contexts

(restaurant, shoe shop, cell phone shop), b) compared different types of food (e.g., grapes versus dark chocolate), c) scenario valence (e.g., positive versus very negative), d) design (scenario versus field study).

The main conclusion of study 1 and 2 is that after a positive service scenario, participants who ate dark chocolate (compared to other types of food) reported improved service performance outcomes, mediated through mood. This indicates that the positive effect on mood (and service performance outcomes) of dark chocolate cannot just be attributed to the idea that getting a vice food (dark chocolate or cookies) or increased sugar levels could elicit a better mood, because dark chocolate enhanced mood and improved service performance outcomes more than types of food. When dark and milk chocolate were compared the results were less clear, since the mood enhancing effect of dark chocolate is moderated taste. When the taste of chocolate is low or mediocre the dark chocolate has a more positive effect on mood compared to milk chocolate, if the taste is very good this effect changes. After a negative service encounter, we did not find these results, confirming Hypothesis 2. Furthermore, related to Research question 1, we did not find a positive or negative effect of dark chocolate after a moderately positive scenario. Suggesting that the minimum requirement for a small detail to be successful is positively perceived core service (cf. Bolton et al., 2014).

Lastly, we conducted a field study to increase the external validity of our results. Participants who ate dark chocolate (compared to milk or nothing) generally had a higher mood after the service encounter. The mediation effect of mood_{after} was not always present. However, satisfaction and general satisfaction with the firm was higher after eating dark chocolate compared to eating nothing or milk chocolate, through mood_{after}. Considering return intentions, mood mediated the effect of dark chocolate (vs nothing) on return intention, but not for dark chocolate vs milk. Further, eating dark chocolate compared to eating nothing (not compared to milk) increased positive word-of-mouth intention through mood_{after} had a significant effect on word-of-mouth.

In sum, a key finding is that dark chocolate can improve service performance outcomes after a positively perceived service experience. Although not all our results might be as convincing independently, when taking all studies together we can conclude that dark chocolate has an impact on several service performance outcomes through mood. Yet, this positive effect of eating dark chocolate, disappears once one was involved with a negatively or moderately perceived service. We show that a small detail such as dark chocolate cannot help in services that are perceived as

only as moderately positive or negative. We show again that dark chocolate is a suitable mood-enhancer and that dark chocolate seems to indeed have something that other types of food, such as grapes and milk chocolate do not have.

Table 3.

Overview of our results

	Hypothesis/RQ	Scenario context	Scenario valence	Result Hypothesis/RQ
Study 1	H1	Restaurant	Positive	Partially Accepted
	H2		Negative	Accepted
Study 2a	H1	Cellphone shop	Positive	Partially Accepted
	RQ1		Moderately positive	No effect
Study 2b	H1	Cellphone shop	Positive	Partially Accepted
	RQ1		Moderately positive	No effect
Study 3	H1	Shoe store	/	Partially Accepted

6.1. THEORETICAL AND MANAGERIAL CONTRIBUTIONS

This paper contributes to practice and the literature in several ways. Firstly, we show that a small detail not related to the core service, in this case eating dark chocolate, at the beginning of a service experience can improve service performance outcomes such as satisfaction. We showed, as expected by the literature (Macht & Dettmer, 2006; Scholey & Owen, 2013), that dark chocolate is an external mood-enhancing stimulus that can have an impact on service performance outcomes. However, this is only the case if the service encounter was perceived positively. After a negative or a moderately positive scenario, no positive nor negative effects surface. We argue that small details can really help to improve holistic service performance outcomes of your customers, but practitioners should keep in mind that it is a nice extra to elevate the service experience, not a band-aid to fix a poorly or mediocre perceived service. Indeed, good quality service is key in satisfying customers

Dark Chocolate is an interesting small detail to include in your service experience, because it can improve performance outcomes if the service is positively perceived, yet it never harms performance outcomes, thus service providers can safely offer dark chocolate to customers. Furthermore, offering dark chocolate is something that can be easily done in many service settings

(e.g., shoe store, restaurant), does not require a specific skills-set of your employees, and no training specific training is necessary, and has a rather limited cost.

Furthermore, only a limited set of studies has tied dark chocolate and consumer behavior together. Some studies investigated the effect of chocolate scents on sales in stores (McGrath, Aronow, & Shotwell, 2016; Vinitzky & Mazursky, 2011), but the effect of eating dark chocolate on service performance outcomes has not been researched before. Our study also confirms that dark chocolate can enhance mood even outside the lab.

Further, by using different types of food we contribute to getting closer to an explanation why dark chocolate could be a better mood-enhancer than other types of food. We show that it is not due to for instance a sugar increase or due to being just chocolate. Most likely dark chocolate improves mood more than types of food due to its specific ingredients such as flavonoids (Neligi, 2013; Phase et al., 2013) or impact on neurotransmitters (Bruinsma & Taren, 1999; Parker et al., 2006; Sokolov et al., 2013). However, it seems the taste of the type of food can be an important moderator too, thus further research is absolutely necessary.

6.2. LIMITATIONS AND FUTURE RESEARCH

As with all research, our studies have several limitations. First of all, participants in the scenario-based studies and taste test study had to eat 3 pieces of dark chocolate which should be enough to bring an effect of dark chocolate to the surface. Having customers eat 3 pieces of chocolate is not realistic in a real service setting. However, we still found an effect of dark chocolate in the field study where people ate less chocolate pieces.

Furthermore, our study only focused on using dark chocolate as small detail to enhance mood and service performance outcomes mood-enhancer, we believe that for future research it is interesting to go further and investigate other types of mood-enhancing techniques to establish clear guidelines for service providers on which small details they should focus to enhance mood in customers. Inspiration can be drawn from experimental psychology research (e.g., Forgas, 1991; Gable & Harmon-Jones, 2008; Johnson et al., 2010; Vanlessen et al., 2016; Yang et al., 2013; Zhang et al., 2014).

Customers often process their consumption experiences in a chronological order, therefore change a small detail at the beginning or end of a service experience could be an interesting approach (Anderson et al., 2010). Our studies only focused on small details during the prepurchase

stage of a service experience, however it would also be interesting in future studies to investigate the impact of small details at the end (e.g. chocolate with the restaurant bill).

In our study chocolate or other sampled food is presented before customers enter or start engaging in the service encounter (i.e. reading the scenario), which excludes the possible effect of gift-giving and/or reciprocity. Nevertheless, in real life this could be an important distinction. Imagine when a bank clerk offers you dark chocolate, you might have several reactions such as a) feel happy you got a gift, b) feel like you have to do something back (reciprocity), c) feel like they try to manipulate you, or d) get in a better mood due to the dark chocolate attributes. All these reactions can have a very different impact on customer mood and future studies should take these reactions into account.

Furthermore, we did not, however conceptually different, distinguish mood from emotions. Nevertheless, especially in practical service research it difficult to make that distinction (Bagozzi et al., 1999). Indeed, it proves hard to determine when an intense emotion turns in to a mood or a mild emotion turns into an intense emotion (Liljander & Mattsson, 2002).

This paper briefly touches the idea of studying neurotransmitters and hormones during service encounters, we believe that investigating the effect of fluctuations on hormones and neurotransmitters levels is an interesting avenue in order to understand customers' mood, behavior, cognitive processes, and decision-making better (e.g., Boksem & Smidts, 2015; Fürst, Thron, Scheele, Marsh, & Hurlemann, 2015; Lichters et al., 2015). The results of our studies suggest that dark chocolate is different compared to other types of food and a possible explanation for this is the effect of dark chocolate on neurotransmitters, however further research is necessary to back-up this suggestion. An interesting neurotransmitter to investigate in the context of services is serotonin. Serotonin impacts people's behavior, mood, and thought processes (e.g., impact on pro-social behaviors, decision-making, consumer behavior, Doya, 2008; Crockett et al., 2010, Lichters et al., 2016).

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8. APPENDIX

Appendix A. Scenarios Study 1-2

Study 1

Positive

You and a friend go out for a dinner at “La dolce pizza”. The waiter comes to your table quickly to take orders. You order a rare steak and a glass of wine. The waiter brings you your order fast. Immediately you taste that your steak is cooked perfectly. You finish your meal and ask for the bill. The waiter helps you to put on your coat and then you dive into the city.

Study 1

Negative

You and a friend go out for a dinner at “La dolce pizza”. You have to wait 10 minutes before the waiter comes by to take orders. You order a rare steak and a glass of wine. After some time the waiter brings you your order. Immediately you taste that your steak is overdone. You finish your meal and ask for the bill. You pay the bill, pull on your coat, and dive into the city.

Study 2a-2b

Positive

You have just decided to buy a new mobile phone. You and a friend go to the mobile store “PLace2be” to buy one. After looking around, you ask for assistance of a salesperson.

The salesperson is directly available for you. He helps you guys with several questions and gives tips on what is the best to buy. After you made your choice, you go to the cashier and you can pay immediately. While you are walking outside the sales person wish you guys a nice afternoon.

Moderately positive

You have just decided to buy a new mobile phone. You and a friend go to the mobile store “PLace2be” to buy one. After looking around, you ask for assistance of a salesperson. The sales person says that you have to wait for a moment. After a ten minutes he comes to you. He helps you guys with several questions and gives tips on what is the best to buy. After you made your choice, you go to the cashier and you can pay immediately. While you are walking outside the sales person wish you guys a nice afternoon.

Appendix B. Pretest impact of dark chocolate on mood

Design and procedure of the pretest

The pretest was conducted to test the direct effect of dark chocolate on mood. We invited 54 students (40.7 % men, $M_{age}=22$, age range 20- 26) to take part in the pretest in our consumer lab. Participants were recruited from a marketing course and they received extra grades for participating in several studies. The study consisted of four different tasks, a) measuring mood (= mood 1), b) a taste test of dark chocolate, c) measuring mood for a second time (= mood 2), and d) reading a service scenario and a mood measure for a third time (= mood 3). First, we measured participants current mood, after which they participated in a dark chocolate taste test. The participants ate a minimum of three pieces of dark chocolate. To make the taste test credible, participants rated the taste of the sampled dark chocolate (e.g., 'Did you like the chocolate') immediately after tasting. After the taste test, participants rate their mood again on the same scale. Next, they read a restaurant service scenario (see Appendix A) about a positive service encounter after which mood was assessed again.

Measures pretest

All Cronbach's alphas were satisfactory ($\alpha_{mood1}=.84$, $\alpha_{mood2}=.87$, $\alpha_{mood3}=.90$; see Appendix B for items). Mood was three times assessed by means of the Dutch version of the basic mood introspection scale (BMIS, Mayer & Gaschke, 1988). Participants rated 16 mood adjectives (e.g., drowsy, calm, active) on a 7-point Likert scale (1= I do not feel this at all, 7= I feel this very strong) twice. After the taste test participants answered questions about the taste of the sampled food, and different questions on for instance their fondness of chocolate on 7-point Likert scales. We also asked participants age and gender.

Results

We conducted a mixed model analyses (within; 3 times mood) to investigate the impact of eating dark chocolate and reading a scenario on mood. A first order autoregressive variance-covariance matrix (AR(1)) was used to model the within-subjects covariance on the dependent variable (mood). An autoregressive matrix was chosen because it allows for the examination of time-to-time changes in the dependent variable. We find that measurement time has a significant impact on mood ($F(2, 101.70) = 23.50$, $p < .001$). Mood increases both after eating the dark chocolate as after reading the scenario ($M_{mood1}=4.52$, $M_{mood2}=4.82$, $M_{mood3}=5.12$). Thus, indeed eating dark

chocolate improves mood. Pairwise comparisons showed that mood before tasting is significantly lower compared to after eating dark chocolate and reading the scenario (with $p < .001$). Thus, after eating dark chocolate participants will be in a better mood before start reading the service scenario in the following studies, leading to better post-consumption mood. In turn better post-consumption mood will lead to better service performance outcomes. After reading the scenario mood increases again compared to mood measured after eating dark chocolate (with $p < .001$).

Appendix C. Items and Cronbach's alphas for study 1-2

	Study 1	Study 2a	Study 2b
<i>Taste test (self-constructed)</i>			
The chocolate/grape/cookie was ¹ (not at all tasty - very tasty)			
Would you buy this chocolate/grape/cookie frequently? ¹			
How much do you like eating (dark/milk chocolate/grape/cookie)? ¹			
How frequently do you eat chocolate/grape/cookie? ¹			
How much did you feel like eating chocolate/grape/cookie you had now? ¹			
<i>Mood (BMIS; Mayer & Gaschke, 1988)</i>			
Lively			
Drowsy ^r			
Happy			
Grouchy ^r			
Sad ^r			
Peppy			
Tired ^r			
Nervous ^r			
Caring			
Calm			
Content			
Loving			
Gloomy ^r			
Fed up ^r			
Jittery ^r			
Active			
<i>Mood_{before}</i>	.82	.84	.86
<i>Mood_{after}</i>	.84	.87	.85
<i>Satisfaction (Maxham, 2001)</i>	Pos =.93	Pos =.93	.96
	Neg =.89	Mod =.96	
How satisfied are you with the quality of ...			
I am satisfied with the service of ...			
How satisfied are you with this service? ¹			
<i>Word-of-mouth valence (Harrisson-Walker, 2001; Lang, 2009; Singh, 1990)</i>	Pos =.66	Pos =.63	.71
	Neg=.60	Mod =.73	

	Study 1	Study 2a	Study 2b
I only have good things to say about my experience with ...			
I am proud to tell others that I go to			
I would not recommend this service to others ¹			
I would complaint about this service to friends and family ¹			
<i>Return intention (Maxham, 2001)</i>	Pos =.81 Neg=.90	Pos =.94 Mod =.97	.94
I will continue to go to ... if I go for dinner/buy a phone			
I am planning to go to ...when I am going out next time/when I need a new phone			
How big is the chance that for a next night out/the next time you need a phone you will go to ...again?			
Will you use the service of this company again? ¹			
<i>Complaint intention (Singh, 1990; Kim et al, 2003)</i>	.78	-	-
Will you formulate a complaint?			
I will complain to the employee or manager right after (or on my next visit to ...) experiencing dissatisfaction.			
I will make the company take proper action right after experiencing the dissatisfaction.			

Realism

How realistic was the scenario about?

Note. Pos = α for the positive scenario, Neg = α for the negative scenario, Mod = α is for the moderately positive scenario^r = reversed coding, ¹ =self-constructed

Appendix D. Items and Cronbach's alphas for study 3

Dutch PANAS (Watson, Clark, & Tellegen, 1988; Engelen et al., 2006)

Positive items

Attentive	Interested	Mood _{before} . = .87
Active	Strong	Mood _{after} = .92
Alert	Determined	
Excited	Inspired	
Enthusiastic	Proud	

Negative items ^r

Hostile	Scared	Mood _{before} . = .88
Irritable	Afraid	Mood _{after} = .85
Ashamed	Jittery	
Guilty	Nervous	
Distressed	Upset	

Mood total Mood_{before}. = .85

Mood_{after} = .89

Satisfaction (Voss, Parasuraman, & Grewal, 1998)

.89

- I am satisfied with the provided service
- In my opinion they deliver a food service

Word-of-mouth positive (Price & Arnould, 1999; Harrison-Walker, 2001)

.95

- I would recommend this shop to friend
- I would say positive things about this shop to other people
- I would recommend this shop to my friends if they would ask about it

Return intention (Maxham, 2001)

- Next time I need shoes I will come again to

General attitude toward the shop (Goldsmith, Laferty, & Newell, 2000)

- My general impression of the is good

Note. ^r = reversed coding

CHAPTER VI: Concluding remarks

CHAPTER VI: Concluding remarks

This dissertation considered the role of affective processes throughout the customer journey while interacting with service companies and how these processes impact service performance evaluation (e.g., satisfaction). This dissertation highlighted three topics that need further attention while studying the customer journey, namely the emotional component of the CX, exploring the impact of underlying processes during the customer journey, and new methods to measure the customer journey.

Chapter II & III used a multi-method approach to capture (un)conscious emotions and their temporal fluctuations during the purchase stage of the CX, whereas Chapter IV and V centered on prepurchase underlying processes in consumers. This final chapter is structured as follows. First, a recapitulation of the main findings of Chapters II to V is provided, followed by discussion on overarching theoretical, methodological, and managerial contributions. We conclude with a discussion of limitations that characterize the conducted research and present suggestions for future research.

1. RECAPITULATION OF THE CORE FINDINGS

Chapter II explored the effect of service interface on the emotional component of the CX by combining both self-report and neurophysiological measures. In contrast to previous literature, we found that service interface (SST versus HI) did not impact self-reported service performance outcomes (e.g., satisfaction). This indicates that, at least when creating a loyalty card, it does not matter if customers use SST or are assisted by an employee. This finding may be explained by that, while creating a loyalty card, service interface in our study had a very limited impact on emotions. However, some different results surfaced between the self-report data and neurophysiological data of emotions. For instance, according to valence measured by EEG, service interfaces and phase of the service encounter had no impact, whereas we did find those effects on self-reported phase-specific valence. Phase-specific valence was more positive during the HI condition. In line with the literature, the failure and filling out personal details 2 phase were conceived the most negative from all phases. In contrast to several previous studies, we did not find higher positive effects (compared to other phases) of recovery actions (e.g., Chebat & Slusarczyk, 2005; DeWitt, Nguyen, & Marshall 2008). Further, those phases were also not better

perceived when carried out by a human employee. Thus, in this study, the impact of SST versus HI on emotional component of the CX seemed very limited. Overall, we concluded that SST versus HI has a limited effect on emotions during the CX. Important is that most variation in emotion was associated with phase, indicating that different phases throughout a CX are important to consider while designing a service.

Chapter III focused on the emotional effect of choosing the gender of the frontline employee that will serve you by means of a multi-method approach. Two studies provided preliminary evidence that, in contrast of what is expected from the customization and gender literature, not a lot of differences between having the choice to be served by a female/male provider or having no choice surfaced. Having the choice between female or male service provider compared to not having a choice did not substantially impact service performance outcomes or emotional responses in both studies. Interestingly, when taking a closer look to the qualitative results we found that when people are offered a choice, both men and woman generally choose to be served by a woman. Participants provided multiple reasons in line with the literature (Mathies & Burford, 2011), such as that female frontline employees are more warm and easier to talk to. When comparing the two no choice conditions, we found emotions and service performance outcomes in both studies did not differ considerable when looking at the self-reported results. Conversely, looking at the neurophysiological results we did find several hints that women find it more pleasurable to be served by another woman, but these more pleasurable emotions did not transfer to better service performance outcomes. For men we did not observe this effect. Yet, men were found to be less stressed and frustrated when being served by a woman in the no choice conditions.

Chapter IV investigated the effects of bodily changes on service performance evaluations and complaint behavior. We found that bodily changes play a role during service encounters and that service valence can moderate this relationship. Our studies show that bodily changes (decreased HR) related to feeling empathic concern increased overall satisfaction, return intentions, and WOM_{pos} after a positive service encounter. Further, we found that the induced bodily changes did not have a positive or negative impact on service evaluations after a (very) negative service. Yet, satisfaction was higher and WOM_{neg} was lower after experiencing a moderately negative service. Thus, inducing bodily changes that are related to empathic concern in customers can be valuable, since positive effects occur in case of positive and moderately negative service encounters and no

negative effects surfaced after a (very) negative service encounter. Lastly, we showed that support-seeking coping was higher after participants experienced a moderately negative service when bodily changes linked to empathic concern were induced.

Chapter V studied the effect of dark chocolate as a mood-enhancing tool during a service encounter. We conducted several studies to test if eating dark chocolate has a positive impact on service performance outcomes in different service contexts, compared to different types of food, and across scenarios with a different valence (e.g., positive versus very negative). The main conclusions were that after reading a positive service scenario, participants who ate dark chocolate (compared to grapes or cookies) reported higher service satisfaction and return intention, these effects were fully mediated by mood. After a negative service encounter, we did not find these results. These results were extended by showing that participants who ate dark chocolate and milk chocolate had a better mood, in turn mood had an impact on for instance service satisfaction after a positive service encounter. After participant read a moderately positive scenario, we found only an effect on return intentions of milk chocolate (versus nothing). Since milk chocolate also had several positive effects on service performance outcomes, we investigated the impact of taste. We showed that when the taste of chocolate is low or mediocre, dark chocolate (versus milk chocolate) has a more positive effect on mood, if the taste is very good this effect changes. This effect did not occur after reading a moderately positive scenario. In a field study, we showed that when consumers ate dark chocolate (compared to milk or nothing), they had a higher mood after the service encounter. Service satisfaction and general satisfaction with the firm was higher after eating dark chocolate compared to eating nothing or milk chocolate, through mood. We concluded that dark chocolate is a suitable mood-enhancer and that dark chocolate has an impact on several service performance outcomes through mood after a (moderately) positive service scenario.

2. THEORETICAL AND METHODOLOGICAL CONTRIBUTIONS

Apart from the specific contributions of the empirical chapters, this dissertation provides several overarching contributions that I discuss here. This dissertation tapped in to the need to investigate affective and underlying processes during the different stages of the customer journey in more depth. To investigate these processes and to capture the dynamic nature of the customer journey, we explored the adoption of neuroscientific measurement tools. Our general contributions

centers around three topics, namely exploring the affective component, underlying processes, and new measurement tools throughout the customer journey.

First, this whole dissertation contributes to the service literature by taking a fresh new perspective on studying the customer journey. First off, it became clear that the research on affective processes while studying the customer journey is still in nascent stage. For instance, terms as mood and emotion are often used interchangeably in service research (Beedie, Terry, & Lane, 2005; Vanlessen, De Raedt, Koster, & Pourtois, 2016), however they are not the same. Furthermore, retrospective self-report tools to measure emotion have been the go-to method, yet they are not without drawbacks and new methods do exist. This dissertation is a call to integrate theory and methods derived from new disciplines such affective neuroscience and modern psychology in the service research domain. For instance, Chapter IV heavily relied on theory from (affective) neuroscience and modern psychology to introduce bodily changes in the service research domain. Furthermore, Chapter II, III, and IV applied different neuroscientific methods on service research topics.

Second, the service literature has been mainly looking for proximate explanations, but ignored underlying processes (e.g., bodily states, evolutionary explanations). Yet, as this dissertation shows (e.g., serotine, bodily changes), this does not provide the full picture on how customers' minds and behavior works. Most likely, underlying processes have been often ignored, because the current service researches toolbox is insufficient to capture them. Indeed, there is a broad diversity of methods used in service research, yet neuroscientific tools (that can capture underlying processes) have been neglected (Benoit, Scherschel, Zelal, Nasr, & Kandampully, 2017). This dissertation shows that studying underlying processes can be beneficial for service research. It can help us to understand individual difference, psychological processes, and customer behavior better (cf. Plassmann, Venkatraman, Huettel, & Yoon, 2015). For instance, despite this rich background in the literature, empirical examinations of effective methods for keeping stress levels low, building mutual trust and empathy, and enhancing prosocial behaviors in service encounters are incomplete (Mende and Bolton 2011). Specifically, displaying friendliness and genuine care during employee–customer interactions boosts trust (Gremler, Gwinner, and Brown 2001; Lemmink and Mattsson 2002; Sundaram and Webster 2000); yet a thorough understanding of the mechanisms that drive trust are lacking. Studying hormones and neurotransmitters (underlying processes) could help us to understand these mechanisms better. Furthermore, from

this dissertation we can derive that it is also possible to influence these underlying processes (e.g., Chapter IV & V) during the prepurchase stages to improve service performance outcomes, indicating that they form an important subject of further investigation and can be useful for service researchers and service design. For instance, in Chapter V we showed that changed heart rate related to empathic concern had an influence on customer service performance outcomes.

Third, this dissertation served as a starting point for exploring key questions that have been put forward, such as “How can CX be measured in such a way that it captures all facets of the construct?” and answer the calls to study the CX in such a way that allows a dynamic measurement (Lemon & Verhoef, 2016; Venkatraman, Clithero, Fitzsimons, & Huettel, 2012). Along this line, this dissertation displays the benefits of tackling research questions by relying on a multi-method approach. Indeed, both in Chapter II and III we could draw different conclusions by using different methods (e.g., neurophysiological measures, qualitative measures, and self-reports). For instance, if we only had used self-report measures to study customizing the gender of the service employee, we would most likely have concluded that customizing the gender of a service employee is not important while ordering a concert ticket. Nevertheless, by integrating quantitative, qualitative, and neurophysiological data we do see that overall women are preferred as service employee, and that a further investigation on this topic is crucial. Further, we saw in Chapter II that neurophysiological measures are better in picking up difference in arousal level across phases during the CX, thus it provides us with extra information on the CX. However, overall when looking at both self-report and neuroscientific methods, the added value of using two methods for studying the CX was limited. We saw that neurophysiological tools did provide some additional information, but in the context of our studies the contribution of neurophysiological tools was limited. It seems that for measuring the CX of a rather simple service interaction retrospective self-reports are good enough. Especially, if you consider the cost and time-investment of neurophysiological compared to self-report measures. Further research is necessary on the adoption of neuroscientific measures to explore the customer journey and other topics in the service research domain (see *infra*).

3. MANAGERIAL CONTRIBUTIONS

Companies are always thriving to improve the customer journey and CXs. Many companies rely on customer experience management to craft satisfying CXs and fulfilling customer journeys

(Homburg, Jozić, & Kuehnl, 2017; Palmer, 2010; Schmitt, 2010). This dissertation explored affective processes during different stages of the customer journey and explored the use of neuroscientific tools in measuring the CX. Hence, several overarching take-aways for service practitioners and customer experience managers can be derived from this dissertation. Especially, since this dissertation focused on the current customer experience and simple mundane service encounters including a failure (Chapter II & III). Furthermore, services with different quality perceptions (e.g. positive, negative; Chapter IV & V) were investigated.

First, throughout this dissertation it became clear that a positively perceived service is crucial to satisfy your customers. Across the different chapters it became obvious that a good service is key to impact service performance outcomes. For instance, we found that adding small detail at the beginning of a service experience is only beneficial when the following service was positively perceived (Chapter V). Further, we found that when a failure happens this negatively impacts affective processes (Chapter II & III). Thus, we underline that first practitioners need to ensure they provide a decent core service, before trying to enhance their CX with for instance small details or changes in the servicescape.

Secondly, throughout this dissertation we show that affective processes and underlying processes should not be ignored. We caution service experience designers to also keep those processes in mind while designing a service. Further, we show that service providers can impact affective processes (e.g., emotion, bodily states), underlying processes (e.g., bodily states), and performance outcomes through different stages of the CX. In Chapter II and III we focused on affective processes during the purchase stage. It was clear that throughout this CX emotions of customers fluctuate. We suggest that practitioners keep this in mind while designing and delivering services.

Thirdly, drawing from Chapter IV and V, we caution that service providers should also keep the prepurchase stages in mind. We suggest that they should try and stimulate optimal pre-consumption bodily states and mood in customers to maximize their chances to create satisfying CXs and build long-term relationships. One way to do so is to integrate small details like give a piece of chocolate (Chapter V). Furthermore, we suggest to train staff to be able to assess micro expressions and bodily states in customers. Some frontline employee might be able to do so naturally, but we suggest making your frontline employee aware of the impact of pre-consumption (and of course during the experience as well) and train them to read for instance micro expressions

could not only benefit the company, but also customers and frontline employees. Indeed, Matsumoto & Hwang (2011) have not only shown that reading micro expressions is trainable, but also other people rated the trainees better on social and communicative skills. If frontline employees are able to read consumers' affective processes (mood, emotions, bodily states), they can adapt their service delivery throughout the customer journey by changing their own behavior, communication style, or emotional display in order to cater for consumers' current needs (Matilla & Enz, 2002). This results most likely in a more satisfying experience for both customer and frontline employee (Bitner, Booms, & Tetreault, 1990). An enjoyable employee–customer interaction has positive effects not only for the customer (Delcourt, Gremler, Van Riel, & Van Birgelen, 2013) but also for the company (Gremler & Gwinner, 2008; Gremler, Gwinner, & Brown, 2001), and its employees (Bailey, Gremler, & McCollough, 2001; Frey, Bayón, & Totzek, 2013; Zimmerman, Dormann, & Dollard, 2011). More specifically, satisfying employee–customer interactions have positive effects on customer loyalty, positive word-of-mouth behaviors, employee job satisfaction, employee loyalty, and customer well-being.

Lastly, we argue that using neuroscientific tools could be valuable for managers and service designers to help to pinpoint crucial moments during a CX. These tools can assist to identify points where interventions during a CX are necessary. However, as previously discussed the added value of neuroscientific techniques while measuring the CX was limited in our studies. Furthermore, neuroscientific techniques have several drawbacks compared to other techniques such as self-report. For instance, conducting neuroscientific studies are time- and effort-consuming, pretty expensive, and require a specific skillset. Also, unlike a customer satisfaction survey, you cannot conduct a neuroscientific study on every customer that enters your store, thus neuroscientific techniques are (at this point in time) not suitable to use as a metric to see if all your current customers are satisfied, although they might be more suitable in the service design phase. Hence, we generally advise practitioners not (not yet) to pay market research firms for expensive neuroscientific studies, especially when considering the effort and costs related to these techniques as well. More 'fundamental' research is necessary on applying neuroscientific techniques in the context of the customer journey before adopting these techniques in real-life business settings. We do argue that for very complex CXs (e.g. festival, airport) and situations where there is a high risk of social desirability bias neurophysiological tools might prove very useful. In these cases, combining neuroscientific techniques with self-report measures, and qualitative research could

offer new interesting insights. Indeed, during more complex experiences, phases (e.g., failure) may be less clear and it might be harder to pinpoint important emotion-laden touch points or unexpected ‘issues’ along the customer journey and in time with surveys. The near future might bring interesting applications for practitioners, for instance neuroscientific tools combined with AI-technology might be used to spot unhappy consumers in real-time (e.g. facial recognition, video-based heart rate, robot reading your emotion) and recovery interventions could be automatically activated (e.g., send an employee to a frustrated customer).

4. LIMITATIONS AND FUTURE RESEARCH

This dissertation provides ample of inspiration for further research ideas or directions on a variety of topic (e.g., customer journey, new measures). Table 1 provides an overview of research ideas covering three broad topics, namely measuring and studying the customer journey, service interfaces and encounter, and underlying process. In what follows I discuss several overarching limitations and suggestions for future research in more depth. For chapter-specific limitations and future research opportunities we refer the reader to the specific chapters.

Table 1.

Summary of research ideas.

Measuring and studying the customer journey & CX
<ul style="list-style-type: none"> • Compare self-report (or other) techniques with neuroscientific techniques to study the customer journey <ul style="list-style-type: none"> → Which predicts behavior best (e.g., buying something in a shop) → Which Predicts long-term effects best (e.g., return behavior) → Which is the best customer journey metric? • VR & avatar study designs (e.g. eXperience Induction Machine; Betella et al., 2014) • Applying other neuroscientific techniques (e.g., measuring hormones) • Field studies with wireless neuroscientific tools • Real-time customer data updating (e.g., facial recognition software, measuring heart rate with video) • Studying failure and recovery with in-the-moment measures • Study affective processes during the customer journey related to high involvement service
Service interfaces/ encounter
<i>SST vs. human interaction</i>
<ul style="list-style-type: none"> • Meta-analysis on impact of different service interfaces on service performance outcomes • Study blends of service interfaces (e.g., anthropomorphism, different service interface in different stages) • Study important moderators (e.g., involvement with service, failure severity, need for human interaction) • Impact of robots/service interfaces enhanced with artificial intelligence (i.e. Static versus dynamic service interfaces)

<i>Customizing people dimension (i.e. service provider)</i>
<ul style="list-style-type: none"> • Qualitative studies on what can be customized in service providers (e.g. gender, communication style, values, language, personality) • Experiments/field studies on impact of choice of customizing the service provider or people dimension • Study important moderators (e.g., culture, time orientation, gender, personality, self-efficacy) • Explore the impact of forced choice • Explore the impact on service provider of customer choice related to the service provider • Customizing customers: does it happen and could it be a good thing?
<i>Gender service provider</i>
<ul style="list-style-type: none"> • CIT and in-depth interviews to explore why people prefer to be served by women? What can change this? • Impact of androgynous service providers • Study stereotypical service providers (e.g., nurse, construction worker)
<i>Small details</i>
<ul style="list-style-type: none"> • Investigate impact small details in postpurchase stage • Search for other small details that can be useful (inspiration can be drawn from experimental psychology, service literature, and part on underlying processes in this dissertation) • Investigate if small details have long-term effects (e.g., loyalty) • Investigate if people habituate to the specific small details • Investigate if small details can backlash as well in certain contexts
Underlying processes during the customer journey
<ul style="list-style-type: none"> • Explore impact of stable bodily states (e.g. fetal testosterone) and genetics • Apply different neuroscientific tools (e.g., neuroimaging, blood draws) <ul style="list-style-type: none"> ○ Some neuroimaging tools suitable to study for instance customer journey, user experience ○ EEG: topics on attention & affect ○ Neurophysiological tools: topics as customer journey, servicescape, usability studies, anything related to affect & attention ○ Hormones & neurotransmitters: topic such as failure, CX in hedonic settings or health care, servicescape

As shown in chapter IV & V very negative service encounters can have very different effects compared to positively valenced service encounters. However, in both chapter II and III we only focused on very mild failure situations. We took this approach since most service encounters are in fact mundane and therefore also situations deserve attention. Note that every service exchange leads to a CX regardless of how mundane they encounter may be (Schmitt, Brakus, & Zarantonello, 2015). Along these lines, both chapter II and III focused on a low involvement service (creating a loyalty card and reserving a concert ticket). However, high involvement with a service could result in different outcomes (Franke, Keinz, & Steger, 2009; Ostrom & Iacobucci, 1995). We argue that most services are indeed low-involvement services. Essentially, both chapters used a conservative approach, yet we still found some hints that things might be going

on. Suggesting that further research is necessary. We suggest that future research should explore the impact of service interfaces (SST versus HI, choice of gender) in both high-involvement service contexts and during severe failure situations, since this could moderate the impact of service interfaces (e.g., Franke et al., 2009; Ostrom & Iacobucci, 1995). It might be the case that in those situations service interface and customization becomes a more crucial antecedent of the emotional CX.

Furthermore, all our chapters focused on a single CX. This made sense for chapter IV and V, because we wanted to investigate the effect of prepurchase state on a particular encounter. For chapter II & III we focused on a single CX because our focus lied on exploring consumer emotions by means of a new method. Focusing on a journey consisting out of several CXs and lots of touch points would have made these studies overly complicated and would also not have allow to draw specific theoretical contribution on the topic of SST versus HI and customizing the people dimension. Nevertheless, we believe that studying a whole service journey with neurophysiological tools could be very interesting. We suggest future research to use wearable neurophysiological tools and have consumers go for instance in to a shopping mall or an airport. The whole consumer journey can be mapped and these tools will help to pin-point key moments and touch point throughout that experience. However, further research should also focus on determining the predictive power of different methods. We believe that the service domain would benefit from studies comparing different methods and see if they predict different outcomes or the same. For instance, it would be possible that self-reported emotions better predict self-reported outcomes and neurophysiological measures of behavioral outcomes. There is no way to know now, but I believe studies focusing on exploring the predictive power of different methods could help future researchers to better design their studies or experiments.

Next to wearable neurophysiological tools, we suggest that also other neuroscientific methods could be useful to study consumers in a service context. Inspiration can be drawn for both our Chapter I, Chapter IV and V, they briefly expanded upon the idea of studying neurotransmitters and hormones during service encounters. Indeed, dark chocolate might be related to serotonin (Chapter V) and the movies used in Chapter IV to changing levels of oxytocin and cortisol. An interesting avenue in order to understand consumers' mood, behavior, cognitive processes, and decision-making better would be to study neurotransmitters and hormones in the service domain (e.g., Boksem & Smidts, 2015; Fürst, Thron, Scheele, Marsh, & Hurlemann, 2015; Lichters,

Brunnlieb, Nave, Sarstedt, & Vogt, 2016). Since neurotransmitters and hormones have an important impact on people's behavior, mood, and thought processes (e.g., impact on pro-social behaviors, decision-making, consumer behavior, Crockett, Clark, Hauser, & Robbins, 2010; Doya, 2008; Lichters et al., 2016).

For future research it is interesting to go further and investigate other techniques to impact underlying processes. This will help to establish clear guidelines for service practitioners on which behavior or servicescape attributes they should focus to enhance for instance mood in consumers or change bodily states in congruence with what would be beneficial. Inspiration can be drawn from experimental psychology research (e.g., Forgas, 1991; Gable & Harmon-Jones, 2008; Johnson, Waugh, & Fredrickson, 2010; Yang, Yang, & Isen, 2013; Zhang, Hui, & Barrett, 2014).

In Chapter II and III we used experiments, but unlike most studies studying service interfaces, we did so by having the participants really participate in a service encounter. This has several advantages over other methods (e.g., scenarios), but still less realistic compared to field studies or quasi-field experiments. Furthermore, we had to rely on research assistants to play the role of frontline employee. We followed several guidelines to ensure that their behavior and appearance was the same across participants (e.g., same t-shirt, same service script). Nevertheless, it is impossible to assure that they never had an extra sparkle in their eye or that their micro expressions were always the same. Therefore, future researchers could turn to virtual reality designs. This does not only allow to create the exact same handling of every participant, but permits a very flexible way with unlimited possibilities to change almost anything in a servicescape or on a service employee. Think back about Chapter III, if we would apply a virtual reality setting we could have created a design where participants arrive in the concert venue and two reception desks are open. They see a man and a woman, that are exactly the same in appearance (except for some male or female traits), as attractive, and behave in exactly the same way. This is nearly impossible to do in the real world.

In all our chapters we used self-reported service performance outcomes and intentions measures on a single moment. Further, participants report those almost immediately after they participated or read about the service encounter. Future research could extend our results by integrating actual behavioral outcomes (e.g., did a customer return, real buying behavior) and longitudinal measurement (e.g., Larivière, 2008). This is not only important to study behavior and

long-term effects in itself, but could also help to validate different methods to measure the CX better (see supra).

To conclude, this dissertation can be seen as a call for service research 2.0. Technology transformed how services are designed, delivered and consumed (Larivière et al., 2017; Ostrom, Parasuraman, Bowen, Patricio, & Voss, 2015), and companies focus shifted to enhancing the customer journey and the customer experience (Lemon & Verhoef, 2016). Improved technology did not only play a key role in changing service delivery in itself, but provides service researchers and companies with new opportunities to measure the customer journey (e.g., big data, artificial intelligence, facial recognition; Grewal, Roggeveen, Nordfältb, 2017). For instance, neuroscientific measures are rapidly advancing, the price will most likely drop quickly, and easy-to-use applications will soon find the marketplace (e.g., facial recognition software, measuring heart rate with video). Hence, new frameworks and measurement tools are crucial in studying the customer journey. I truly believe that for the service domain to further evolve it is crucial to integrate new measurement tools (e.g., neuroimaging techniques) and co-create with other domains. I particularly believe that integrating disciplines such as (affective) neuroscience, cognitive psychology, and computer sciences would lead to new fruitful research avenues.

5. REFERENCES

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