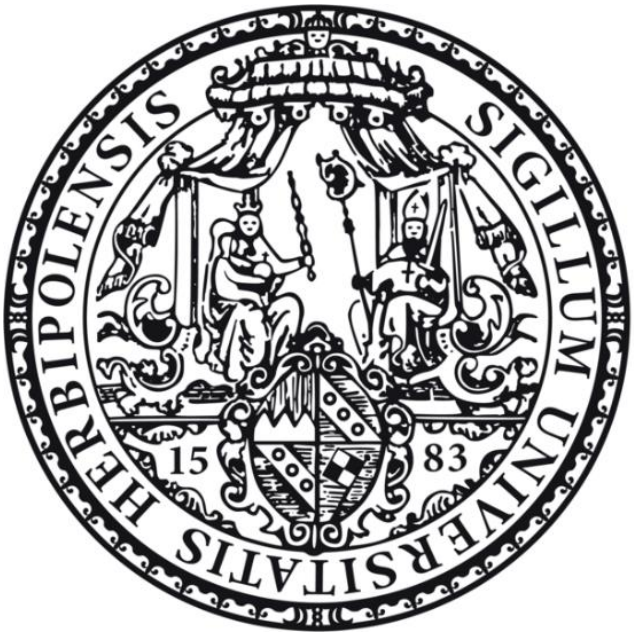
THE INFLUENCE OF

PERSONALITY AND TRUST

ON INFORMATION PROCESSING AND DECISION MAKING

IN THE SPECIFIC CONTEXT OF ONLINE MARKETING



INAUGURAL-DISSERTATION

for a doctoral degree

Faculty of Human Sciences
Julius-Maximilians-University Wuerzburg

submitted by

Saskia Müller

Wuerzburg 2023

Primary Supervisor: Prof. Dr. Johannes Hewig

Secondary Supervisor: Prof. Dr. Frédéric Thiesse

Third Supervisor: Prof. Dr. Markus Appel

Date of Public Defense: 16.04.2024

The best way to find out
if you can trust somebody
is to trust them
Ernest Hemingway

Affidavit

I hereby confirm that my thesis entitled “The Influence of Personality and Trust on Information Processing and Decision Making in the specific Context of Online Marketing” is the result of my own work.

I did not receive any help or support from commercial consultants. All sources and/or materials applied are listed and specified in the thesis. Furthermore, I confirm that this thesis has not yet been submitted as part of another examination process neither in identical nor in similar form.

Würzburg, 31.10.2023

Place, Date

Signature

Acknowledgements

At this point, I would like to thank all the people who have contributed to the success of this dissertation through their professional and personal support.

First, I would like to thank my primary PhD supervisor, Prof. Dr. Johannes Hewig, Chair of Psychology I, who has proactively supported me with excellent expertise in the realization of my research interests. Through his encouragement and openness, he created a working atmosphere in which a creative development and realization of my research ideas would only become possible.

I would also like to thank Prof. Dr. Frédéric Thiesse, Chair of Information Systems and Systems Development, for his support as part of my committee, his valuable advice during our meetings and for broadening my perspective with interdisciplinary elements of business informatics. I further wish to express my gratitude to Prof. Dr. Markus Appel, Chair of Communication Psychology and New Media, for his willingness to support me as part of my doctoral committee. A special thanks goes to Steven Schwehm, former part of the Chair of Information Systems and Systems development, now part of the Chair for Digital Marketing and E-Commerce, for his excellent and decisive professional support and interdisciplinary perspective in the realization of our research ideas.

Furthermore, my thanks are due to my working group, which always enabled professional improvements and inspirational thoughts through interesting discussions within an uplifting framework of constructive cooperation.

Most importantly and from the bottom of my heart, I would like to thank my partner Steven, my dear parents Bianka and Bernd, my sister Stefanie and my friends, especially Marlene, who always encouraged me to changes, put their deepest trust in me to pursue my goals and supported me with their utmost patience - motivationally and emotionally.

Finally, I would like to express my gratitude to the European Union with the project "European Fund for Regional Development" (EFRE) for funding my research and allowing me to present my work to an interested audience at international conferences.

Contents

List of Tables i
List of Figures ii
List of General Abbreviations iv
List of Statistical Abbreviations v
Abstract 1
1 Introduction 2
2 Theoretical Background 3
2.1 Problem Context: Business to Consumer (B2C) E-Commerce 3
2.2 Problem Definition: Information Asymmetry in B2C E-Commerce 7
2.3 Trust in B2C E-Commerce 9
2.4 Personality-Based Personalization of Trust-Enhancing Signals 18
2.5 Hypotheses 30
2.5.1 Hypothesis 1 30
2.5.2 Hypothesis 2 32
2.5.3 Hypothesis 3 34
2.5.4 Hypothesis 4 36
2.5.5 Hypothesis 5 38
3 Methods 41
3.1 Study 1: Personality-Associated Preference of Trust-Enhancing Signals 41
3.1.1 Participants 41
3.1.2 Procedure 42
3.1.3 Materials 44
3.1.4 Statistics 45
3.2 Study 2: Personality-Based Personalization of Trust-Enhancing Signals 48
3.2.1 Participants 48
3.2.2 Procedure 50
3.2.3 Study Design 53
3.2.4 Materials 58
3.2.5 Statistics 70

4 Results 91
4.1 Study 1: Personality-Associated Preference of Trust-Enhancing Signals 91
4.2 Study 2: Personality-Based Personalization of Trust-Enhancing Signals 92
4.2.1 Quality Testing of Reflective Measurement Models 92
4.2.2 Confirmative Analyses 107
4.2.2.1 Hypothesis 1 107
4.2.2.2 Hypothesis 2 112
4.2.2.3 Hypothesis 3 115
4.2.2.4 Hypothesis 4 118
4.2.2.5 Hypothesis 5 122
4.2.3 Explorative Analyses 129
5 Discussion 144
5.1 Summary and reflection of study results – Study 1 145
5.2 Summary and reflection of study results – Study 2 148
5.2.1 Hypothesis 1 148
5.2.2 Hypothesis 2 151
5.2.3 Hypothesis 3 154
5.2.4 Hypothesis 4 156
5.2.5 Hypothesis 5 158
5.3 Theoretical Implications 165
5.4 Practical Implications 166
5.5 Strengths and Limitations 167
5.5.1 Research Method 167
5.5.2 Study Methodology 168
5.5.3 Study Design 169
6 Conclusion 170
References vi
Appendix xxvii

List of Tables

Table 1. *Greek notation for parameters and variables in SEM* 74
Table 2. *Illustration of dummy coded vectors under hypothesis 1.* 80
Table 3. *Illustration of model constraints under hypothesis 2.4.* 82
Table 4. *Illustration of model constraints under hypothesis 3* 84
Table 5. *Illustration of model constraints under hypothesis 5.* 89
Table 6. *Confirmatory factor and reliability analysis for DTT*. 93
Table 7. *Confirmatory factor and reliability analysis for IBT.* 94
Table 8. *Confirmatory factor and reliability analysis for TBs.* 95
Table 9. *Confirmatory factor and reliability analysis for TIs.* 96
Table 10. *Confirmatory factor and reliability analysis for SP.* 97
Table 11. *Correlations between the first-order latent constructs of DTT.* 99
Table 12. *Second-order factor and reliability analysis for DTT.* 100
Table 13. *Correlations between the first-order latent constructs of IBT.* 101
Table 14. *Second-order factor and reliability analysis for IBT.* 102
Table 15. *Correlations between the first-order latent constructs of TBs.* 103
Table 16. *Second-order factor and reliability analysis for TBs.* 104
Table 17. *Correlations between the first-order latent constructs of TIs.* 104
Table 18. *Second-order factor and reliability analysis for TIs.* 105
Table 19. *Structural model test results for hypothesis 1.* 108
Table 20. *Descriptive statistics and 95 % CIs for TBs, TIs and TRB.* 110
Table 21. *Structural model test results for hypothesis 2*. 113
Table 22. *Structural model test results for hypothesis 3.* 116
Table 23. *Structural model test results for hypothesis 4.1, 4.2, 4.3*. 119
Table 24. *Structural model test results for hypothesis 5.1.* 123
Table 25. *Structural model test results for hypothesis 5.2.* 124
Table 26. *Structural model test results for hypothesis 5.3*. 125
Table 27. *Structural model test results for personality* 126
Table 28. *Personality effects on user behavior.* 131
Table 29. *Results of the binomial logistic regression for behavioral measures.* 141
Table 30. *Results of the binomial logistic regression for cognitive measures.* 142
Table 31. *Correlation between cognitive and behavioral measures.* 143

List of Figures

Figure 1. B2C e-commerce market volume in Germany. 4
Figure 2. Conversion funnel in e-commerce. 5
Figure 3. Model of initial trust formation (MITF). 13
Figure 4. Integration of trust-enhancing signals into the MITF. 17
Figure 5. Integration of personality into the MITF. 23
Figure 6. Integration of personalization into the MITF. 29
Figure 7. Development of hypotheses 1.1, 1.2, 1.3. 31
Figure 8. Development of hypotheses 2.1, 2.2, 2.3. 33
Figure 9. Development of hypotheses 3.1, 3.2, 3.3. 35
Figure 10. Development of hypotheses 4.1, 4.2, 4.3. 37
Figure 11. Development of hypotheses 5.1, 5.2, 5.3. 39
Figure 12. Integration of hypotheses into the model. 40
Figure 13. Illustration of the study procedure (study 1). 43
Figure 14. Illustration of the study procedure (study 2). 50
Figure 15. Illustration of the technical background of personalization. 52
Figure 16. Matrix of condition combinations. 54
Figure 17. Illustration of the distinct combinational sequences of conditions. 55
Figure 18. Illustration of the cell occupation. 56
Figure 19. Basic principle of trust-enhancing signal allocation. 57
Figure 20. Illustration of the internal (product range) structure. 61
Figure 21. Illustration of the home page structure. 64
Figure 22. Illustration of the product overview page structure. 65
Figure 23. Illustration of the product detail page structure. 66
Figure 24. Illustration of the page structure (contact, about us, imprint). 67
Figure 25. Illustration of the page structure (GTC, privacy policy, FAQs). 68
Figure 26. Illustration of the page structure (shopping cart, checkout). 69
Figure 27. Measurement model (CFA) for disposition to trust. 74
Figure 28. Measurement model (CFA) for institution-based trust. 75
Figure 29. Measurement model (CFA) for trusting beliefs. 75

Figure 30. Measurement model (CFA) for trusting intentions. 75
Figure 31. Measurement model (SFA) for disposition to trust. 76
Figure 32. Measurement model (SFA) for institution-based trust. 77
Figure 33. Measurement model (SFA) for trusting beliefs. 77
Figure 34. Measurement model (SFA) for trusting intentions. 78
Figure 35. Path Diagram of the full structural model (H1). 81
Figure 36. Path Diagram of the full structural model (H2). 83
Figure 37. Path Diagram of the full structural model (H3). 85
Figure 38. Illustration of the moderation model (H4)..... 86
Figure 39. Path Diagram of the full structural model (H4 - Neuroticism). 87
Figure 40. Path Diagram of the full structural model (H4 - Extraversion). 88
Figure 41. Path Diagram of the full structural model (H5). 90
Figure 42. Graphical illustration of model paths (study 1). 91
Figure 43. Results for the measurement models (CFA). 98
Figure 44. Results for the measurement models (SFA). 106
Figure 45. Factor scores of trusting beliefs sub-facets. 109
Figure 46. Results for the full structural model (H1). 111
Figure 47. Results for the full structural model (H2). 114
Figure 48. Results for the full structural model (H3). 117
Figure 49. Results for the full structural model (H4 - Neuroticism). 120
Figure 50. Results for the full structural model (H4 - Extraversion). 121
Figure 51. Results for the full structural model (H5). 127
Figure 52. Summary of confirmatory results..... 128
Figure 53. Trust-enhancing signal effects on trusting beliefs. 133
Figure 54. Trust-enhancing signal effects on trusting intentions. 135
Figure 55. Conditional trust-enhancing signal effects on trusting beliefs. 137
Figure 56. Conditional trust-enhancing signal effects on trusting intentions. 138
Figure 57. Behavioral measures by signal presentation and product category. 140

List of General Abbreviations

A	Agreeableness
AP	Anti-Personalization
B2C e-commerce	Business to Consumer e-commerce
C	Conscientiousness
CSS	Cascading Style Sheets
DSGVO	Data Protection Regulation
DV	Dependent Variable
E	Extraversion
FAQ	Frequently Asked Questions
GTC	General Terms and Conditions
HTML	Hypertext Markup Language
IV	Independent Variable
MITF	Model of Initial Trust Formation
MV	Moderator Variable
N	Neuroticism
NEO-PI-R	Revised NEO Personality Inventory
O	Openness to Experience
OP	Objective Personalization
P	Personalization
PHP	Hypertext Preprocessor
SEC	Search, Experience, Credence Goods
SP	Subjective Personalization
TB	Trusting Beliefs
TI	Trusting Intentions
TIPI-G	Ten Item Personality Inventory-German
TRB	Trust-Related Behaviors

List of Statistical Abbreviations

AVE	Average Variance Extracted
B	Regression Coefficient
C.R.	Critical Ratios
CFA	Confirmatory Factor Analysis
CFI	Comparative Fit Index
CI	Confidence Interval
CMIN	Minimum Discrepancy
CR	Construct Reliability
d	Cohen's d
df	Degrees of Freedom
M	Mean
ML	Maximum Likelihood
MCAR	Missing completely at random
MGA	Multigroup Analysis
N	Quantity (Total)
n	Quantity (subset)
RMSEA	Root Mean Square Error of Approximation
RSI	Relative Speed Index
SD	Standard Deviation
SE	Standard Error
SEM	Structural Equation Modeling
SFA	Secondary Factor Analysis
S_k	Distribution Coefficient of Kurtosis
SRMR	Standardized Root Mean Squared Residual
S_s	Distribution Coefficients of Skewness
r	Correlation Coefficient
VIF	Variance Inflation Factor

Abstract

Trust carries the capacity to shift the focus from risks to opportunities of a situation, making it an important resource for both individual and societal functioning. Scientific studies from the field of trust research point out that besides situation-specific factors (i.e., stimuli of the environment), cross-situationally stable interindividual differences (i.e., personality) are involved in the emergence of trust. Stable interindividual differences are particularly influential to the subjective experience of situational conditions in situations where information is incomplete (Baumert & Schmitt, 2012). Given the spatiotemporal separation between seller, buyer and product, the online shopping environment classifies as a prime example of markets with asymmetric information (Dimoka et al., 2012). Research has examined online consumer trust in the light of signaling theory to understand the effects of trust-enhancing signals. Yet, previous research neglects interindividual differences in the perception, processing and reaction to these signals. Against this background, this scientific work has two primary objectives: the investigation of (1) interindividual differences in the evaluation of trust-enhancing signals and (2) a personality-based personalization of trust-enhancing signals in its effect on cognition and behavior. For this purpose, an interactive and dynamically adaptable online shop setup was created, which served as realistic environmental framework. First, the results show a trust-enhancing effect of both objective and subjective personalization, with a superiority of subjective over objective personalization. Second, results suggest a particular susceptibility of the *beliefs* component of trust, with the personal *benevolence* sub-facet benefiting the most. Third, the results suggest that personalization exerts a specifically strong effect in what is, by definition, the particularly uncertain environment of credence goods. Fourth, results indicate that while the trust-enhancing effects of personalization operate (largely) independently of personality, the effect of personality (especially agreeableness and conscientiousness) on trust seems to depend on the condition of signal presentation. Taken together, the present work makes an important contribution to understanding the effect of personality-adapted signaling environments on the emergence of trust and decision making in the specific context of B2C e-commerce.

1 Introduction

"We're never so vulnerable than when we trust someone – but paradoxically, if we cannot trust, neither can we find love or joy" – Walter Anderson

Trust is of importance for all areas of human interaction. With its potential to shift the focus from risks to opportunities in situations of incomplete information, it provides the basis for interpersonal cooperation. In the light of globalization and digitalization requiring increasing levels of cooperation among strangers, trust is an ever more important resource at the individual and societal level. Given its importance for the functionality of individuals and societies, much effort has been devoted to studying the situational and psychological foundations of social trust. A key finding from these scientific studies is that individuals differ in their willingness to trust. Beneath the involvement of situation-specific factors (i.e., stimuli of the environment), this suggests the participation of cross-situationally stable interindividual differences (i.e., personality) in the emergence of trust. Especially in situations characterized by incomplete information, stable interindividual differences are of importance for the subjective experience of situational conditions (Baumert & Schmitt, 2012). With its spatiotemporal separation between seller, buyer and product, the online environment represents a prime example of markets with asymmetric information (Dimoka et al., 2012). The consumer has to reach the purchase decision under uncertainty, which requires the presence of trust (Wells et al., 2011). Online consumer trust has been investigated in the light of signaling theory to understand the effects of trust-enhancing signals, which serve as information substitutes on the website to promote the development of trust (Aiken, 2006; Wells et al., 2011). Largely neglected by previous research, however, are interindividual differences in the perception, processing and reaction to these signals. Given the dispositional component of trust, accounting for interindividual differences in information needs may have the potential to support the emergence of trust, to improve customer experience and to strengthen conversion rates. Against this background, this scientific work has two primary objectives: the investigation of (1) interindividual differences in the evaluation of trust-enhancing signals and (2) a personality-based personalization of trust-enhancing signals in its effect on cognition and behavior.

2 Theoretical Background

The focus of this work is on trust, personality and their interaction in the specific context of electronic (e-) commerce. With the theoretical background, the foundation for understanding the constructs examined in the empirical study underlying this thesis should be created. The first section addresses the *specific characteristics of e-commerce* that make it so suitable for the study of trust-related problems. The second section focuses on *trust* and *trust-enhancing signals* in online marketing. The third section considers *personality* and *personality-based personalization* from the perspective of trust in online marketing.

2.1 Problem Context: Business to Consumer (B2C) E-Commerce

Business to consumer (B2C) e-commerce can be defined as electronic trade in goods and services between a business (supplier) and a consumer (demander), implemented through interactive information- and communication technologies (Deges, 2020; Wöhe & Döring, 2013). The core element and target dimension of B2C e-commerce is the initiation, acquisition and processing of an *electronic transaction*. The electronic nature of the transaction dispenses the need for physical encounters between buyer and seller, classifying B2C e-commerce as manifestation of *distance trade*. Internet-based platforms like online shops serve as (primary) interaction platform between buyer and seller.

Within the last 20 years, online trade has experienced a strong economic upswing. The market volume of B2C e-commerce in Germany has increased from 1.3 billion € in 2000 to 97.4 billion € in 2022 (Handelsverband Deutschland, 2022). Similarly, the online market share on total retail sales volume increased from 0.3 % in 2000 to a considerable amount of 10.7 % in 2022 (Handelsverband Deutschland, 2022). Branch-specific sales drivers include non-food sectors like consumer electronics (share of total online volume 2022: 23.9 %, turnover 20.7 billion €) and fashion (share of total online volume 2022: 23.1 %, turnover 20 billion €), together representing 47 % of total online sales volume (Handelsverband Deutschland, 2022).

The average online shopper (German population aged 14 years and over) spends 1,423 € per year in the non-food sector, with the highest spending in consumer electronics and fashion (Handelsverband Deutschland, 2020). Growth in the number of online shoppers registered a general deceleration, which is probably attributable to the high coverage rate of 80 % among 14-29 year olds and 79.2 % among 30-59 year olds in 2019 (Handelsverband Deutschland, 2020). In contrast, the age group of people above sixty still registers a strong increment in the number of online shoppers (2022: +30 %, coverage rate of 34.9 % in 2019; Handelsverband Deutschland, 2019, 2022). Figure 1 illustrates the economic development of the B2C e-commerce market volume in Germany within the last 20 years (own figure based on Handelsverband Deutschland (2022)).

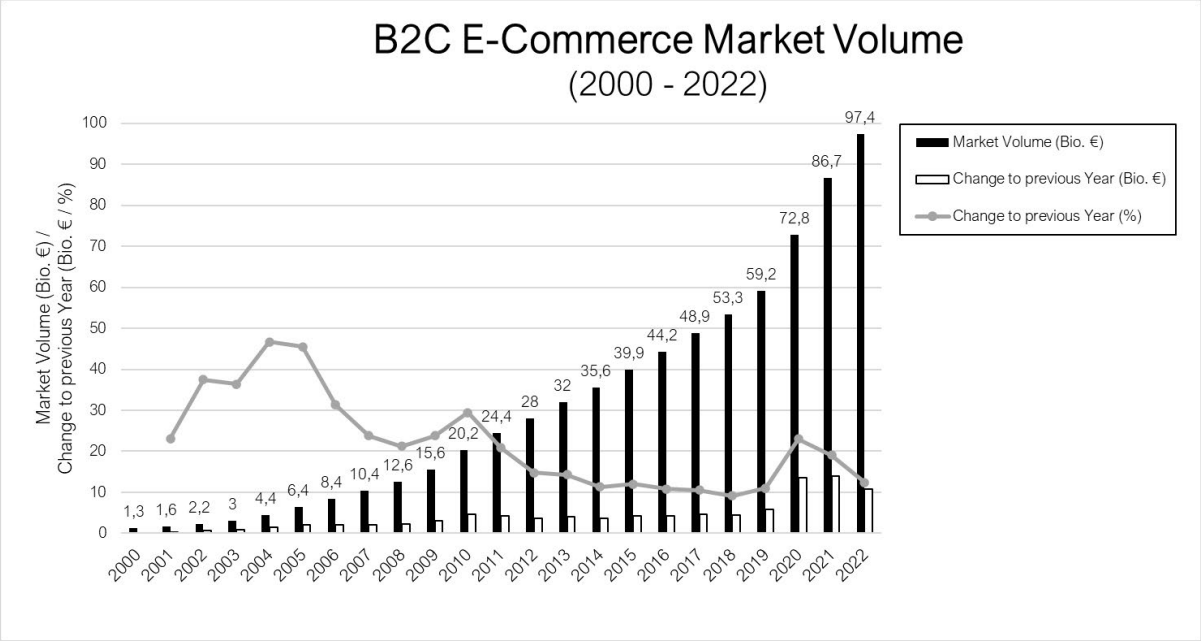


Figure 1. B2C e-commerce market volume in Germany.

The steadily increasing popularity of B2C e-commerce can be attributed in part to the flexibility that B2C e-commerce offers consumers. In modern society, where resource scarcity extends to time rather than money, an economically motivated consumer seeks to reduce time and effort costs associated with shopping in a retail environment. In this sense, compared to traditional brick and mortar business, online shopping provides time- and space-independent shopping experiences (access convenience), facilitates the collection of product information (search convenience) and allows for rapid execution of transactions (transaction convenience; Beauchamp & Ponder, 2010).

On closer inspection, however, it becomes clear that despite growing sales rates worldwide, considerable economic potential still remains unused. This can be recognized in central performance-based key indicators of online sales such as conversion rates. A *conversion* in the context of (online) marketing can be defined as transformation of the status of a target person (e.g., visitor of an online shop) into a new status (e.g., buyer of an online shop; Ahrholdt et al., 2019). The status of the target person can be assigned to an individual phase in the purchase decision process, as schematically represented in the so-called *conversion funnel* (see figure 2; own figure based on Deges, 2020).

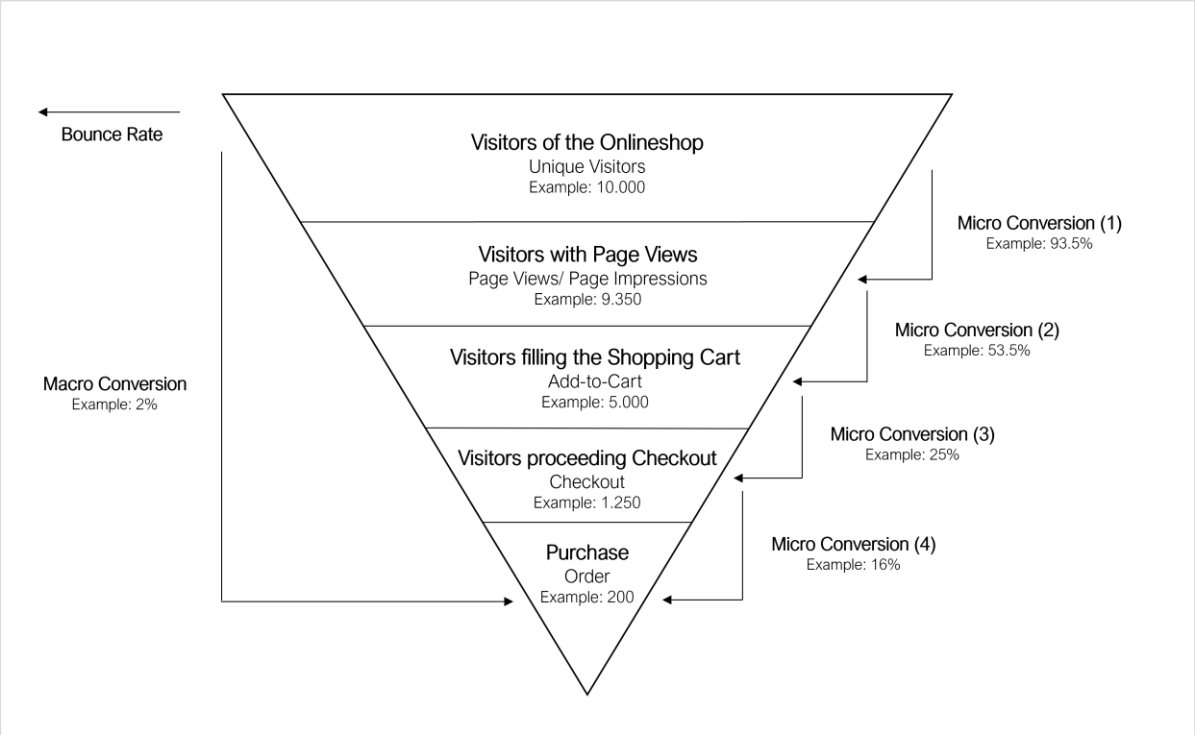


Figure 2. Conversion funnel in e-commerce.

The conversion funnel uses consecutive phases of user behavior to illustrate the customer journey, starting with the initial customer contact (e.g., visit of the online shop) and ending with the purchase decision (e.g., order in the online shop; Olbrich et al., 2019). Each successful phase transition is accompanied by an increase in the customer's cognitive involvement and purchase intention (Lemon & Verhoef, 2016). As an indicator of phase transitions within the conversion funnel, the *conversion rate* (in the context of B2C e-commerce) expresses the ratio of online store visitors who have performed a defined

target action (e.g., # of website buyers) to the total number of online store visitors (e.g., # of website visitors) in a given time period (Kreutzer, 2021).

Depending on the phase transition in focus, micro conversions (directly successive phases, e.g., ratio of page views to shop visits) are distinguished from macro conversions (more distant phases, e.g., ratio of buyers to visitors; Deges, 2020). In most cases, the term "conversion rate" refers to the macro conversion rate. Independent of industry and provider, the (macro) conversion rate averages between 2 % and 4 % (Holzwarth et al., 2006; McDowell et al., 2016; Moe & Fader, 2004). Depending on factors like brand awareness, the conversion rate fluctuates between 1 % for small and unknown companies and 10 % for large and well-known companies (Ahrholdt et al., 2019). The low value of this indicator underlines the problem that a large proportion of website visitors are lost at an earlier or later stage of the customer journey.

On the one hand, lower time and effort costs of online shopping compared to in-store shopping reduce cognitive dissonance when purchases are abandoned (Moe & Fader, 2004). On the other hand, probably due to a "mental categorization of the Internet as a search channel rather than a shopping channel" (Verhoef et al., 2007, p. 144), an increasing proportion of stationary sales is prepared online (e.g., electronics: 73 % of stationary sales, fashion: 44 % of stationary sales; Handelsverband Deutschland (2019)), a phenomenon called "webrooming" (Arora & Sahney, 2017).

Purchase abandonments at an earlier stage of the conversion funnel (e.g., *bounces* after only a single page view) indicate profound barriers to deeper interactions with the online store, such as technical problems, an unsuitable product range (e.g., regarding price level) or a less than appealing (i.e., user-friendly) design or usability (Ahrholdt et al., 2019). In contrast to earlier stages of the conversion funnel, the effect mechanisms behind purchase cancellations on later stages of the conversion funnel (e.g., *shopping cart* abandonments, *checkout* cancellations) are less clear. One possible source contributing to purchase abandonments in later stages may be found in the asymmetrical distribution of information between customers and sellers in B2C e-commerce (Wells et al., 2011), which often manifests in a lack of trust (B.-C. Lee et al., 2005).

2.2 Problem Definition: Information Asymmetry in B2C E-Commerce

The asymmetric distribution of information between customers and sellers is rooted in three basic conditions inherent to e-commerce. First, a spatiotemporal separation between *buyer and product* inhibits physical product inspections before a purchase (Dimoka et al., 2012; Mavlanova et al., 2012). As a consequence, consumers in online environments do not have access to intrinsic cues of product quality like physical appearance, smell or touch in advance to a purchase (San-Martín et al., 2017; Wells et al., 2011). Second, a spatiotemporal separation between *buyer and seller* inhibits face to face interactions with sellers (Gefen et al., 2003; Gefen & Straub, 2004). Hence, consumers in online environments do not have access to social cues of seller trustworthiness like gestures, facial expressions, direct conversation and behavior (Dimoka et al., 2012). Third, the *globally accessible structure of the Internet* involves a wide range of possibilities for the unauthorized access to as well as the collection, storage and analysis of personal data by third parties (Awad & Krishnan, 2006; Dinev & Hart, 2006; Smith et al., 2011). In its entirety, these features of e-commerce contribute to the problem of *information asymmetry*, which is defined as unequal distribution of information to the customer's disadvantage (Pavlou et al., 2007) and entails the "inability [of the consumer] to evaluate [seller and product] quality accurately prior to the purchase" (Mishra et al., 1998, p. 278).

The degree of (product-related) information asymmetry is further intensified by the *nature of the product* (Wells et al., 2011). Depending on the (cognitive) search effort necessary to obtain product quality related information prior to a purchase, information economics subdivide goods into three groups: search, experience (Nelson, 1970) and credence goods (Darby & Karni, 1973). *Search goods* are characterized by a priori (independent of product experience/before a purchase) easily accessible information on product quality (Nelson, 1970). A typical example for search goods from Nelson's original classification is clothing. The high level of easily accessible pre-purchase knowledge in search goods contributes to a low perceived purchase risk (Mitra et al., 1999). *Experience goods,* on the other hand, are characterized by a priori difficult to access, but a posteriori (dependent of product experience/after a purchase) easily accessible information on product quality

(Nelson, 1970). A typical example of experience goods from Nelson's original classification is electronics. The moderate level of pre-purchase knowledge in experience goods contributes to a moderate perceived purchase risk (Mitra et al., 1999). Finally, *credence goods* are characterized by neither a priori nor a posteriori easily accessible information on product quality (Darby & Karni, 1973). A typical example of credence goods are nutritional supplements. The low level of pre-purchase knowledge contributes to a high perceived purchase risk (Mitra et al., 1999). The **S**earch, **E**xperience and **C**redence (SEC) classification provides a *simplified* and *objective* framework for the categorization of goods and services based on the ease or difficulty with which consumers can access product quality related information. However, the final classification of a specific product as search, experience or credence good is a subjective judgement depending on interindividual differences (prior product experience/ knowledge), the focused product attribute and the situational context (Nakayama et al., 2010). Accordingly, it can be assumed that especially "the search vs. experience classification more logically represents the two extremes of product classification, with most items falling somewhere in-between" (Laband, 1991, p. 498). Nevertheless, the SEC classification of goods and services can serve as heuristic approach to the most probable judgment of an average person, when there is no knowledge about their state of experience (Wan et al., 2012).

Taken together, the information asymmetry between the two transacting parties confronts the decision maker with decision-making under uncertainty. As outcome of the investment decision, both gains (cooperative seller behavior) and losses (opportunistic seller behavior) are conceivable (Pavlou et al., 2007). Due to information asymmetry, the odds for gains versus losses are not a priori calculable, which is why the purchase decision has to be made under *uncertainty* (Dimoka et al., 2012). It is such decision-making environments characterized by uncertainty, where *trust* is a crucial mechanism of complexity reduction (Luhmann, 1979). With its potential to shift the focus from potential risks to opportunities in situations of incomplete information, trust enables the individual to remain capable of making decisions (Frederiksen, 2014). As aptly noted by Hawthorn (2000), "…the less information we have, the more trust we need" (p.114).

2.3 Trust in B2C E-Commerce

Trust can be defined as "*psychological state* comprising the *intention to accept vulnerability* based upon *positive expectations* of the intentions or behavior of another" (Rousseau et al., 1998, p. 395). This definition refers to the two critical components of trust: (A) the willingness of the trusting person (the trustor) to accept vulnerability to the trusted person (the trustee) and (B) confident expectations about the trustee's intentions and future behavior (Thielmann & Hilbig, 2015). Two necessary situational conditions have to be fulfilled to create an opportunity for trust to arise: (1) the presence of *risk* resp. *uncertainty*, understood as perceived probability of loss (Chiles & McMackin, 1996) and (2) *interdependence* of the involved parties, understood as reciprocal dependence in interests (Rousseau et al., 1998). Accordingly, the potential of trust results not from objective *risk reduction*, but from a psychologically reduced *risk perception* (Grünberg, 2014).

Considering its great importance for social, economic and political behaviors (Ben-Ner & Halldorsson, 2010), numerous efforts have been made in different disciplines like psychology, economics and sociology to investigate the conceptual nature of trust (Thielmann & Hilbig, 2015). In *personality psychology*, trust is understood from a dispositional perspective as cross-situationally stable expectancy in the reliability of (oral or written) statements of another individual (Rotter, 1971). In *social psychology and economics*, trust is understood as psychological state subject to situational influences (Bohnet & Zeckhauser, 2004). Finally, in *sociology*, the focus is on institutional structures safeguarding against betrayal of trust (Zucker, 1986). In appreciation of these different professional perspectives, interdisciplinary trust research considers trust as multidimensional construct, which is subject to dispositional, situational and institutional influences (Mayer et al., 1995).

In situations characterized by a lack of credible or meaningful information about a trusted person, trust towards strangers *(initial* or *generalized trust)* plays a crucial role (McKnight et al., 1998). Here, and in contrast to trust towards acquaintances (*repeated or specific* trust), cross-situationally stable influences (i.e., dispositions or generalized experiences) of the trusting person are especially influential to trust. The *first visit on a website in B2C*

e-commerce is a paragon of decision-making environments in which initial trust is critical for achieving goals (McKnight et al., 2002b), since the trustor (i.e., the buyer) does not receive credible information about the trustee (i.e., the seller) until after the transaction is completed. With the goal of systematizing the process of trust building in the context of the first visit on a website, McKnight et al. (2002) developed the model of initial trust formation.

2.3.1 Model of Initial Trust Formation

The model of initial trust formation integrates the interdisciplinary perspectives of personality-, situation- and institution-based trust research streams and puts initial trust in the context of e-commerce (McKnight et al., 2002a). The model is based on the empirically well-supported theory of reasoned action (Fishbein & Ajzen, 1975). This psychological theory aspires to predict a specific behavior from beliefs and behavioral intentions (Fishbein & Ajzen, 1975). In the following sections, the five model constructs (disposition to trust, institution-based trust, trusting beliefs, trusting intentions and trust-related behavior) will be described in more detail.

(1) Disposition to Trust. During psychosocial development, the individual makes repeated observations of behavior in social interactions with significant other people (e.g., parents, teachers or peers; Rotter, 1967, 1971, 1980). In the course of a lifetime, these experiences condense to a generalized, stable attitude towards the reliability of other persons (Rotter, 1971). The individual *disposition to trust* reflects a "consistent [cross-personal and cross-situational] tendency to be willing to depend on [general, nonspecific] others across a broad spectrum of situations and persons" (McKnight et al., 1998, p. 477). Consistent with this, individuals from different developmental backgrounds differ in their disposition to trust (Mayer et al., 1995).

Disposition to trust can be subdivided in two substructures: faith in humanity and trusting stance. *Faith in humanity* refers to the conviction that humans in general are typically competent, benevolent and of integrity. *Trusting stance* refers to the notion that, in general, better interpersonal outcomes can be achieved by giving other people the credit of trust until proven otherwise (McKnight et al., 2002a). Especially in ambiguous,

unstructured or novel situations, the individual disposition to trust is to a special degree influential to the interpretation of the situation (McKnight & Chervany, 2001).

(2) **Institution-Based Trust.** *Institution-based trust* can be defined as the cross-personal, situation-specific perception that in a given context (e.g., the Internet), structural conditions are present to safeguard against the abuse of trust and to increase the likelihood of a successful transaction outcome (McKnight et al., 2002a). Institution-based trust consists of two substructures: structural assurance and situational normality. *Structural assurance* refers to the impression that "anticipatory protections against abuse" (Shapiro, 1987, p. 643) like guarantees, legal regulations or insurances exist. *Situational normality* characterizes the notion that the environment represents a safe setting for the execution of transactions (Garfinkel, 1963).

While disposition to trust (in general, nonspecific others) and institution-based trust (in the situation or structures) are largely independent of a specific person, trusting beliefs refer to interpersonal trust in a specific other person (McKnight & Chervany, 2001).

(3) **Trusting Beliefs**. *Trusting beliefs* reflect the person-specific, cross-situational perception of the trustor that the trustee possesses trustworthy characteristics (McKnight & Chervany, 2001). In trust research, three characteristics of the trustee have been identified as constituting elements of trust: competence, benevolence and integrity (Butler, 1991; Mayer et al., 1995). *Competence* refers to the trustor's perception of a trustee's skills, abilities or expertise that are beneficial to the trustor's goal attainment (McKnight et al., 2002a). *Benevolence* relates to the trustor's perception of the trustee's goodwill and exclusion of opportunistic profit motives before, during and after the transaction (Mayer et al., 1995). *Integrity* reflects the trustor's perception that the trustee adheres to moral principles with which the trustor can identify like reliability, sincerity and discretion (Schlosser et al., 2006).

(4) **Trusting Intentions**. *Trusting intentions* can be defined as the trustor's intention to actually trust the trustee. Trusting intentions consist in two substructures: willingness to depend and subjective probability of depending. *Willingness to depend* can be described as the "volitional preparedness to make oneself vulnerable to the trustee" (McKnight et

al., 2002a, p. 337). *Subjective probability of depending* refers to the trustor's perceived probability of depending on the trustee. The perceived probability extends to three risk-prone actions: sharing information (e.g., personal or monetary data), acting on vendor advice and making purchases. While willingness to depend expresses volition or desire to depend, subjective probability of depending extends to a stronger, "verifiable intent or commitment to depend" (McKnight & Chervany, 2001, p. 50). In the theory of reasoned action, (trusting) intentions are the most proximal predictor of (trusting) behavior (Fishbein & Ajzen, 1975).

(5) Trust-related Behavior. *Trust-related behavior* can be defined as action of the trustor that causes vulnerability to a trustee (McKnight et al., 2002a). In e-commerce, the most explicit trust-relevant measurable behavior is the purchase decision after the first visit on a website. The purchase decision transfers the unilateral control over resources to the seller and demonstrates acceptance of vulnerability and trust in the seller.

Figure 3 illustrates the five central model constructs (disposition to trust, institution-based trust, trusting beliefs, trusting intentions and trust-related behavior) and their interrelations within the model (own figure based on McKnight et al., 1998, 2002a).

The first visit of a website in B2C e-commerce is characterized by two special peculiarities. First, as generally valid for e-commerce, the omission of physical touchpoints deprives the buyer of physical information sources (e.g., face to face interactions or product inspections; Wells et al., 2011). From the *perspective of the buyer*, this involves the difficulty to differentiate trustworthy from untrustworthy sellers (B.-C. Lee et al., 2005).

Second, as specifically valid for the first visit on a website, the buyer cannot draw on experiences from past interactions (Berg et al., 1995). From the *perspective of the seller*, this implies the challenge to signal trustworthiness through the website as the first point of contact between buyer and seller. In this effort, key stimuli (so-called "signals") that are indicative of trust characteristics are used as information substitutes on the website (Mavlanova et al., 2012).

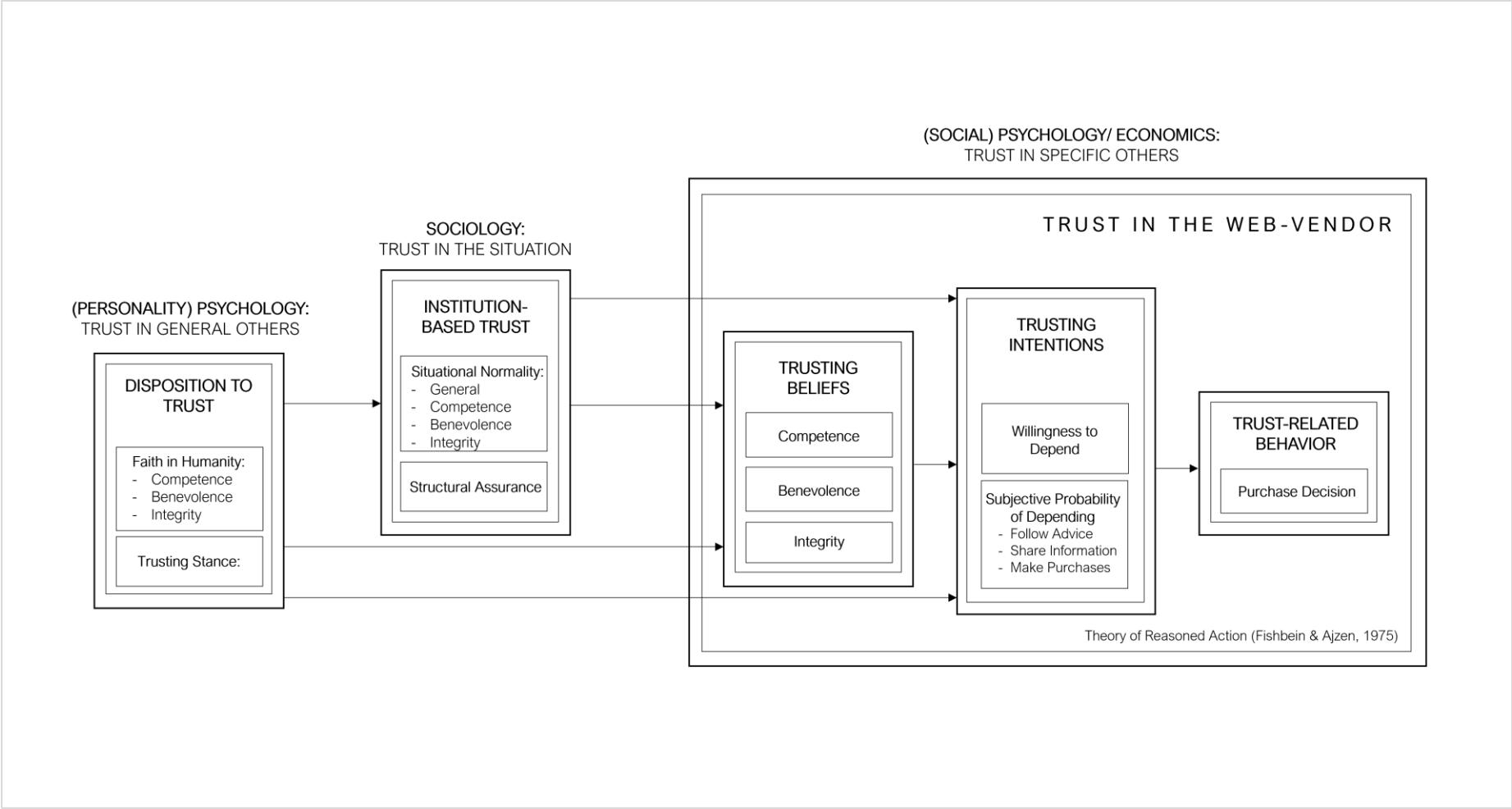


Figure 3. Model of initial trust formation (MITF).

2.3.2 Trust-Enhancing Signals

The website is a stimuli-based decision-making environment characterized by information asymmetries between buyer and seller (Tam & Ho, 2006). A possible approach to solving the problem of information asymmetry lies in sending signals as information substitutes to compensate for the spatiotemporal separation of buyer, seller and product (Boulding & Kirmani, 1993). A signal is defined as "action taken by the better-informed party [the seller] in a setting of asymmetric information to communicate its true characteristics in a credible fashion to the less-informed party [the buyer]" (B.-C. Lee et al., 2005, p. 612). In previous research, which is summarized below, several trust-enhancing signals have been identified.

The perception of social presence can mitigate the perceived social distance between buyer and seller, reduce perceived social complexity and increase trust (Gefen & Straub, 2003). In this sense, detailed information about the seller behind the online shop (*about us information*) displaying corporate history, philosophy and company references serve a humanizing and personalizing function (Breeze, 2015). Correspondingly, direct (*contact telephone*) and indirect (*contact form or chat*) individual-human contact channels between seller and buyer contribute to the perception of interpersonal interactivity (Lu et al., 2016; Mero, 2018).

Especially in the context of initial trust, the lack of past interactions between buyer and seller prohibits the recourse to own experiences for the buyer. This makes online feedback from other customers especially informative to the differentiation of trustworthy from untrustworthy sellers (Resnick et al., 2000). Reputation systems collect, aggregate and distribute past customer experiences with an online shop (Resnick et al., 2000). The provided information consists in the condensation of several sub-criteria (e.g., delivery, product/customer service quality) to *star ratings* or the more detailed consideration of specific sub-criteria in *customer reviews.* The provision of information about the seller's prior transactions by other customers can substitute own experiences and build trust in the individual seller (Ba & Pavlou, 2002; Gregg & Scott, 2006; Pavlou & Gefen, 2004; Utz et al., 2012). Furthermore, reputation systems offer an incentive for cooperative seller

behavior as well as sanction possibilities for uncooperative seller behavior (Ba et al., 2003).

Arrangements that facilitate product return in case of defect or dissatisfaction protect against financial loss. Lenient return policies (e.g., *free return*) reduce the monetary costs of a return in case of dissatisfaction (Wolfinbarger & Gilly, 2001). They are associated with the perception of retailer quality (Bonifield et al., 2010), decrease the overall purchase decision conflict and increase the probability of order (Wood, 2001). Furthermore, the offer of purchase on *invoice* gives the buyer the opportunity to physically inspect the product quality before the payment, which reduces the risk of hidden product defects (Ahrholdt, 2011).

Quality seals are third-party certifications attesting the online shop the fulfillment of precisely defined certification criteria (Deges, 2020; Noll & Winkler, 2004). While some studies certify quality seals a strong beneficial influence on cognitive, affective and behavioral trust (Aiken, 2006) as well as on the conversion rate (Özpolat et al., 2013), other studies couldn't find such an effect (Head & Hassanein, 2002; McKnight et al., 2004).

Warranties like unconditional *money back guarantees* allow a refund of the money in case of dissatisfaction. There is evidence in research that guarantees hold the potential to signal product quality (Boulding & Kirmani, 1993; Moorthy & Srinivasan, 1995), increase institutional trust (Stouthuysen et al., 2018) and reduce perceived risk (Hawes & Lumpkin, 1986). Especially unknown brands profit from the presence of a warranty (Price & Dawar, 2002).

Legal requirements and controls that ensure security of personal data can reduce information security and privacy concerns. The implementation of a comprehensive *data privacy policy* provides transparency over the collection, storage and use of customer information (Belanger et al., 2002). Clear and unambiguous privacy and security policies increase the willingness to provide personal information (S. Wang et al., 2004), they positively impact consumer trust and negatively affect informational risk perceptions (D. Kim & Benbasat, 2006; Malhotra et al., 2004).

Third-party payment systems like PayPal protect both sellers and buyers as a trusted third party through the provision of transaction guarantees (Pavlou & Gefen, 2004), which extend to a payment refund in case of non-delivery or dissatisfaction (X. Hu et al., 2004) and the protection of sensitive financial or personal data (Cardoso & Martinez, 2019).

Taken together, the signals mentioned above hold the potential to inform the buyer about the trustworthiness of the seller and to positively impact trusting beliefs. In order to potentially be effective, signals have to be visible (to attract attention), clear (to be understood), credible (must not be falsifiable) and differentially costly (more costly for low-quality products and sellers than for high-quality products and sellers; Dimoka et al., 2012). Yet, these conditions represent only necessary but not sufficient conditions for signal effectiveness.

Specifically, even if signals are visible, clear, credible and differentially costly, it cannot be assumed that all signals are used with equal weighting to form trust-related judgements by an individual customer. Among the variety of stimuli offered in the environment, preference is given to those stimuli individuals evaluate as personally relevant (Petty & Cacioppo, 1986). Whether a signal is effective depends, beneath bottom-up factors like stimulus saliency, on top-down factors determining personal relevance of environmental stimuli like cross-situationally stable interindividual differences (Kaspar & König, 2012). With this in mind, trust can be considered as result of a complex interaction between features of the specific (trust) situation and individual characteristics of the trusting person (Thielmann & Hilbig, 2015).

Correspondingly, beneath situation-specific variables causing *intraindividual* variability, "a stable inclination toward (dis)trusting" (Thielmann & Hilbig, 2015, p. 250) rooted in personality causes *interindividual* variability in trust-related behavior. This highlights the need to consider stable interindividual differences in the selection, processing, and response to trust-related information. Figure 4 gives an overview over the identified trust-enhancing signals considered in this study and integrates them into the model of initial trust formation.

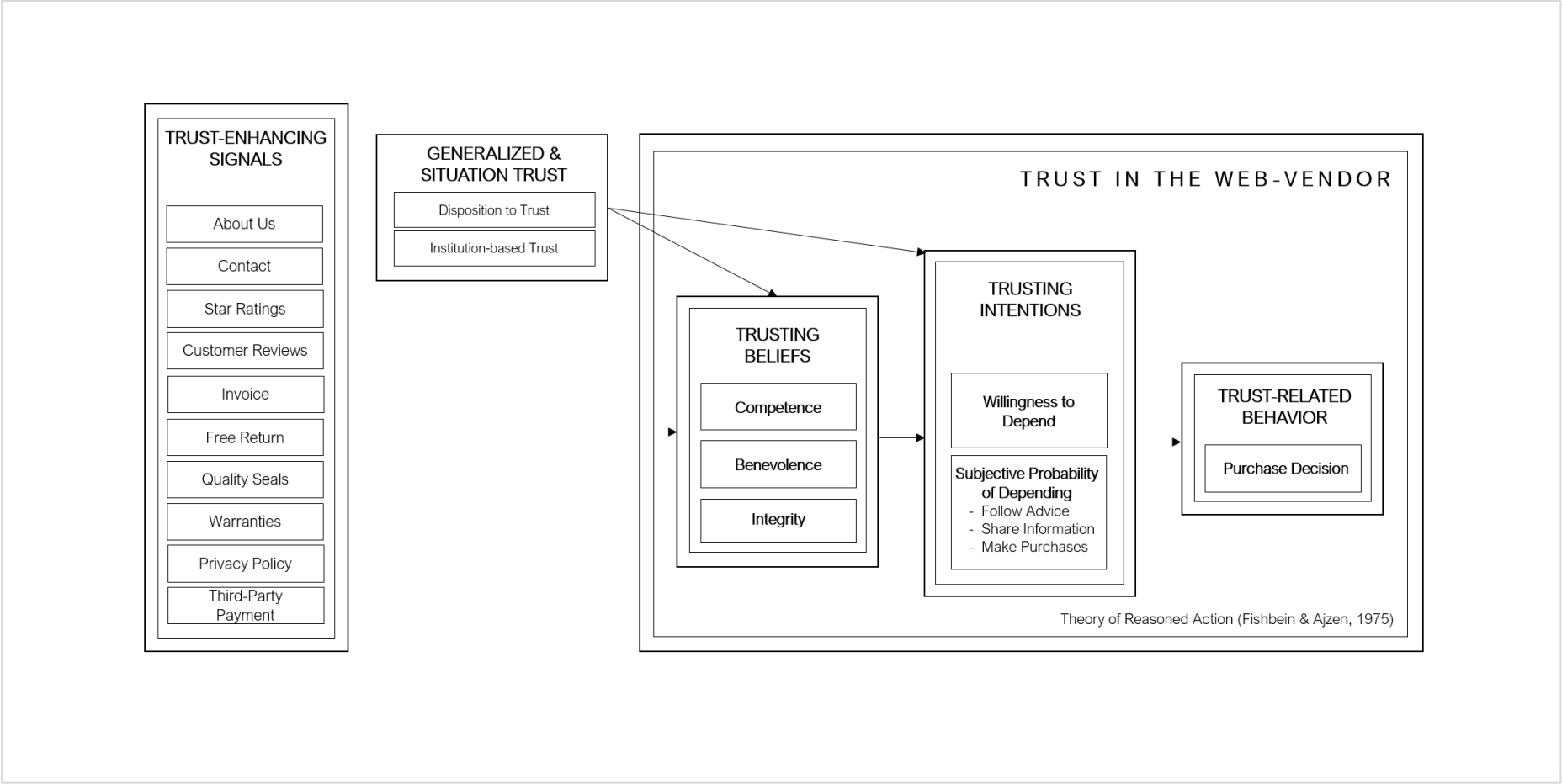


Figure 4. Integration of trust-enhancing signals into the MITF.

2.4 Personality-Based Personalization of Trust-Enhancing Signals

Personality can be defined as composition of cross-situationally stable *traits* that represent "dimensions of individual differences in tendencies to show consistent patterns of thoughts, feelings, and actions" (McCrae & Costa, 2003, p. 25). In the effort to conceptualize personality, several models have been developed, with most of them proceeding from the lexical hypothesis. Descending from the idea that relevant personality characteristics find their reflection in language, the lexical hypothesis marked the origin of personality psychology research (Galton, 1884).

Based on the identification of nearly 18.000 personality-descriptive words, Allport & Odbert (1936) extracted a set of 4.504 psycho-lexical trait-names describing "generalized and personalized determining tendencies" (Allport & Odbert, 1936, p. 26). Their psycho-lexical set of trait-names served as fundament for the development of several personality theories. Through the application of factor analytical reduction methods, several authors independently worked out five reliable personality factors (e.g., Fiske, 1949; Goldberg, 1990; Norman, 1963; Tupes & Christal, 1992). The five-factorial structure of personality, also referred to as "Big Five", is now widely accepted in the domain of personality research (Costa & McCrae, 2008). As commonly applied representative of the five-factorial models, the "Five Factor Model" (FFM) by McCrae and Costa (1987) describes personality along five dimensions: extraversion, neuroticism, openness to experience, agreeableness and conscientiousness.

Extraversion captures temperamental tendencies like positive emotionality, excitement-seeking, activity as well as interpersonal stiles like warmth, sociability and assertiveness (McCrae & Costa, 1992). *Neuroticism* characterizes facets like cross-situational anxiety, angry hostility, depression, self-consciousness, impulsiveness and vulnerability (McCrae & Costa, 1992). *Openness* to experience comprises open-mindedness towards fantasy, aesthetics, feelings, actions, ideas and values (McCrae & Costa, 1992). *Agreeableness* encompasses social motives like altruism, trust, straightforwardness, compliance, modesty and tender-mindedness (McCrae & Costa, 1992). *Conscientiousness* characterizes the facets competence, order, dutifulness, achievement striving, self-discipline and deliberation (McCrae & Costa, 1992).

Research in the field of differential psychology provides convincing evidence that stable interindividual differences are associated with both selective information processing styles (Baumert & Schmitt, 2012; Mathews, 2012; Matthews, 2008; Paelecke et al., 2012) and decision making tendencies in trust-related situations (Freitag & Bauer, 2016; Thielmann & Hilbig, 2014). In the sense of "individual differences in 'sensitivities' to certain classes of situations" (Denissen & Penke, 2008, p. 1286), personality represents a complex predisposition "to exhibit reaction R under condition S" (Tellegen, 1991, p. 17). Consistently, social-cognitive approaches to personality (Bandura, 1986) involve the idea that "chronic parameters of the cognitive–affective–motivational system shape information processing in specific situations and, thus, cause the patterns of emotion and behavior captured by trait terms" (Baumert & Schmitt, 2012, p. 87).

Following this idea, the stimulus-organism-response (SOR) model (Mehrabian & Russell, 1974) captures the notion that directly observable sensory **S**timuli of the environment unfold their effect on emotional, cognitive and behavioral **R**esponses of an individual through not directly observable (more or less stable) mental processes within the **O**rganism. In this sense, trust-related behavior can be explained as result of a complex interaction between situation-specific (e.g., trust-related cues) and person-specific (e.g., trait-based) characteristics. Accordingly, an individual's (cognitive, affective or behavioral) trust-related responses (R) to trust-enhancing signals (S) should, beneath cognitive-affective internal states, depend on systematic interindividual differences (O).

In the effort to gain a trait-based understanding of interindividual differences in trust, especially two personality traits of the Five Factor Model (McCrae & Costa, 1987) are primarily associated with a cross-situational stability in trust-related cognitions and behavior (Thielmann & Hilbig, 2015): neuroticism and agreeableness. On the one hand, *neuroticism* is associated with a sensitivity to threatening (negative emotional) cues (Rusting & Larsen, 1998). As important determinant of trust behavior, the individual *attitude towards risky prospects* (risk and loss aversion) is considered as function of anxiety- and fear-related traits like neuroticism (Glöckner & Hilbig, 2012). Correspondingly, research findings refer to a negative relationship between neuroticism and the willingness to trust (Alarcon et al., 2018; Ben-Ner & Halldorsson, 2010; Evans &

Revelle, 2008; Freitag & Bauer, 2016; Müller & Schwieren, 2019), which is possibly mediated through risk and loss aversion (Thielmann & Hilbig, 2015). On the other hand, *agreeableness* specifically includes the facet trust, which describes "a disposition to believe that others are honest and well-intentioned" (Costa & McCrae, 1992, p. 17). Optimistic trustworthiness expectations in individuals high in agreeableness are assumed to negatively influence risk and loss aversion and thereby support trust behavior (Thielmann & Hilbig, 2015). Correspondingly, research findings point to a positive relationship between agreeableness and the willingness to trust (Alarcon et al., 2018; Ben-Ner & Halldorsson, 2010; Freitag & Bauer, 2016; Müller & Schwieren, 2019).

Research findings are less clear with regard to extraversion. *Extraversion* (in contrast to neuroticism) is associated with a sensitivity to rewarding (positive emotional) cues (Rusting & Larsen, 1998). In conjunction with the tendency to approach and enjoy social interactions, findings point to a positive relationship between extraversion and the willingness to trust (Evans & Revelle, 2008; Freitag & Bauer, 2016; Thielmann & Hilbig, 2014). However, this association seems to find application almost exclusively in situations involving a distinct social component, which is often absent in the context of trust among strangers given in B2C e-commerce (Thielmann & Hilbig, 2015).

Openness to experience encompasses the "receptiveness to new ideas, approaches, and experiences" (McCrae & Costa, 2003, p. 46). In this sense, this personality dimension has been associated with a high level of trust towards strangers in research, which is attributed to the open-mindedness and tolerance underlying this personality dimension (Freitag & Bauer, 2016). Conscientiousness as a (cautious) tendency to make only well-considered decisions on the basis of substantiated information is associated with a low level of trust, especially towards strangers (Freitag & Bauer, 2016; Müller & Schwieren, 2019).

In accordance with the partially ambiguous findings on the link between personality traits and (trust-related) behavior is the observation that behavior varies both *interindividually* as function of internal dispositions (source of consistency) and *intraindividually* as function of the external environment (source of variability), suggesting an interaction between person and situation (Fournier & Moskowitz, 2018).

The theory of *situational strength* attempts to quantify the weights of person and situation in their influence on behavior. According to the concept of *situational strength*, "the relative importance of individual differences [for emotional, cognitive and behavioral responses] will depend on the situation selected" (Mischel, 1973, p. 255). According to the presence of environmental stimuli that are indicative for the appropriate behavior, the concept distinguishes between weak and strong situations as two ends of a continuum. A *weak situation* is characterized by the absence of clear stimuli that provide a guide to the appropriate behavior in the specific situation. In a *strong situation*, however, clear and unambiguous stimuli specify appropriate behaviors (Mischel, 1968). According to the theory, *individual differences* exert the strongest influence on behavior when situations are weak, whereas the *situation* exerts the strongest influence on behavior when situations are strong (Cooper & Withey, 2009).

Nevertheless, the mere presence of a weakly structured situation independent of its quality is not a sufficient condition for the activation of personality traits. Rather, "the behavioral expression of a trait requires arousal [in the sense of an activation] of that trait by trait-relevant situational cues" (Tett & Guterman, 2000, p. 398). This suggests the necessity for a conceptual separation between *situational strength* (Mischel, 1968) and *situation trait relevance* (Tett & Guterman, 2000). In this terminology, while situational strength refers to "the *compellingness* to behave such that individual differences in behavioral dispositions are washed out" (Tett & Guterman, 2000, p. 399), situation trait relevance refers to "the *type* of information to which people respond in expressing a trait" (Tett & Guterman, 2000, p. 399).

Obviously, the final behavior is a complex outcome of the interaction between situation and personality, but also within-person variables beyond personality (e.g., subjective goals, life experiences, norms, competencies, expectancies, values), which in turn influence both the evaluation of the situational strength as well as situational trait relevance (Fournier & Moskowitz, 2018). Accordingly, the concepts of situational strength and situation trait relevance represent a simplified approximation, which can nevertheless serve as theoretical framework to understanding the relationship between personality, situations and (trust-related) behavior.

Given the high degree of information asymmetry, B2C e-commerce, in a broader sense, classifies as a rather unstructured decision environment (weak situation). In the light of a lower density of salient external cues indicative of trustworthiness compared to stationary sales, it can be assumed that people will focus more on relevant internal cues like their dispositional preferences for engaging in decision making (De Kwaadsteniet et al., 2006). Accordingly, in the light of the personality effects to be expected in this context, B2C e-commerce provides an interesting situational context for the investigation of personality-associated differences in signal processing and decision making. Nevertheless, previous research leaves largely unclear, to which extent the B2C e-commerce context is of situational trait relevance for the behavioral expression of the Big Five personality dimensions. In this sense, to the best of the author's knowledge, interindividual differences in the perception, processing and reaction to trust-enhancing signals are largely neglected in previous research. With the goal of coming one step closer to addressing this research gap, the integration of a dispositional component into the model of initial trust formation can expand the knowledge about the process of trust formation by interindividual differences.

According to the supposed personality-dependent effects of environmental cues in the trust-building process, the effect of trust-enhancing signals on trusting beliefs, intentions and behavior should depend on the expression of the Big Five personality dimensions. Based on the outlined research findings, individual trust disposition as well as institution-based trust should in turn also be related to the Big Five personality dimensions. Beneath their association with generalized (trait) and situation (state) trust, the Big Five personality dimensions should also directly influence the willingness to trust a given person in a specific situation (here: trust in a web-vendor). Depending on the degree of information asymmetry (situational strength), it can be expected that the strength of this influence will vary with signal presentation conditions. Figure 5 integrates the Big Five personality traits into the model of initial trust formation. The knowledge about systematic interindividual differences in signal effectiveness then creates a foundation for a personality-based signal personalization actively acknowledging individual information needs.

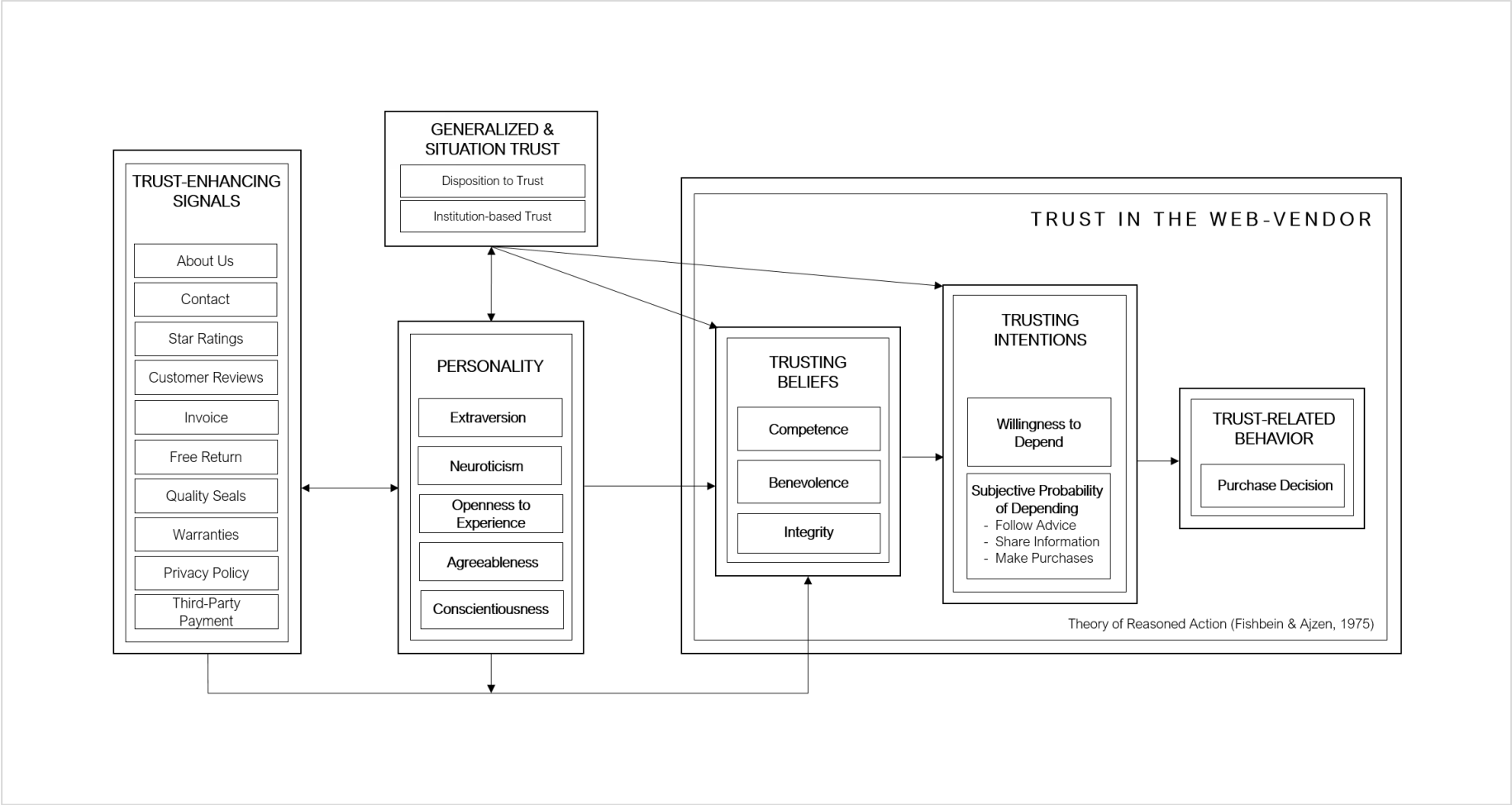


Figure 5. Integration of personality into the MITF.

2.4.1 Definition of (Website) Personalization

In general, personalization can be defined as the process of adapting information to the specific needs of individuals with the goal to "deliver the right content to the right person at the right time" (Tam & Ho, 2006, p. 867). Personalization can be classified along three dimensions: (1) the *object* of personalization (content, interface, channel, functionality), (2) the *target* of personalization (individuals or categories of individuals) and (3) the *type* of personalization (implicit or explicit personalization; Fan & Poole, 2006).

Concerning the first dimension, personalization can be applied to several objects: the information itself (content), how the information is presented (interface), the medium used to deliver the information (channel) and the user-sided operating options of the system (functionality; Fan & Poole, 2006). Further, in terms of the second dimension, personalization can be targeted to the needs of a single user (individuals) or to the needs of user groups (categories of individuals; Fan & Poole, 2006). Finally, depending on the degree of user-sided awareness about the personalization, it can be carried out on an implicit (system-initiated) or an explicit (user-initiated) basis (Fan & Poole, 2006). While implicit personalization usually uses behavioral (e.g., clicks, page views, purchases) and sociodemographic (e.g., gender, age) data from previous transactions as basis for the derivation of user needs, explicit personalization draws on the user-sided specification of the system features (Fan & Poole, 2006).

On this basis, three main forms of personalization are distinguished: user-, transaction and context-driven personalization (Tam & Ho, 2006). While *user-driven personalization* requires the proactive, explicit input of the consumer in the form of direct consumer-initiated specifications, *transaction-driven personalization* uses reactive, implicit input in the form of previous transactions (e.g., behavior, purchase/demographic information) to derive consumer preferences (Tam & Ho, 2006). *Context-driven personalization* uses contextual, interactive real-time data (e.g., search patterns, click stream) to predict objectives of search behavior (directed search vs. exploratory browsing) and to dynamically adapt web contents to the individual user (Tam & Ho, 2006).

In this work, the focus is on an implicit personalization of *website contents* (trust-enhancing signals) on the basis of an explicit user-sided specification of the personality profile prior to the online shop visit. Accordingly, the investigated form of personalization in this thesis is a *hybrid* of user-driven and context-driven personalization, as it requires explicit user input, but still implicitly adapts website content to the individual user without creating an explicit link between user input (personality) and website output (signals).

This form of personalization is innovative in two respects: first, it allows the investigation of a *personality-based* personalization. Concerning the data basis of personalization, previous research has almost exclusively focused on behavioral or sociodemographic data, while neglecting the potential of psychological concepts like personality. Secondly, it allows the investigation of a personalization of *trust-enhancing signals*. Concerning the object of personalization, previous research has primarily concentrated on coarser web contents like banner ads, messages, products or services, while neglecting the potential of subtle trust-enhancing signals.

Despite contextual differences regarding the concrete configuration, the effect mechanisms of personalization have been the subject of past research. With its potential to increase content relevance and self-reference of the information offer, personalization has effects on attention, cognitive processing and decision making (Tam & Ho, 2006).

2.4.2 Effect of Personalization on Attention, Cognition and Decision Making

The advantage of Internet-mediated technologies lies in their capacity to provide consumers with large amounts of information (Chen et al., 2009). However, given the limited cognitive processing ability in humans (Bettman, 1979), the offer of an information amount exceeding the limit of individual information processing capacities will result in information overload (Chen et al., 2009; Jacoby et al., 1974). Information overload in turn is associated with several adverse outcomes like deterioration of decision quality, with a low signal-to-noise-ratio making it difficult to filter information (Keller & Staelin, 1987; B.-K. Lee & Lee, 2004; Malhotra, 1982).

Through selective filtering and adaptation of information to individual information needs, personalization of website contents can effectively reduce information overload (Aljukhadar et al., 2012; Huang & Zhou, 2019; Liang et al., 2006). Personalized information in turn is perceived to be more personally relevant (Noar et al., 2009), which promotes greater selective attention to (Bang & Wojdynski, 2016) and deeper processing of the information (Petty & Cacioppo, 1986). As cognitive core mechanism behind personalization, personal relevance of personalized contents is assumed to function as "top-down factor in attentional control" (Köster et al., 2015, p. 182), which fosters attentional bias towards self-relevant contents. Evidence from eye-tracking experiments supports this notion insofar as participants pay more (i.e., frequency of fixation) and longer (i.e., duration of fixation) attention to personalized compared to non-personalized contents (e.g., banner advertisements; Bang & Wojdynski, 2016; Kaspar et al., 2019; Köster et al., 2015). The higher level of attention given to personally relevant contents can translate into a deeper processing of the information (Petty & Cacioppo, 1986), which in turn improves processes of memory, recognition and decision making.

In this sense, personalization improves decision making processes not only in terms of subjective (i.e., choice confidence, perceived cognitive effort), but also in terms of objective (i.e., product choice, extent of information search) measures of decision quality (Xiao & Benbasat, 2018). Previous research on web personalization has further provided evidence that personalized information improves content recall (i.e., response time; Tam & Ho, 2006), reduces purchase decision time (Hostler et al., 2005) and decreases the extent of pre-purchase information exploration (Tam & Ho, 2006).

Beneath these effects on information processing and decision making, personalization also improves post-hoc evaluations (Tam & Ho, 2006) and trust-related attitudes towards the online seller. In this sense, Komiak and Benbasat (2006) found that subjective personalization (the extent of personal customer needs being represented through the recommendation) enhances competence and integrity beliefs (Komiak & Benbasat, 2006). In an effort to specify the attributes of recommendation agents distinctly influential to trusting beliefs, Wang and Benbasat (2016) found that perceived quality of personalization positively influences competence beliefs. Perceived transparency of the

mechanisms behind personalization positively influences all three trusting beliefs, with the strongest influence on benevolence and integrity (W. Wang & Benbasat, 2016).

A few studies investigated the role of personality in reactions to (personalized) persuasion strategies. In the context of advertisement effectiveness, Hirsh et al. (2012) found that persuasive messages framed in line with the personality-associated motivational systems (E: excitement and social rewards; N: safety and security; O: creativity and intellectuality; A: communal goals and interpersonal harmony; C: efficiency and goal pursuit) yielded higher ratings of advertisement effectiveness (Hirsh et al., 2012).

Alkış and Taşkaya-Temizel (2015) investigated interindividual differences in the susceptibility to the six principles of persuasion by Cialdini (1993). They found that while agreeableness is the most susceptible personality trait to persuasion strategies in general, openness to experience is the least susceptible one. All personality traits except openness to experience react to *reciprocation* strategies of persuasion (return of a favor). Extraversion and neuroticism are associated with a special susceptibility to *scarcity* strategies (limited availability). Extraversion and agreeableness react to *liking* strategies of persuasion (influence through similarity or sympathy). Openness to experience, conscientiousness and agreeableness are susceptible to *commitment* strategies of persuasion (alignment with earlier commitments). Both conscientiousness and agreeableness react to *authority* strategies (request by a legitimate authority). Finally, agreeableness is susceptible to *consensus* strategies of persuasion (social proof; Alkış & Taşkaya-Temizel, 2015).

Further, Bang et al. (2019) investigated the personality-dependent effectiveness of personalized ad messages. They found that while individuals higher in narcissism paid longer (absolute visual attention) and more (visit frequency) attention to ads personalized on an individual level (individual information: e.g., name or birthday) than to those personalized on a group level (social identity information: e.g., gender or workplace), individuals low in narcissism showed no such differences. This effect is explained by the appreciation of self-focused attention in individuals higher in narcissism (Bang et al., 2019).

Taken together, scientific evidence on personalization research refers to the potential of website individualization mechanisms to influence consumer decision making. The filtering function of personalization can avoid information overflow by sorting out irrelevant and displaying only relevant information. The effect of personalization begins with early attentional mechanisms ensuring high-involvement processing of the personalized information. By facilitating cognitive decision processes through a decrease in search effort and an increase in content recall, personalization of information makes consumer decision processes more efficient. This cognitive facilitation potentially culminates in an improvement of subjective assessments.

Beneath the cognitive effects on information processing and decision-making, it is conceivable that personalization also holds the potential to influence motivational/emotional concepts like trust. As the overview over personalization research in B2C e-commerce clarifies, research so far has focused primarily on personalized product recommendations and advertisements on the basis of *explicit customer preferences* and *past transactions*. This reveals two research gaps: (1) trust-enhancing signals as *object* of personalization and (2) the individual personality as *target* of personalization. First, while the personalization of products and advertisements meets the customer's product-related information needs, it does not necessarily reduce information asymmetries between seller and buyer. Second, since human behavior underlies a highly complex interaction of cognitive, emotional and motivational processes, personalization on the basis of prior transactions alone stays rather superficial. Correspondingly, prior research in the field of personality psychology, consumer neuroscience and consumer economics impressively illustrates that personality is influential to consumer decision making, especially in situations characterized by uncertainty.

Therefore, it stands to reason that personality plays an important role in moderating the effect of the personalized content. This work aims to fill these identified research gaps by investigating the effect of a personality-based personalization of trust-enhancing signals on trusting beliefs, trusting intentions and trust-related behavior in a realistic B2C e-commerce environment. Figure 6 integrates personalization of trust-enhancing signals into the model of initial trust formation.

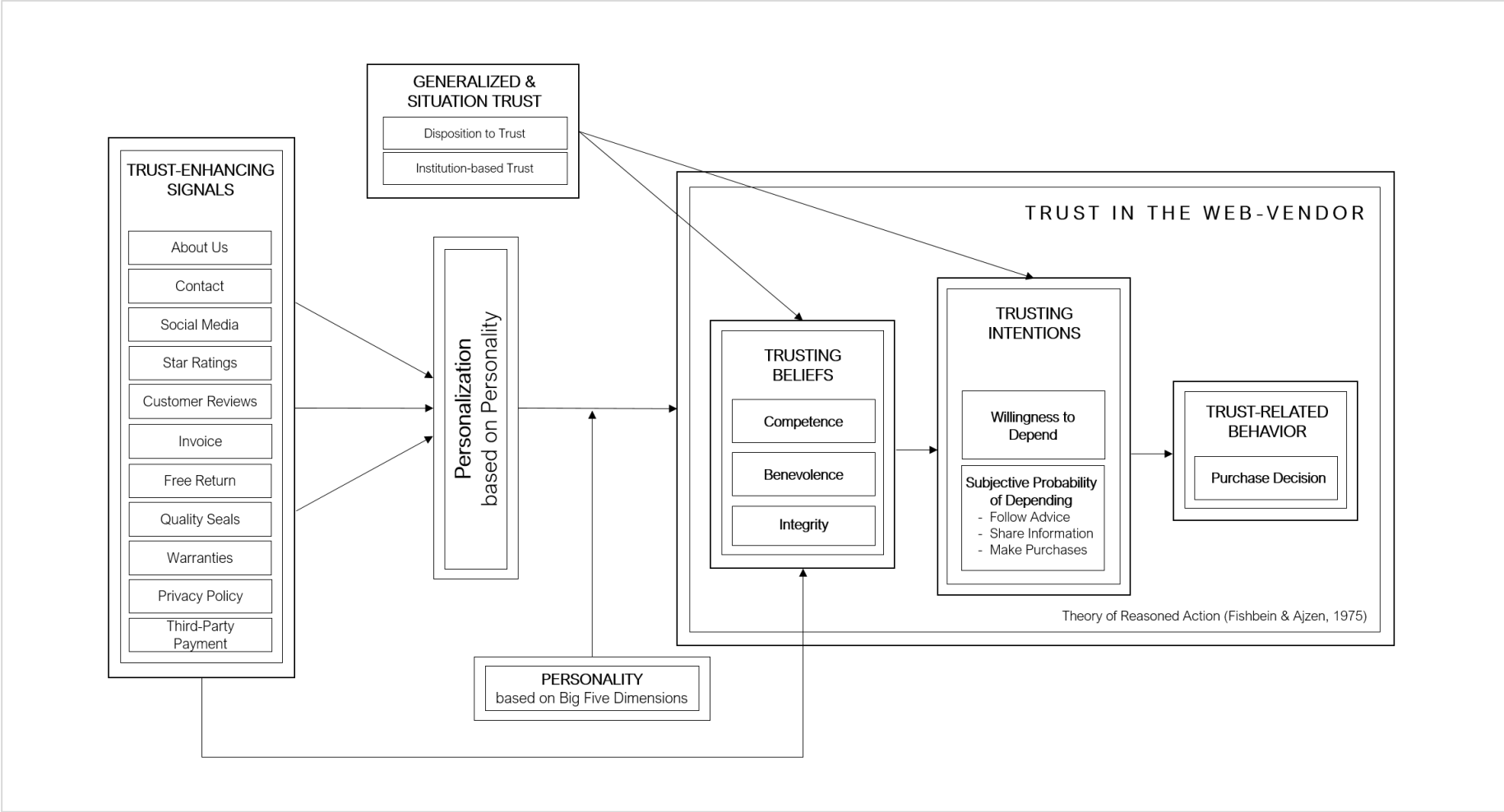


Figure 6. Integration of personalization into the MITF.

2.5 Hypotheses

2.5.1 Hypothesis 1: Objective Personalization Effects on Trust

A personality-based personalization of trust-enhancing signals specifically matches individual information needs with presented information. *Personalized information* increases personal relevance of the information, which promotes greater attention, elaboration, deeper message processing and ultimately reduces information asymmetries (Noar et al., 2009). The personalized reduction of information asymmetries is assumed to increase trust. In contrast, *anti-personalized information* that contradicts personality-associated information needs intensifies information asymmetries, which is assumed to negatively affect trust.

Accordingly, it is hypothesized that personalization has beneficial effects on trusting beliefs (TBs), trusting intentions (TIs) and trust-related behavior (TRB), whereas anti-personalization has harmful effects. A comparison with the baseline (randomization) allows for a quantification of these effects. Figure 7 illustrates the development of H 1.1, 1.2 and 1.3.

(H 1.1) Objective Personalization Effects on Trusting Beliefs

- 1.1.1: TBs are higher under personalization compared to randomization.
- 1.1.2: TBs are higher under personalization compared to anti-personalization.
- 1.1.3: TBs are higher under randomization compared to anti-personalization.

(H 1.2) Objective Personalization Effects on Trusting Intentions

- 1.2.1: TIs are higher under personalization compared to randomization.
- 1.2.2: TIs are higher under personalization compared to anti-personalization.
- 1.2.3: TIs are higher under randomization compared to anti-personalization.

(H 1.3) Objective Personalization Effects on Trust-Related Behavior

- 1.3.1: The probability for TRB is higher under personalization than randomization.
- 1.3.2: The probability for TRB is higher under personalization than anti-personalization.
- 1.3.3: The probability for TRB is higher under randomization than anti-personalization.

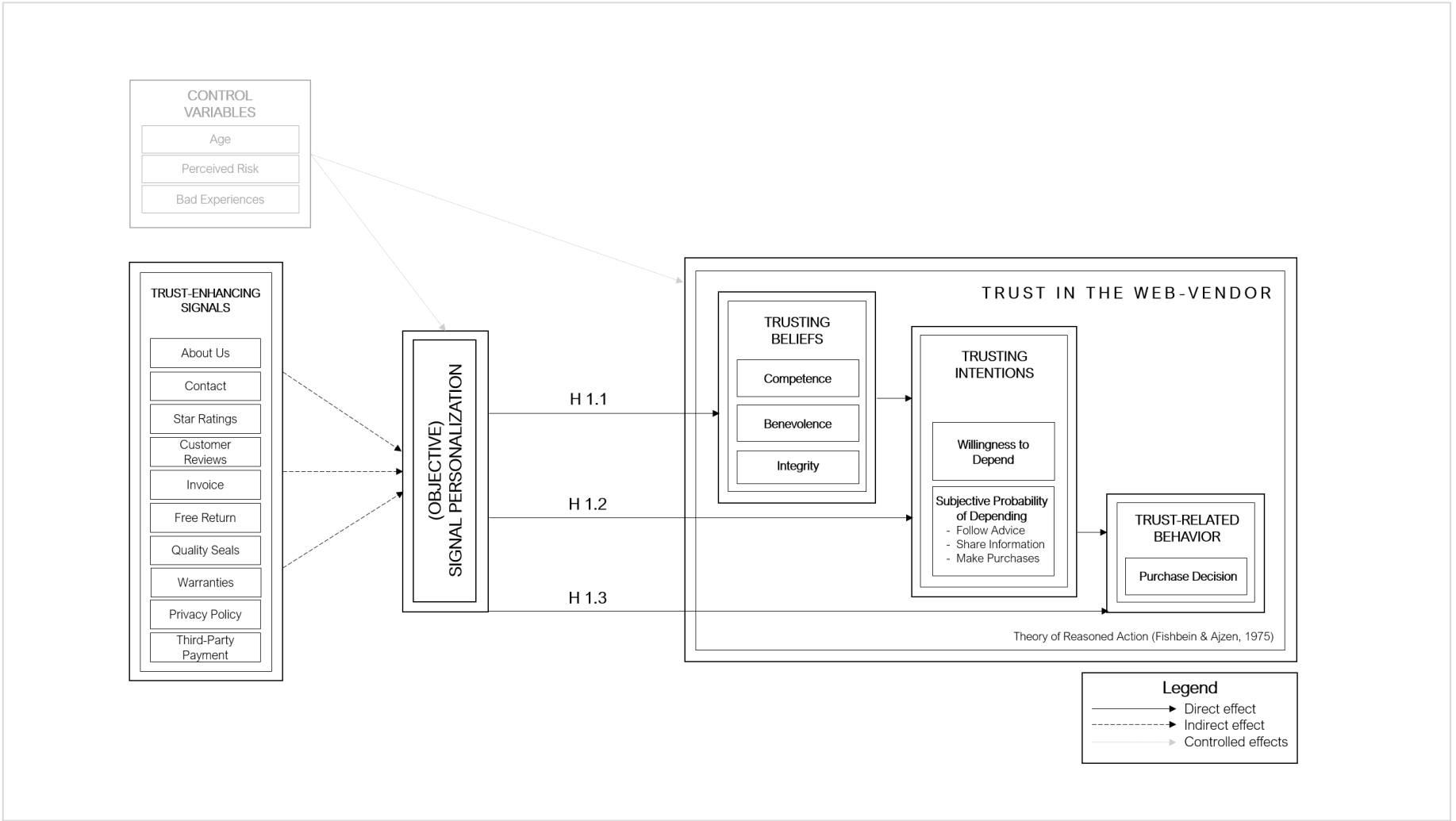


Figure 7. Development of hypotheses 1.1, 1.2, 1.3.

2.5.2 Hypothesis 2: Subjective (vs. objective) Personalization Effects on Trust

As demonstrated by Li (2016), actual (objective) and perceived (subjective) personalization are two distinct constructs. Personalized information resulting from a (more or less generic) personalization process may be interpreted as non-personalized, whereas a non-personalized information may be interpreted as personalized. Accordingly, due to perception biases, (objective) personalization does not automatically yield more favorable effects than non-personalization (or anti-personalization). Rather, Li (2016) postulates subjective personalization as core mechanism to favorable effects, that is even found to be superior to actual personalization.

Accordingly, it is hypothesized that, beneath objective (actual) personalization, subjective (perceived) personalization exerts a positive effect on trusting beliefs, trusting intentions and trust-related behavior. Figure 8 illustrates the development of H 2.1, 2.2 and 2.3.

(H 2.1) Subjective Personalization Effects on Trusting Beliefs

- Subjective Personalization positively influences trusting beliefs.

(H 2.2) Subjective Personalization Effects on Trusting Intentions

- Subjective Personalization positively influences trusting intentions.

(H 2.3) Subjective Personalization Effects on Trust-Related Behavior

- Subjective Personalization increases the probability for TRB.

Drawing on the results of Li (2016), subjective personalization (SP) is assumed to be more important for trusting beliefs, intentions and trust-related behavior than objective personalization. Accordingly, its effect on trust is assumed to be greater than the objective personalization (OP) effect, operationalized as contrast between personalization (P) and anti-personalization (AP).

(H 2.4) Subjective vs. Objective Personalization Effects on Trust

- 2.4.1: SP effect is greater than OP effect (P vs. AP) on trusting beliefs.
- 2.4.2: SP effect is greater than OP effect (P vs. AP) on trusting intentions.
- 2.4.3: SP effect is greater than OP effect (P vs. AP) on trust-related behavior.

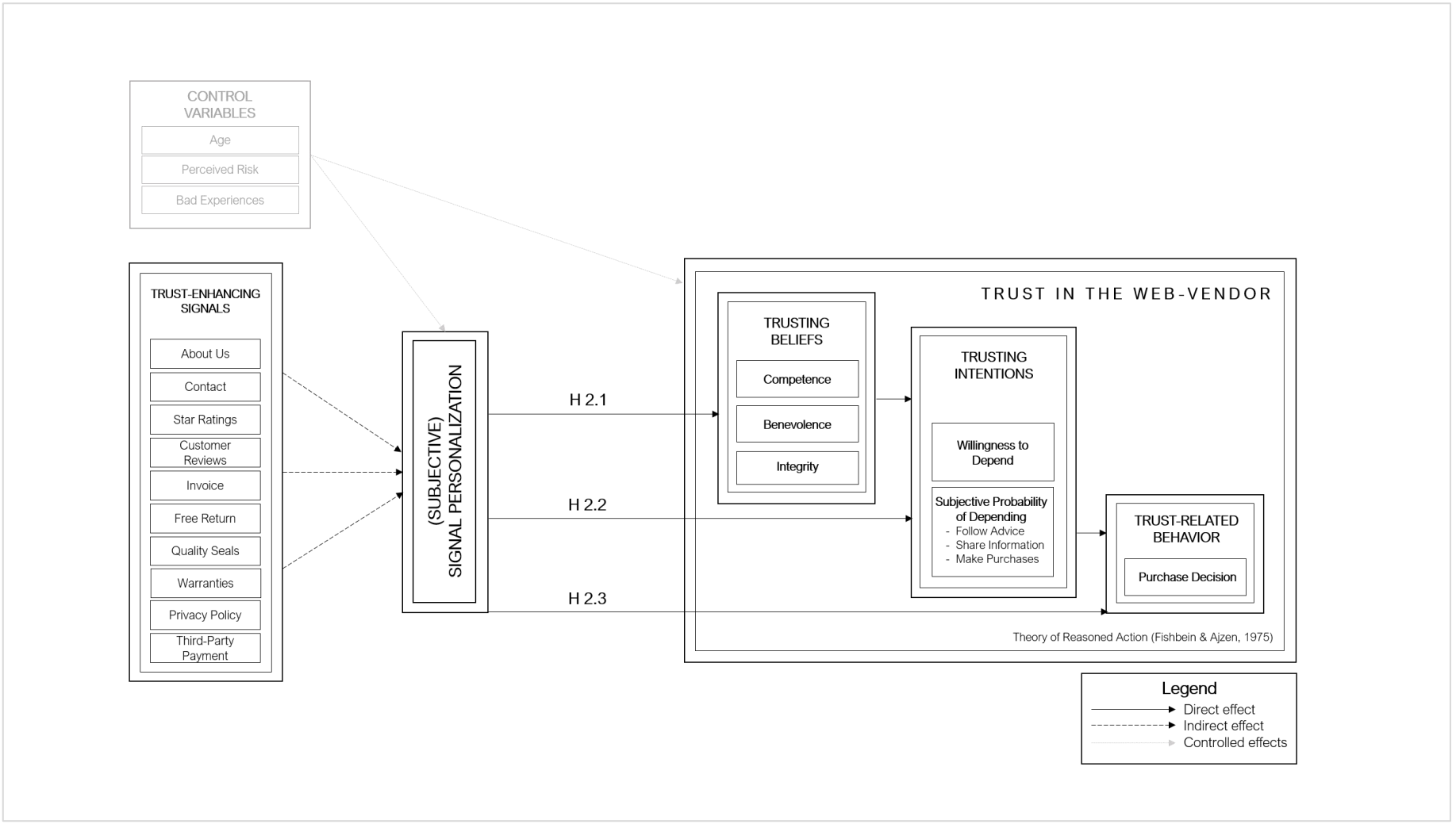


Figure 8. Development of hypotheses 2.1, 2.2, 2.3.

2.5.3 Hypothesis 3: Product-Category Dependent subj. Personalization Effects on Trust

According to the SEC classification of goods and services, the extent of a priori existing information asymmetries varies with product category (search, experience, credence goods). Due to the varying accessibility of information on product quality, information asymmetry is assumed to be strongest in search goods (a priori accessibility), followed by experience goods (a posteriori accessibility) and lowest in credence goods (neither a priori nor a posteriori accessibility; Darby & Karni, 1973; Nelson, 1970). The perception of *personalized information* (as reflected in subjective personalization) is assumed to manifest in a reduction of information asymmetries. In the light of the different prerequisites in information asymmetry varying with product category, personalization is expected to satisfy information needs and thereby promote trust to varying degrees of efficiency depending on product category. Figure 9 illustrates the development of H 3.1, 3.2 and 3.3.

In detail, subjective personalization is assumed to have the greatest potential to reduce information asymmetries in credence goods, followed by experience and finally search goods.

(H 3.1) Product-Dependent Personalization Effects on Trusting Beliefs

- 3.1.1 SP effect on TBs is stronger under credence than search goods.
- 3.1.2 SP effect on TBs is stronger under credence than experience goods.
- 3.1.3 SP effect on TBs is stronger under experience than search goods.

(H 3.2) Product-Dependent Personalization Effects on Trusting Intentions

- 3.2.1 SP effect on TIs is stronger under credence than search goods.
- 3.2.2 SP effect on TIs is stronger under credence than experience goods.
- 3.2.3 SP effect on TIs is stronger under experience than search goods.

(H 3.3) Product-Dependent Personalization Effects on Trust-Related Behavior

- 3.3.1 SP effect on TRB is stronger under credence than search goods.
- 3.3.2 SP effect on TRB is stronger under credence than experience goods.
- 3.3.3 SP effect on TRB is stronger under experience than search goods.

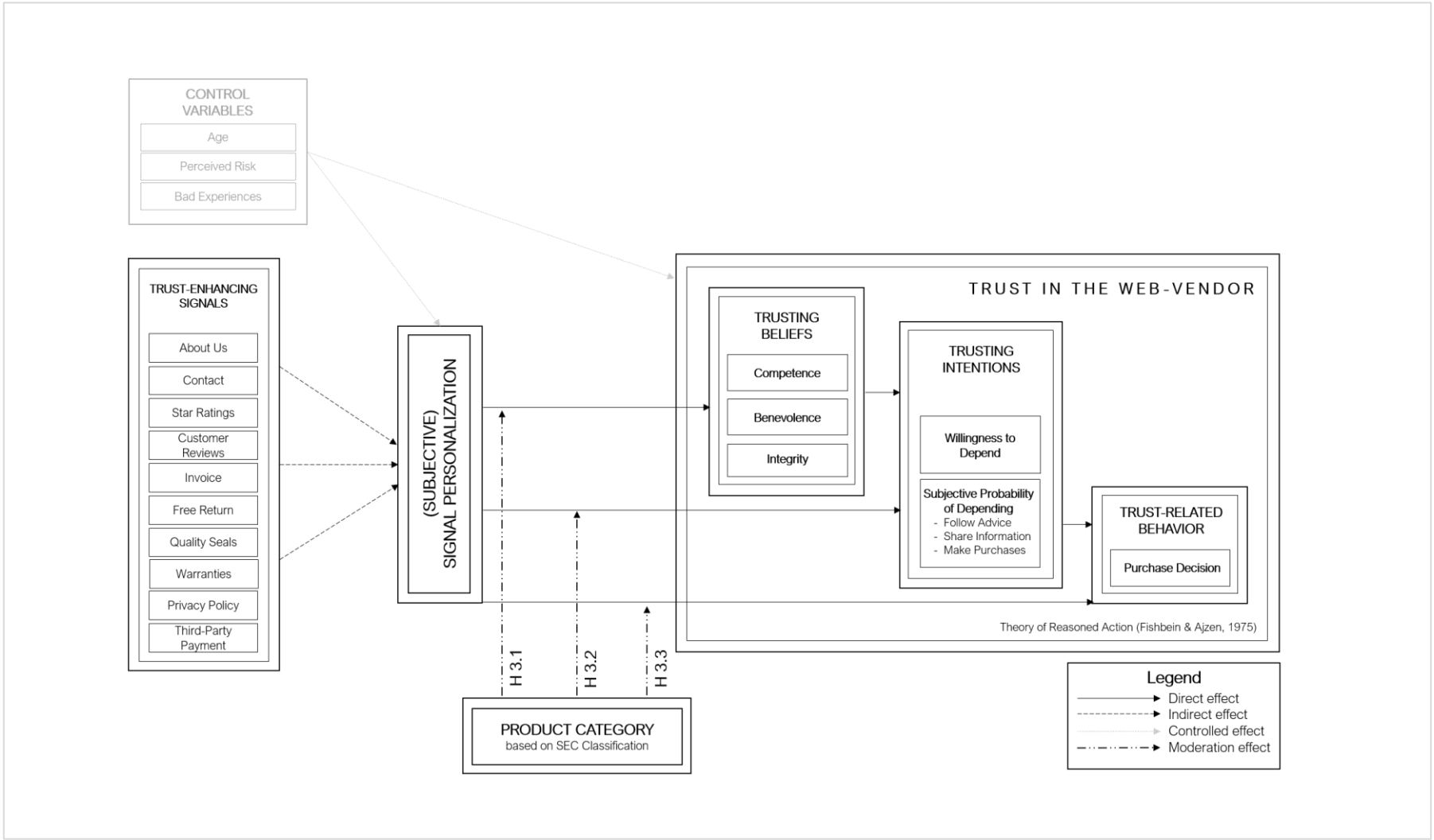


Figure 9. Development of hypotheses 3.1, 3.2, 3.3.

2.5.4 Hypothesis 4: Personality-Moderated Effect of subj. Personalization on Trust

The perception of an information offer tailored to one's own personality can be either experienced more as a reward (in the sense of being in the focus of attention) or more as a threat (in the sense of privacy invasion), a phenomenon called "personalization privacy paradox" (Awad & Krishnan, 2006). Extraversion and neuroticism are the personality dimensions involving a sensitivity to rewards/threats of the environment. While extraversion encompasses a special orientation towards environmental rewards (e.g., social attention; Ashton et al., 2002), neuroticism involves a special orientation towards environmental threats (e.g., privacy concerns; Bansal et al., 2016). Depending on the individual interpretation, an explicitly conscious personalization can either be experienced as privacy invasion (threat to privacy) or as being in the focus of attention (social reward). Accordingly, it is assumed that the effect of perceiving personalized information as reflected in subjective personalization depends on the individual expression of extraversion and neuroticism. In this sense, it should be experienced as more positive (reflected in higher trust levels) in individuals with higher levels of extraversion, whereas it should be experienced as less positive in individuals with higher levels of neuroticism (reflected in lower trust levels). Figure 10 illustrates the development of H 4.1, 4.2 and 4.3. Accordingly, it is hypothesized that the effect of subjective personalization on trusting beliefs, trusting intentions and on trust-related behavior is moderated by extraversion and neuroticism.

(H 4.1) Personality-Dependent SP Effects on Trusting Beliefs

- 4.1.1 Neuroticism weakens the relationship between SP and TBs.
- 4.1.2 Extraversion strengthens the relationship between SP and TBs.

(H 4.2) Personality-Dependent SP Effects on Trusting Intentions

- 4.2.1 Neuroticism weakens the relationship between SP and TIs.
- 4.2.2 Extraversion strengthens the relationship between SP and TIs.

(H 4.3) Personality-Dependent SP Effects on Trust-Related Behavior

- 4.3.1 Neuroticism weakens the relationship between SP and TRB.
- 4.3.2 Extraversion strengthens the relationship between SP and TRB.

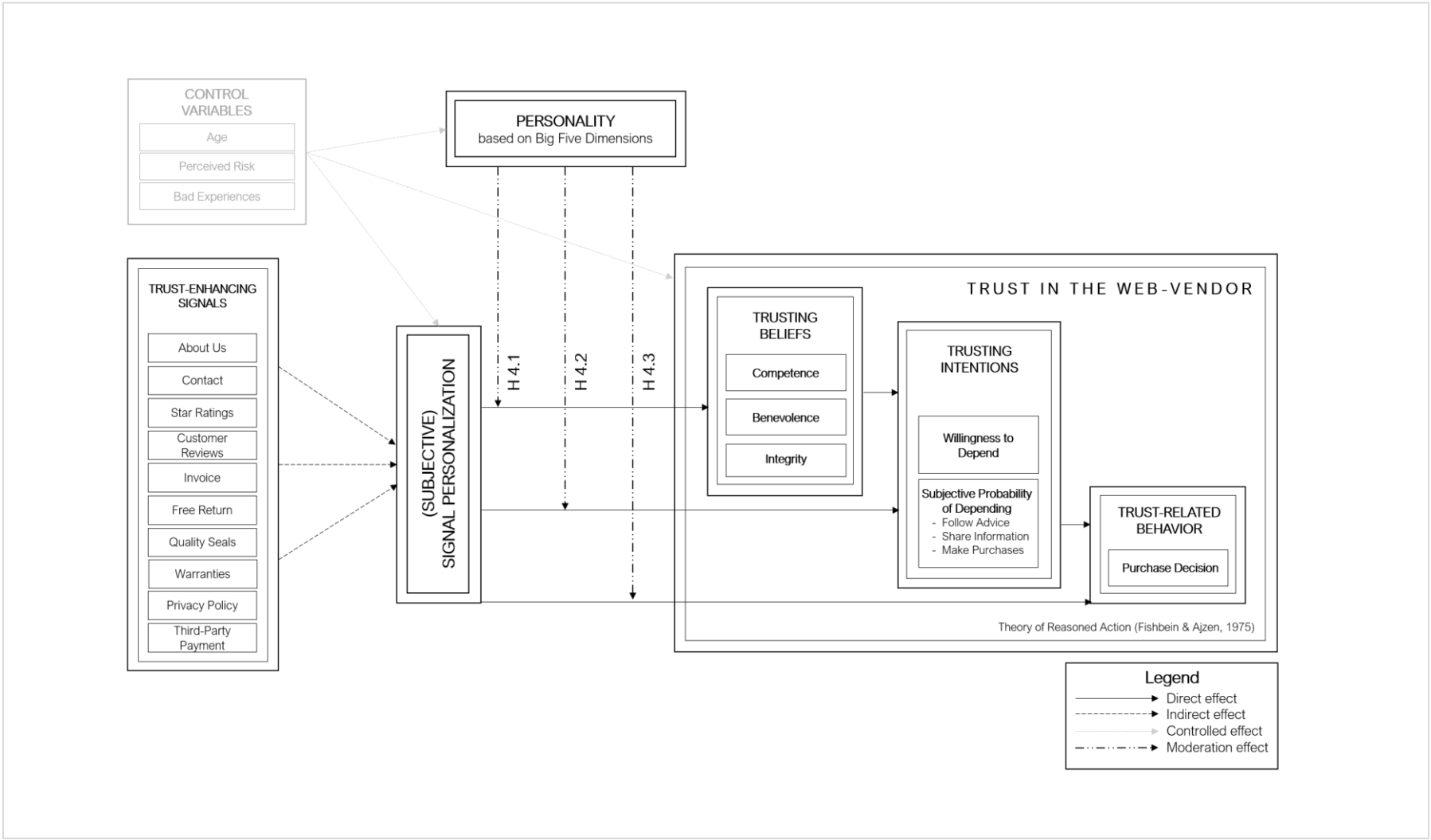


Figure 10. Development of hypotheses 4.1, 4.2, 4.3.

2.5.5 Hypothesis 5: Obj. Personalization-Moderated Personality Effects on Trust

Personality traits are intraindividually consistent and interindividually distinct propensities to exhibit an identifiable behavior. However, the behavioral expression of a trait requires the activation of that trait by trait-relevant situational cues. In other words, depending on the environmental conditions, personality traits exert a stronger or weaker effect on trusting beliefs, trusting intentions and trust-related behavior.

Thus, because personality traits require trait-relevant situations for their expression, objective personalization (as contrasted to subjective personalization) is assumed to provide the appropriate environmental cues to excite personality traits in their (cognitive and behavioral) expression on trust.

For this reason, it is hypothesized that the (negative) effect of neuroticism on trust and the (positive) effect of agreeableness on trust, which have been established in the literature, will be particularly salient in the anti-personalized (neuroticism) condition and in the personalized (agreeableness) condition, in contrast to a randomized signal presentation. Figure 11 illustrates the development of H 5.1, 5.2 and 5.3, figure 12 summarizes all five hypotheses for simplicity.

(H 5.1) OP-Dependent Personality Effects on Trusting Beliefs

- 5.1.1 Effect of N on TBs is stronger in anti-personalization than in randomization.
- 5.1.2 Effect of A on TBs is stronger in personalization than in randomization.

(H 5.2) OP-Dependent Personality Effects on Trusting Intentions

- 5.2.1 Effect of N on TIs is stronger in anti-personalization than in randomization.
- 5.2.2 Effect of A on TIs is stronger in personalization than in randomization.

(H 5.3) OP-Dependent Personality Effects on Trust-Related Behavior

- 5.3.1 Effect of N on TRB is stronger in anti-personalization than in randomization.
- 5.3.2 Effect of A on TRB is stronger in personalization than in randomization.

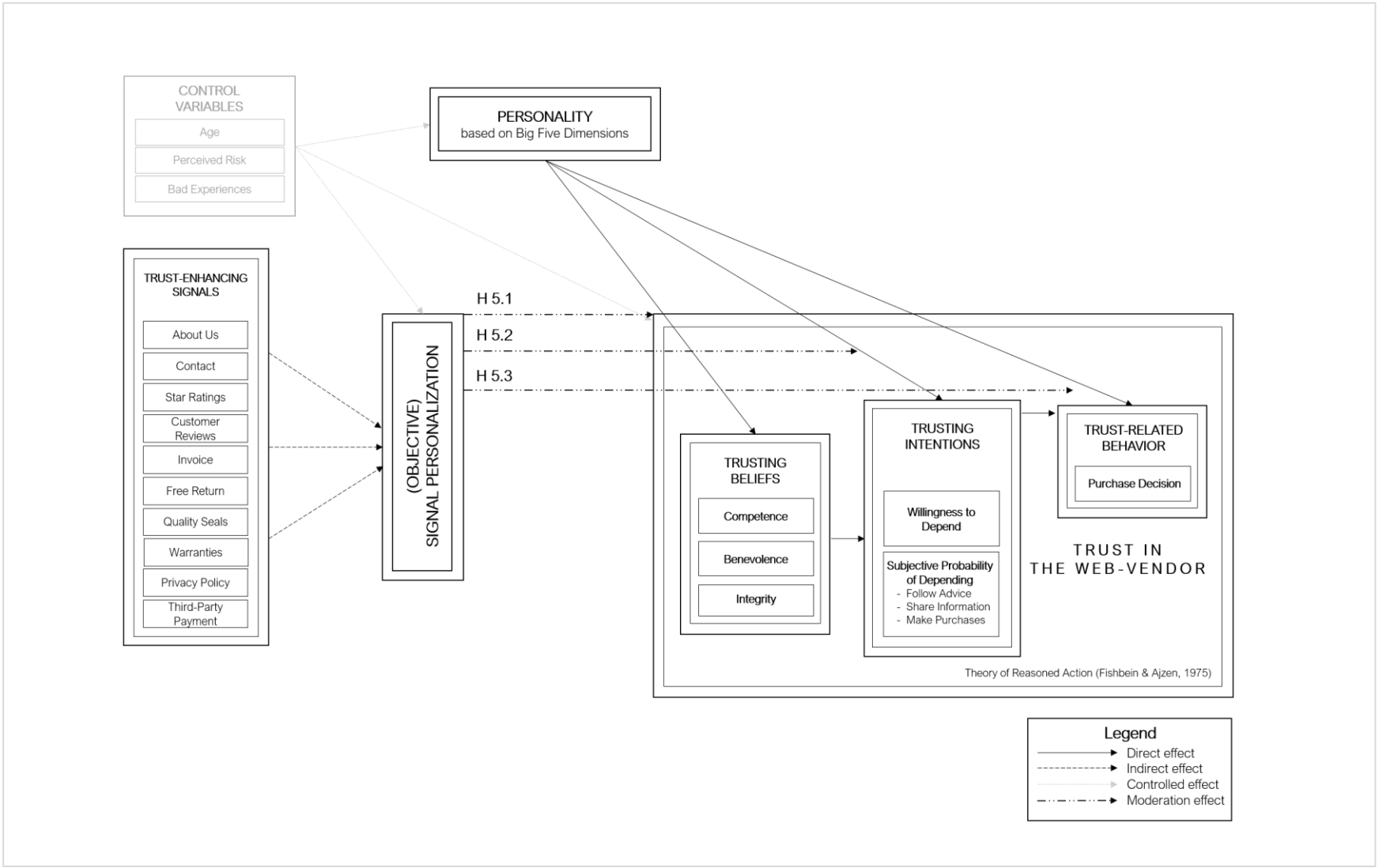


Figure 11. Development of hypotheses 5.1, 5.2, 5.3.

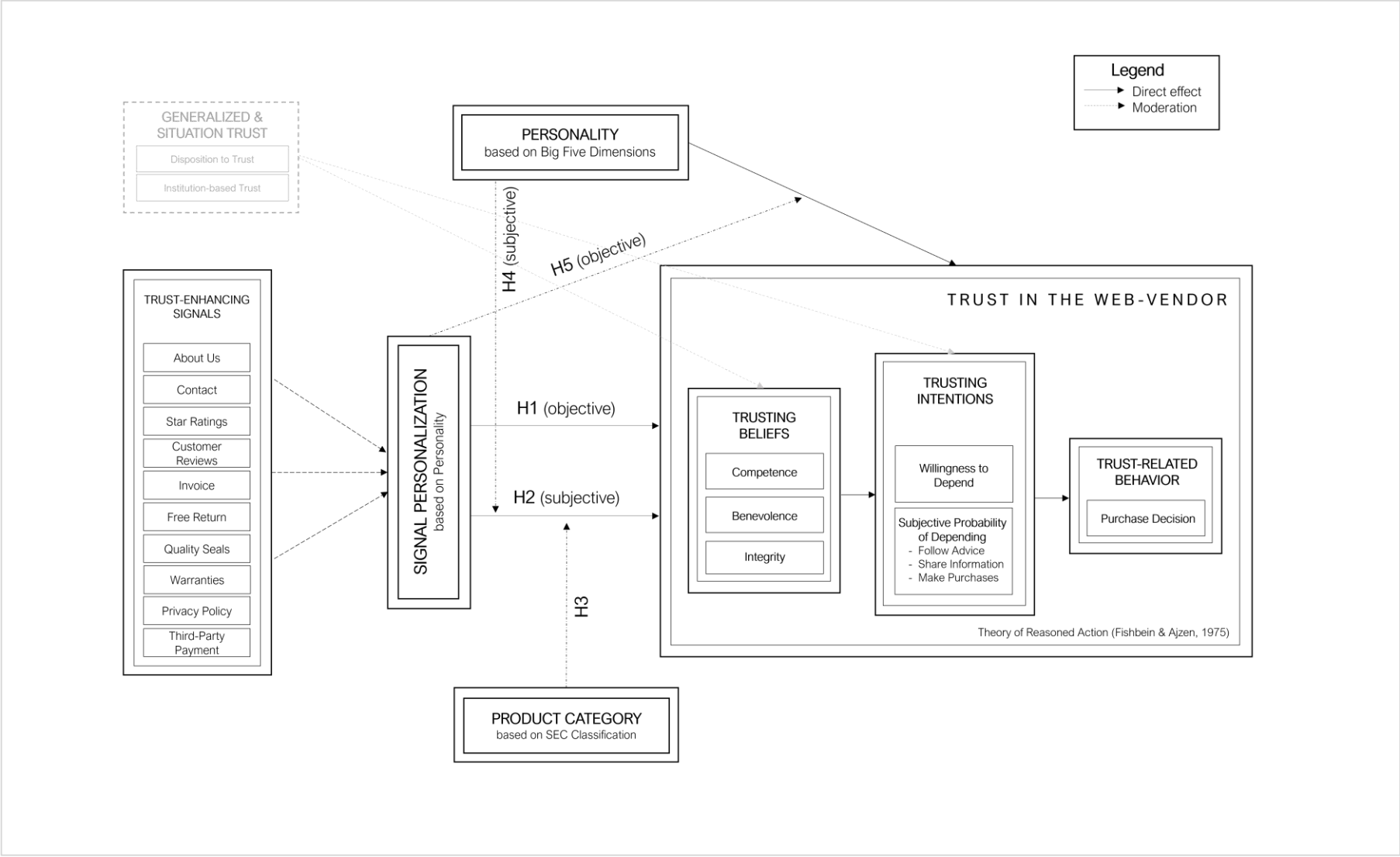


Figure 12. Integration of hypotheses into the model.

3 Methods

3.1 Study 1: Personality-Associated Preference of Trust-Enhancing Signals

The goal of the first study was to build a foundation for a personality-based personalization by examining personality-associated trust-enhancing signal preferences.

3.1.1 Participants

The sample size estimation using G*Power (Faul et al., 2009) for the discovery of a small effect (Cohen's $f^2 = .02$), $\alpha = .05$ and $\beta = .95$ included 652 subjects. A total of 698 subjects participated in the study. After listwise deletion of twelve problematic datasets (due to incorrect/invalid entries or missing data), 686 complete data sets (440 female, 243 male, 3 diverse) were included in the further analysis. Participants received remuneration of 5 € or course credit for their study participation.

(1) **Demographic Characteristics.** The age of participants ranged from 18 to 79 years (*M* = 30.2 years, *SD* = 13.6 years). 94.3 % of participants were of German nationality. With regard to secondary education, 75.9 % of participants reported having a university entrance qualification. Concerning post-secondary education, 36.9 % reported having a university degree (bachelor's, master's or diploma), 22.9 % reported having a (non-university) vocational degree, 34.5 % reported to not have a vocational qualification, 5.7 % other. Regarding employment status, 57.8 % of participants reported being employed full- or part-time and 33.5 % reported to be not employed (students or retirees), 8.7% other. In terms of monthly net income (after deduction of taxes and social security contributions), 44.5 % reported a monthly net income of less than 1000 €, 30.5 % a net income in the range of 1000 € and under 4.000 € and 4.5 % a net income of 4000 € and more, 20.5 % other.

(2) **Internet Experience.** On average, participants reported using the Internet for 12.7 years (range = 2–32 years; *SD* = 4.8 years) for on average 3.8 hours per day (range = 0–23 hours; *SD* = 2.6 hours). On average, subjects reported to make 3.6 online purchases per month (range = 0–150 purchases; *SD* = 7.5 purchases). On a scale of 0–100, participants rated their ability to deal with various aspects of the Internet (evaluation of the

reliability of an online source, collection of information, virus removal, online discussion, getting to know someone online, using a new technology, uploading data, downloading data, evaluating the trustworthiness of online stores) with on average 53.5 (*SD* = 20).

(3) **Recruitment.** To keep the ecological validity and generalizability of the study results as high as possible, the subjects did not have to meet any selection criteria except age ≥ 18. Interested individuals were targeted via online platforms, social media, e-mail distribution lists and study programs, including:

- Sona Systems (https://www.sona-systems.com)
- Social media (Facebook groups)
  - "Versuchsbörse Psychologie Uni Wuerzburg"
  - "Psychologische Studien für alle"
  - "Psychologie – Studienarbeiten, Seminararbeiten, Studien, Studienteilnehmer"
  - "Fair-Teiler Wuerzburg"
- Online classifieds portal ("eBay Kleinanzeigen")
- E-mail distribution lists
  - Freie Universität Berlin: „VPStundenAngebote" [vpstundenangebote@lists.fu-berlin.de]
  - Friedrich-Schiller-University Jena: „VPN_Psy" [vpn_psy@listserv.uni-jena.de]
  - Julius-Maximilians-University Wuerzburg: „Versuchspersonenstunden" [vpstunden@lists.uni-wuerzburg.de]
- Study programs of the Julius-Maximilians-University Wuerzburg
  - Diagnostic seminar (Chair of Psychology I)
  - Digital marketing seminar (Chair of Digital Marketing and E-Commerce)

3.1.2 Procedure

As *introduction* to the study (1), the subject address contained an information text about the theoretical background and procedure of the study, data protection, use of primary data, the right of withdrawal and an informed consent. To avoid influences of demand

characteristics and to keep external validity of results as high as possible (Smith & Mackie, 2007), the construct of interest, "trust", was obscured in the initial information text. Accordingly, "success factors" instead of "trust-enhancing signals" were mentioned.

The introduction to the study was followed by a questionnaire on (2) *demographic data* (age, gender, nationality, marital and employment status, education, income) and *Internet experience* (years of use, daily use, regular shopping behavior and online skills based on the questionnaire of Helsper and Eynon (2013)).

The questionnaire on demographic characteristics was followed by questionnaires on (3) the *Big Five personality profile* (Muck et al., 2007), (4) the *preference of trust-enhancing signals* (own scale, see appendix) and (5) the *attitude towards online shopping* (Forsythe et al., 2006). To avoid response bias due to (item and questionnaire) position effects (Moosbrugger & Kelava, 2020), both the order of these three questionnaires and the order of the items within the questionnaires were randomized.

The *conclusion* of the study (6) included a participation acknowledgement, a reference to the contact e-mail address, and a presentation of a pseudonymized code for participation control. Figure 13 illustrates the procedure of study 1.

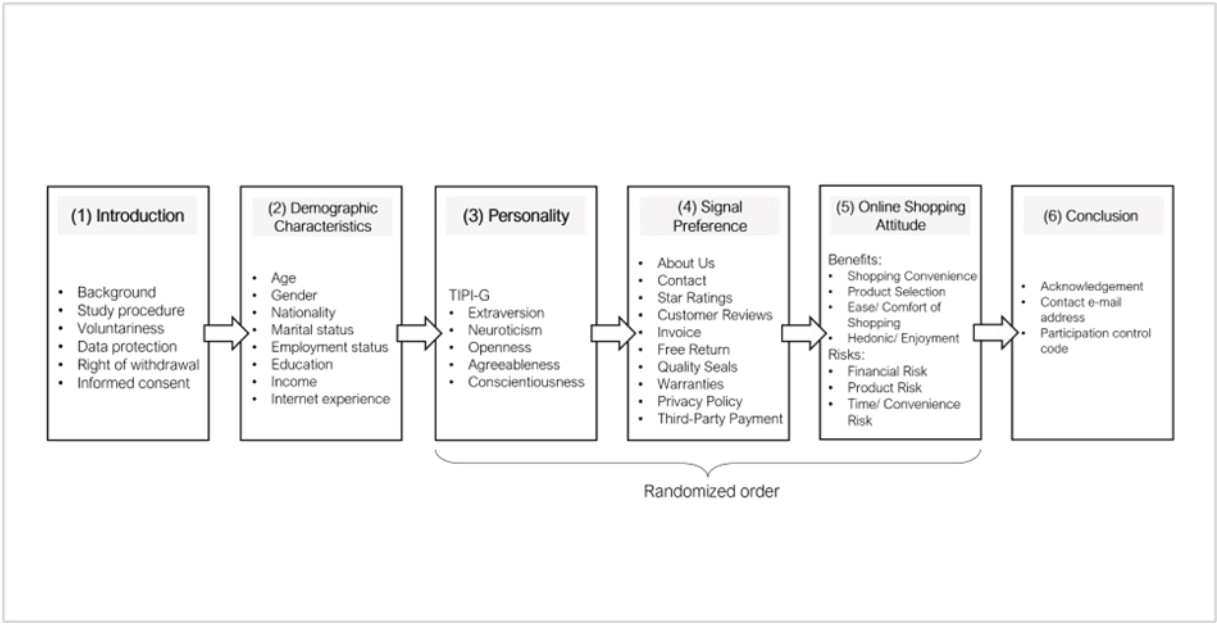


Figure 13. Illustration of the study procedure (study 1).

3.1.3 Materials

(1) **Ten-Item Personality Inventory.** The Ten-Item Personality Inventory (Gosling et al., 2003) is a short scale for the assessment of the Big Five personality dimensions extraversion (E), neuroticism (N), openness to experience (O), agreeableness (A), and conscientiousness (C). The questionnaire includes ten items, with two items (one positively coded and one negatively coded) per dimension. Each item consists of two adjectives (e.g., E+: "extraverted, enthusiastic", E-: "reserved, quiet") to be rated on a seven-point Likert-type scale ranging from "strongly disagree" to "strongly agree". Convergent validity between the TIPI and the established 240-item Revised NEO Personality Inventory (NEO-PI-R; Costa & McCrae, 1992) ranges from r = .68 for C to r = .56 for O (Gosling et al., 2003). The test-retest reliability within a six-week period (r = .72) is acceptable (Gosling et al., 2003). Due to the German-speaking sample in this study, the validated German version of the Ten-Item Personality Inventory (TIPI-G) was administered (Muck et al., 2007).

Despite psychometric costs of higher inaccuracy compared to longer versions, the advantage of short personality questionnaires lies in their practicality. Where the application of detailed questionnaires is often not realizable due to time constraints and reasonability, short questionnaires can provide a good compromise between psychometric and practical considerations (Gosling et al., 2003). This is especially true in the context of e-commerce, where limited time and (potential) perceptions of privacy invasion prohibit the use of long personality-related questionnaires (Awad & Krishnan, 2006). Aiming to provide a basis for a personality-based personalization of trust-enhancing signals that can be applied in practice, the TIPI-G (Muck et al., 2007) was administered to establish a connection between personality and signal preference.

(2) **Trust-enhancing Signal Preference.** The preference of trust-enhancing signals was measured using specific definitions of trust-enhancing signals. The definitions were developed in collaboration with experts in the field of online marketing and checked for comprehensibility from laypersons. The exact wording of the definition is provided in the appendix. For each definition, participants were asked to subjectively rate the importance

of the signal for a reputable impression of the online stores on a seven-point scale from "absolutely not important" to "absolutely important".

For the development of the definitions, the following literature was consulted:

- (1) About us information: Casañ-Pitarch (2015)
- (2) Contact channels: Bock (2012)
- (3) Star ratings, (4) customer reviews: Kollewe and Keukert (2016)
- (5) Payment on invoice, (6) free return: Kollewe and Keukert (2016)
- (7) Quality seals: Noll and Winkler (2004)
- (8) Warranties: Vieth (2009)
- (9) Privacy policy: Art. 13 DSGVO
- (10) Third-party payment: Cardoso and Martinez (2019)

(3) **Online Shopping Attitude.** The "Risks and Benefits" scale (Forsythe et al., 2006) is a questionnaire designed to assess perceived risks and benefits associated with online shopping. The questionnaire contains thirty-two items to be rated on a seven-point Likert-type scale ranging from "strongly disagree" to "strongly agree". The individual items are grouped into three risk factors [(1) financial risk: 7 items, (2) product risk: 6 items, (3) time/convenience risk: 3 items] and four benefit factors [(1) shopping convenience: 4 items, (2) product selection: 4 items, (3) ease/comfort of shopping: 4 items, (4) hedonic/ enjoyment: 4 items]. Nomological validity between the risk and benefit factors and the frequency of online shopping ranges from r = -.19 (financial risk) to r = .22 (shopping convenience/product selection). Since it is reasonable that subjective attitudes toward the risks and benefits of online shopping exert an independent effect on signal evaluation, they were included as control variables.

3.1.4 Statistics

(1) **Data Preprocessing.** In the course of data preprocessing, the data were first screened for *implausible entries* (especially the free input fields) and *missing values*. Five datasets were affected by data missing completely at random (Little MCAR test: $\chi^2(17) = 127.37$, $p = .999$). These five affected datasets were excluded listwise from further analysis.

In the next step, the data were tested for *multiple submissions* by the same respondent. Two datasets had features suggestive of multiple submissions (same pseudonymized code number, age and month of birth). Since both datasets were complete, only the first dataset was kept in the analysis to avoid potentially response-distorting exercise effects.

Subsequently, the data were checked for unusually *low processing time* using the relative speed index (RSI, Leiner (2019)). The RSI is calculated by dividing the sample's median page completion time by the individual page completion time. The recommended threshold for suspicious processing times is an RSI of 2, which means that the respondent has completed a page twice as fast as the typical respondent. As to be expected, the relative processing speed in the present sample has proven to be negatively associated with age ($r(684) = -.27$, $p < .001$) and positively associated with Internet experience ($r(684) = .12$, $p = .002$) of the subject. Since heterogeneity of these characteristics was deliberately aimed for, the decision was made to use a more liberal cutoff criterion (RSI > 3). In this context, five datasets with an RSI > 3 were identified and excluded listwise from further analysis.

In a further step, data were screened for *straightlining behavior*, which is the tendency to "use an identical response category for all items in a set" (Herzog & Bachman, 1981, p. 551). Straightlining was investigated with the "standard deviation of the battery method" (Y. Kim et al., 2019) [straightlining defined as $SD_{Total} < .25$]. One dataset showed characteristics of straightlining behavior and was subsequently excluded listwise from further analysis.

In the context of this study, the response scales are exclusively seven-point Likert-type scales. Due to their limited seven-point rating, these scales are already exempt from *univariate outliers* by definition. Therefore, a univariate outlier analysis was not performed.

To examine exceptionally influential cases on the model, Cook's distance [influential case defined as value > 1 (Cook, 1982)] as measure of *multivariate outliers* was used. There was no evidence on exceptionally influential cases (Cook's distance < 1).

(2) **Linear Regression Assumptions.** In the first step, *linearity* of the relationship between predictors (Big Five personality dimensions) and criterion (trust-enhancing signal preference) was tested graphically using scatter plots of standardized predicted values (x-axis) and the standardized residual (y-axis; Field, 2013). The scatter plots provided no evidence of nonlinear relationships.

Homoscedasticity of residuals was checked with White test (White, 1980). For five out of ten variables, there was evidence for heteroscedasticity of residuals [about us ($\chi^2(20) = 31.56$, $p = .048$), contact phone ($\chi^2(20) = 33.78$, $p = .028$), customer reviews ($\chi^2(20) = 36.01$, $p = .015$), invoice ($\chi^2(20) = 35.25$, $p = .019$), quality seals ($\chi^2(20) = 41.69$, $p = .003$)]. In the remaining five variables, homoscedasticity was fulfilled [free return, privacy policy, star ratings, third-party payments, warranties].

Uni- and multivariate *normality* of the data was tested was tested using critical ratios (C.R.) based on the distribution coefficients of skewness (s_s) and kurtosis (s_k) [C.R.: $s_s/se(s_s)$ / $s_k/se(s_k)$; violation of univariate and multivariate normality distribution defined as $|C.R.| > 2.57$]. The analysis provided evidence for a violation of the (univariate and multivariate) normality assumption. Histograms provided evidence for a negative skewness of variables, speaking of a left-tailed distribution.

The predictive power of the Big Five personality factors for the preference of trust-enhancing signals was investigated using IBM SPSS Amos (Version 28.0.0) with a path analysis for each of the Big Five personality factors to prevent multicollinearity-related suppressor effects. Given heteroscedasticity and non-normal distribution of regression residuals, the robust regression method of *bootstrapping*, which does not rely on assumptions of normality or homoscedasticity, was used to analyze the data (Field, 2013). Accordingly, the associated *p*-values, standard errors (*SE*s) and confidence intervals (*CI*s) are based on bootstrapping with 2000 samples (Field, 2013). Beta coefficients were consulted for the interpretation of the effects. Bonferroni-Holm correction for multiple comparisons was applied in order to prevent alpha inflation (Holm, 1979). In total, five tests (5 personality dimensions) were performed. Accordingly, the Bonferroni-Holm adjustment to prevent alpha inflation started at a critical significance level of $p_{crit} = .010$.

3.2 Study 2: Personality-Based Personalization of Trust-Enhancing Signals

Building on the findings of the first study, the objective of the second study was to investigate the effects of a personality-based personalization of trust-enhancing signals.

3.2.1 Participants

The sample size estimation for the application of the Maximum Likelihood (ML) Method depends on the number of distinct parameters to be estimated (t). In this sense, a sufficient sample size can be assumed when the criterion ($N - t > 50$) is met (Bagozzi, 1981). A total of 636 subjects participated in the study (final N: 580–477 > 50). After listwise deletion of fifty-six problematic datasets (due to invalid entries or missing data), 580 complete data sets (403 female, 173 male, 4 diverse) were included in the further analysis. Participants received remuneration of 10 € or course credit for their study participation.

(1) **Demographic Characteristics.** The age of participants ranged from 18 to 74 years (M = 28.1 years, SD = 11.2 years). 94.7 % of participants were of German nationality. With regard to secondary education, 76.1 % of participants reported having a university entrance qualification. Concerning post-secondary education, 40.7 % reported having a university degree (bachelor's, master's or diploma), 18.8 % reported having a (non-university) vocational degree, 37.9 % reported to not have a vocational qualification and 2.6 % other. Regarding employment status, 57.6 % of participants reported being employed full- or part-time, 36.9 % reported to be not employed (students or retirees) and 5.5 % other. In terms of monthly net income (after deduction of taxes and social security contributions), 51.4 % reported a monthly net income of less than 1000 €, 30.5 % a net income in the range of 1000 € and under 4.000 € and 2.6 % a net income of 4000 € and more, 15.5 % other.

(2) **Internet Experience.** On average, participants reported using the Internet for 13.7 years (range = 2–35 years; SD = 4.9 years) for on average 4.5 hours per day (range = 0–16 hours; SD = 2.6 hours). The subjects reported making an average of 3.7 online purchases per month (range = 0–100 purchases; SD = 5.6 purchases). On a scale of 0–

100, participants rated their ability to deal with various aspects of the Internet (evaluation of the reliability of an online source, collection of information, virus removal, online discussion, getting to know someone online, using a new technology, uploading data, downloading data, evaluating the trustworthiness of online stores) at an average of 54 (*SD* = 17.3).

(3) **Recruitment.** Following the same recruitment protocol as study 1, subjects did not have to meet any selection criteria except age ≥ 18 in order to keep the ecological validity and generalizability of the study results as high as possible. Interested individuals were targeted via online platforms, social media, e-mail distribution lists and study programs, including:

- Sona Systems (https://www.sona-systems.com)
- Social media (Facebook groups)
    - "Versuchsbörse Psychologie Uni Wuerzburg"
    - "Psychologische Studien für alle"
    - "Psychologie – Studienarbeiten, Seminararbeiten, Studien, Studienteilnehmer"
    - "Fair-Teiler Wuerzburg"
- Online classifieds portal ("eBay Kleinanzeigen")
- E-mail distribution lists
    - Freie Universität Berlin: „VPStundenAngebote" [vpstundenangebote@lists.fu-berlin.de]
    - Friedrich-Schiller-University Jena: „VPN_Psy" [vpn_psy@listserv.uni-jena.de]
    - Julius-Maximilians-University Wuerzburg: „Versuchspersonenstunden" [vpstunden@lists.uni-wuerzburg.de]
- Study programs of the Julius-Maximilians-University Wuerzburg
    - Diagnostic seminar (Chair of Psychology I)
    - Digital marketing seminar (Chair of Digital Marketing and E-Commerce)

3.2.2 Procedure

Following the *introduction* (information on the theoretical background, study procedure, data protection, data usage, right of withdrawal, informed consent), a questionnaire on *demographic data* (age, gender, nationality, marital and employment status, education, income) as well as on *Internet experience* was presented.

The study consisted of two parts: (1) a *general (theoretical) part* with trait-related questionnaires and (2) a *specific (practical) part* with three online shops, each followed by attitude-related questionnaires. Figure 14 illustrates the detailed procedure of study 2.

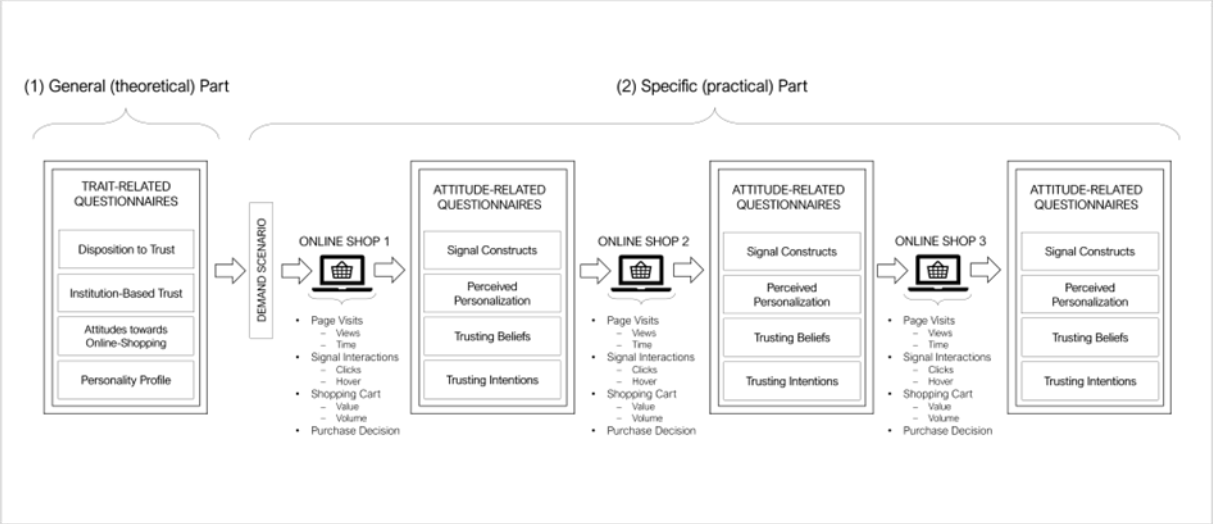


Figure 14. Illustration of the study procedure (study 2).

In the (1) *general (theoretical) part* of the study, subjects answered trait-related questionnaires encompassing the individual *disposition to trust*, the level of *institution-based trust* (McKnight et al., 2002a), the *attitude towards online shopping* (Forsythe et al., 2006) and the *Big Five personality profile* (Muck et al., 2007). In order to ensure responses largely unbiased by the online shop visits, the trait-related questionnaires were presented prior to the visit of the online stores. To avoid response bias due to (item and questionnaire) position effects (Moosbrugger & Kelava, 2020), both the order of these four questionnaires and the order of the items within the questionnaires were randomized.

After completing the general part, a *demand scenario* was installed to cognitively involve the participants with the task. Following the procedure of Ahrholdt (2011), participants

received the following instruction (translated into English, as the original version was written in German):

> "Please put yourself in the following situation:
>
> Imagine that you have been involved with the purchase of electronic items, clothing, and nutritional supplements for some time. You are seriously planning to purchase products from these categories in the near future. With the aim of finding out the last detailed information, you inform yourself about the products on the Internet. In the course of your research, you come across the online stores of "Organic Clothing" (clothing), "Smart Electronics" (electronics) and "Natural Balance" (nutritional supplements). This is where you could purchase the products. Each of these three stores has different features that are relevant to deciding whether you could consider buying from that online retailer.
>
> Your task:
>
> Based on your own feelings, consider whether you could see yourself purchasing the products from Smart Electronics, Organic Clothing and Natural Balance. Look around the online stores as you are used to and let the impressions sink in. While doing so, please scroll down the home page once to the bottom and click through the individual products that interest you. You have the option to add those products you would decide to buy to your shopping cart. If you don't feel the need to buy anything in the online store, you can also leave the cart empty. Go to the checkout in each store and make the decision there whether you would buy from the online store or not. Following each of the three online stores, you will be asked to rate the online stores in terms of different features.
>
> Important:
>
> None of the decisions is associated with a purchase obligation and no purchase contract is concluded."

In the (2) *specific (practical) part* of the study, subjects visited three (fictional) online shops varying in their degree of personalization (personalization vs. randomization vs. anti-personalization). During each visit, several behavioral measures were collected. These included page visits (page views and visit time), interactions with trust-enhancing signals (clicks and hover movements), shopping cart dimensions (value and volume) and the purchase decision (buy or not buy). In case of a decision against the purchase, subjects were asked to state the decisive reason against the purchase (Czajka & Mohr, 2010).

After completing the online store visit, subjects answered attitude-related questionnaires encompassing trusting beliefs (competence, benevolence, integrity), trusting intentions (willingness to depend, subjective probability of depending; McKnight et al., 2002a), the perception of trust-enhancing signals (own scale, see appendix) and the extent of subjective personalization (Ho & Bodoff, 2014; Li, 2016). In order to control potential effects of personal product relevance on purchase intentions and decisions, purchase involvement with the product categories was measured (Laurent & Kapferer, 1985).

The *technical procedure* behind personalization was initiated with the registration of the individual personality profile. JavaScript and PHP were used to transfer the personality data to the server. Subsequently, based on the results of study 1 (personality-associated preference of trust-enhancing signals), the presentation of trust-enhancing signals was dynamically adapted to the individual personality profile using HTML and CSS. The behavioral measurements were captured using JavaScript and PHP and transmitted to the server. Figure 15 illustrates the technical background of personality-based personalization.

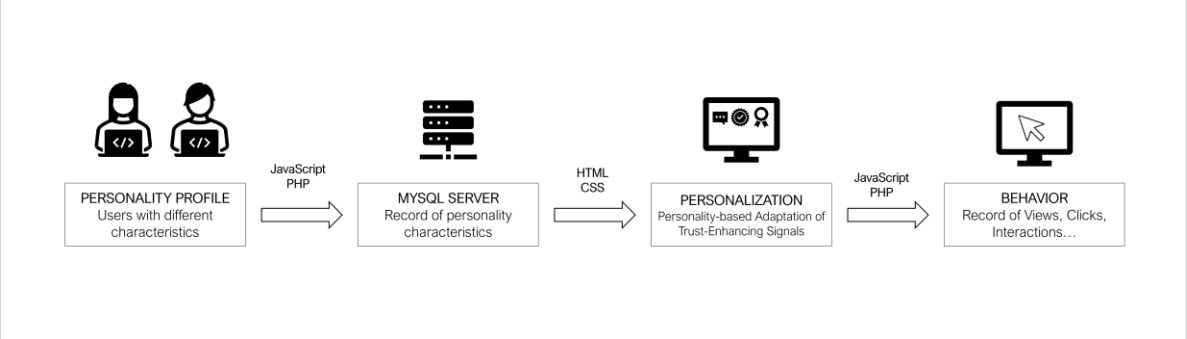


Figure 15. Illustration of the technical background of personalization.

3.2.3 Study Design

(1) **Methodology**. Through the combination of different instruments to measure the personalization effects on subjective-verbal attitudes (questionnaires) and on objectively observable behavior (page views and visit time, clicks and hover movements, shopping cart value and volume, purchase decision), a *multimodal approach* was used. The advantage of combining multimodal methods lies in the protection against measurement method-specific biases, which contributes to improving validity, reliability and objectivity (Schmidt-Atzert & Amelang, 2012). The possibility to establish a connection between subjective-verbal attitudes and objective behavior particularly improves *the internal (convergent) validity* of measures.

With the aim of provoking natural (attitudinal and behavioral) variations in an experimental context that is as realistic as possible, the method of (experimental) *simulation* was used. A simulation can be defined as model-like imitation of a real-world system applied to understand and investigate complex system-related processes (Jann & Hevenstone, 2019). The advantage of combining standardized procedures (stimuli and measurement) with a realistic study setup lies in the *external validity* of the study results, which allows conclusions to be drawn about behavior in real life situations. As simulation context, three (fictional) B2C e-commerce websites for a clothing company (called "Organic Apparel"), an electronics company (called "Smart Electronics") and a supplements company (called "Natural Balance") were developed.

The *product categories* (clothing, electronics and supplements) were chosen as representatives of the SEC classification of goods and services (Darby & Karni, 1973; Nelson, 1970). According to the extent of pre-purchase information asymmetries, clothing can be classified as representative of search goods, electronics as representative of experience goods (Nelson, 1970) and nutritional supplements as representative of credence goods (Darby & Karni, 1973; Nakayama et al., 2010). While most products do not distinctly fall into a single category in a categorical approach, they can rather be quantified along a continuum of pre-purchase information asymmetry in a dimensional approach. The integration of environments with varying levels of pre-purchase information

asymmetry allows for the investigation of personality-dependent personalization effects on trust initiation processes.

The *fictitious nature* of the websites was chosen to exclude potential bias from empirically confirmed branding effects (brand experience and brand familiarity) on trusting beliefs, intentions and behavior (Ha & Perks, 2005). Well-known brands are associated with good reputation, trustworthiness, and reliability, which often gives them a leap of faith due to their familiarity from advertisement and word of mouth (Delgado-Ballester & Hernández-Espallardo, 2008).

(2) **Study structure.** The study structure is characterized by a fully crossed two-factorial 3*3 repeated measures design with the independent variables *signal presentation* (personalization / randomization / anti-personalization) and *product category* (search goods / experience goods / credence goods). Combining the two independent variables results in a 3*3 matrix with 9 cells. Figure 16 illustrates the matrix of condition combinations.

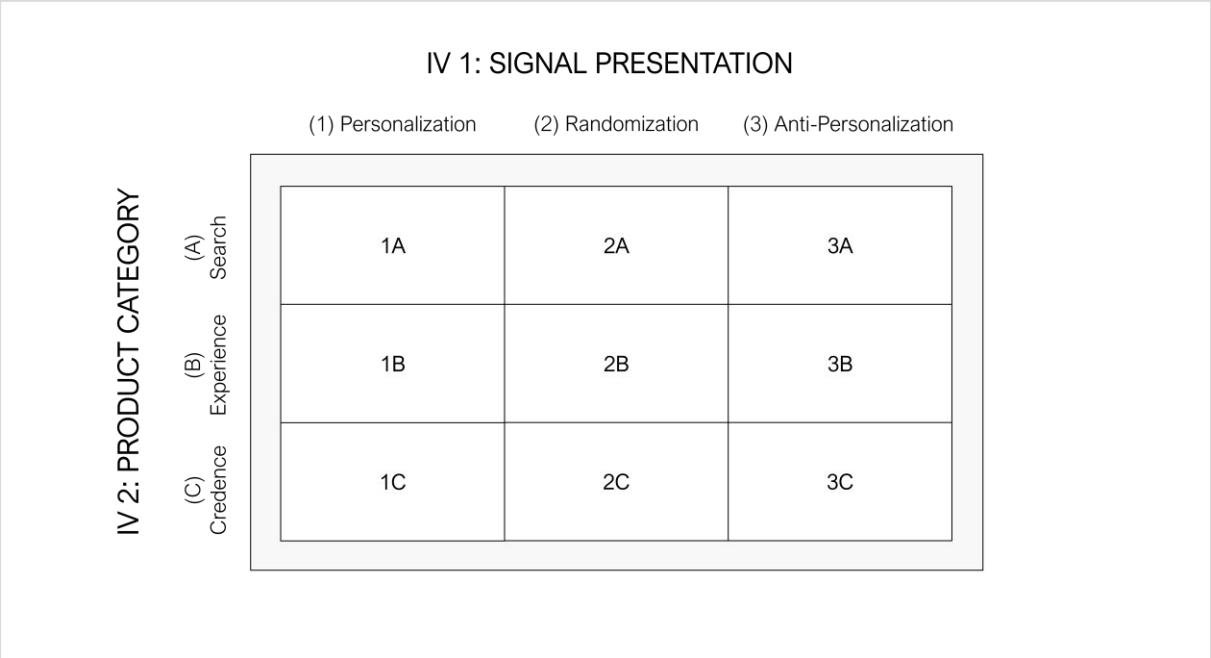


Figure 16. Matrix of condition combinations.

In order not to overwhelm the subjects' ability to discriminate between the online stores, a total of only *three distinct combinations* of product category and signal presentation

were displayed (e.g., 1A / 2B / 3C or 1C / 2A / 3B). This restriction resulted in six possible distinct condition combinations (blocks) with six possible condition orders within each block, summing up to 36 sequences in total (6 condition combinations x 6 condition orders).

To control for the problem of sequence effects that might interfere with the experimental manipulation due to learning effects or fatigue (Goodwin & Goodwin, 2016), subjects were randomly assigned to these 36 possible sequences. To ensure approximately equal allocation to each condition (balanced and orthogonal plan), *adaptive baseline randomization* (biased coin method) was implemented (Frane, 1998). This procedure assures an incorporation of the absolute number of previous condition assignments into the calculation of the sequence probability before the next assignment. The sequence and position of conditions was recorded in order to control their effects.

Figure 17 illustrates the six sequence blocks. Figure 18 illustrates the final cell occupation following this procedure.

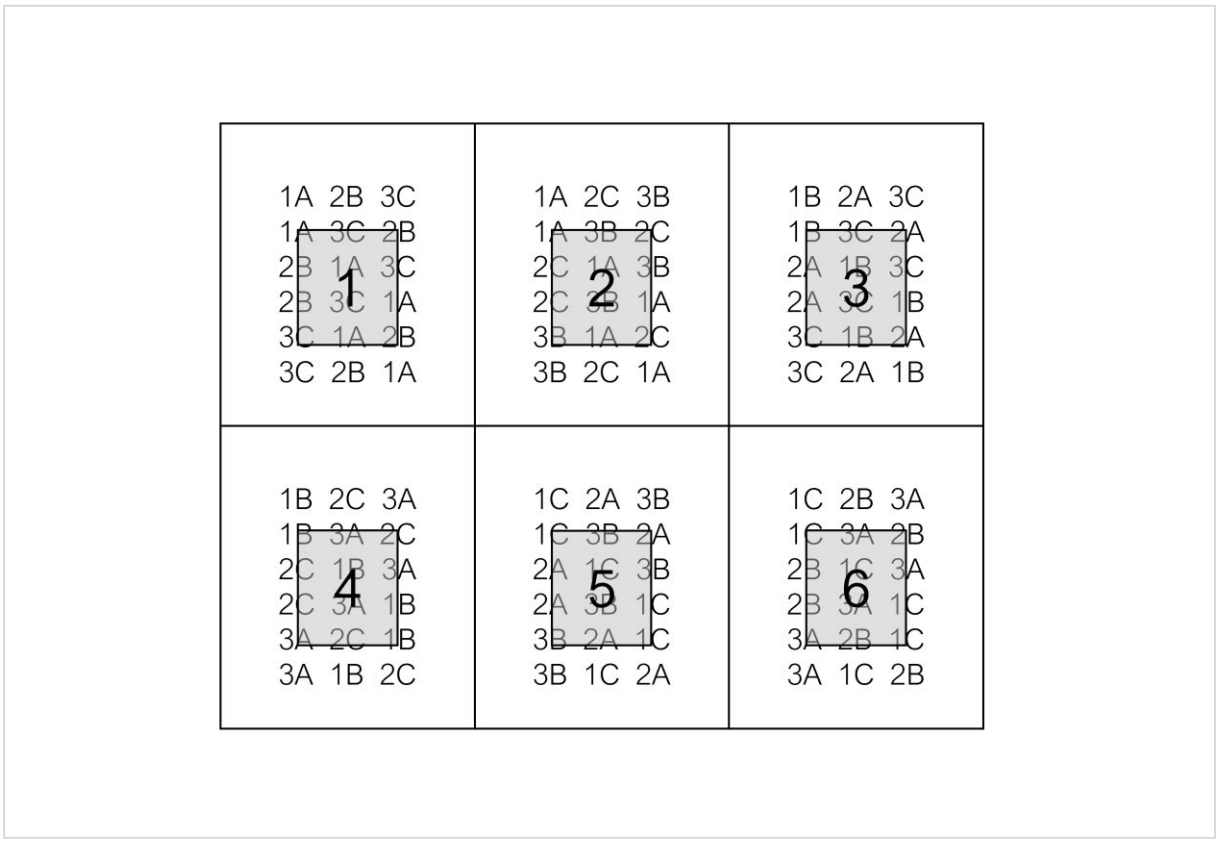


Figure 17. Illustration of the distinct combinational sequences of conditions.

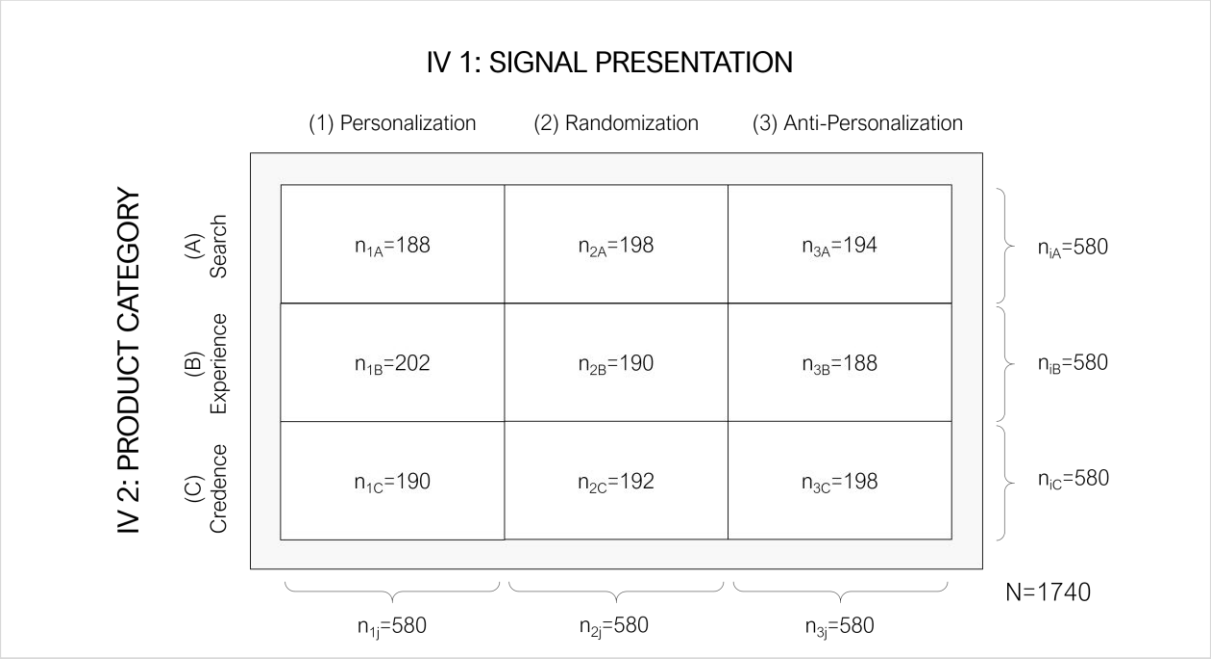


Figure 18. Illustration of the cell occupation.

(3) **Principle of Signal Presentation.** The independent variable of signal presentation was implemented to test the (potentially trust-enhancing) effects of personalization and the (potentially trust-mitigating) effects of anti-personalization against a randomized signal presentation.

In the *personalized* signal presentation condition, personality-associated trust-enhancing signals were distinctly adapted to the individual personality profile as measured by the TIPI-G before the online shop visit. In the *randomized* signal presentation condition, the presented personality-associated signals were randomly diced. In the *anti-personalized* signal presentation condition, all personality-associated signals assigned in the personalized condition were eliminated and mismatched signals presented instead.

The non-personality-associated trust-enhancing signals served as baseline in all three signal presentation conditions. This was to avoid confounding effects of the mere number of trust-enhancing signals on trusting beliefs and to assure that the three signal presentation conditions differed only in their degree of personalization. Normative data for the Ten-Item Personality Inventory (original validation sample by Muck et al., 2007; *N* = 1813) was used as signal allocation criterion.

Given the gradations of the data in 0.5 units due to item averaging, the mean values were rounded (up: E, O, A, C or down: N) to 0 decimal places to ensure that personalization was already effective from a medium expression of the personality dimension. The allocation criterion shows at which level of the personality dimension a personality-associated signal was displayed to the subjects.

- *Extraversion: M* = 4.44 (*SD* = 1.45) → allocation criterion ≥ 4
- *Emotional Stability (N*): M* = 4.83 (*SD* = 1.42) → allocation criterion ≤ 4.5
- *Openness: M* = 5.38 (*SD* = 1.07) → allocation criterion ≥ 5
- *Agreeableness: M* = 5.23 (*SD* = 1.11) → allocation criterion ≥ 5
- *Conscientiousness: M* = 5.40 (*SD* = 1.32) → allocation criterion ≥ 5

Figure 19 illustrates the basic principle of trust-enhancing signal allocation on the basis of an exemplary personality profile with the characteristics (A+, C+, N+, E-, O-). In the *personalized* signal presentation condition, the personality-associated signals are presented (A+: Quality Seals, C+: Invoice, N+: Free Return). In the *anti-personalized* signal presentation condition, these personality-associated signals are set to 0, and the personality-dissociated signals are shown instead. In the *randomized* signal presentation condition, all personality-associated signals have a 50 % chance of being shown.

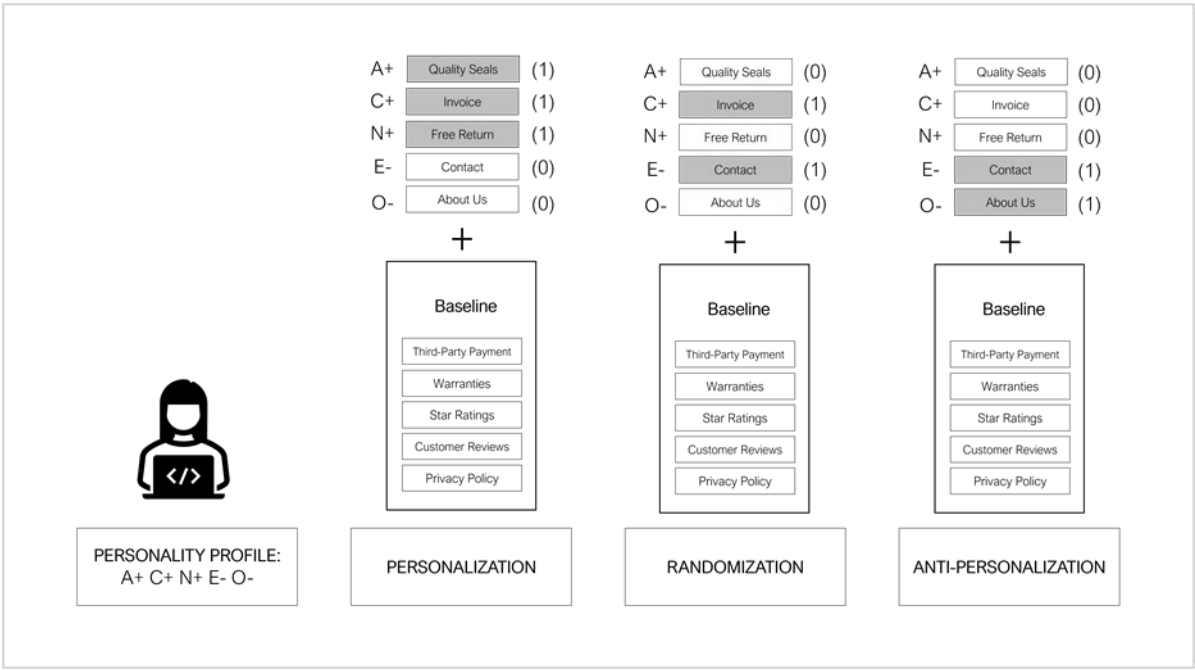


Figure 19. Basic principle of trust-enhancing signal allocation.

3.2.4 Materials

(1) **Trait-related Questionnaires**

(1.1) **Disposition to Trust.** Disposition to trust was assessed with the "Disposition to Trust" scale by McKnight et al. (2002a). The scale encompasses four subscales (competence, benevolence, integrity and trusting stance) with three items per subscale, summing up to twelve items to be assessed on a seven-point Likert-type scale, ranging from "strongly disagree" to "strongly agree". The convergent validity (tested by individual item lambda coefficients > .70, significant *t*-statistic for each path and each path loading greater than twice the standard error) was fulfilled for all three criteria. The reliability (internal consistency) of items ranges between α = .82 and α =.90 for the four subscales.

(1.2) **Institution-based Trust.** Institution-based trust was assessed with the "Institution-based Trust" scale by McKnight et al. (2002a). The scale encompasses five subscales (situational normality – general: 2 items, situational normality – competence: 3 items, situational normality – benevolence: 3 items, situational normality – integrity: 3 items, structural assurance: 4 items) summing up to 15 items to be assessed on a seven-point Likert-type scale, ranging from "strongly disagree" to "strongly agree". The convergent validity was fulfilled for all three criteria. The reliability (internal consistency) of items ranges between α = .85 and α = .96 for situational normality and structural assurance.

(1.3) **Online Shopping Attitude.** The "Risks and Benefits" scale (Forsythe et al., 2006) is a questionnaire designed to assess perceived risks and benefits associated with online shopping. The questionnaire contains 32 items to be rated on a seven-point Likert-type scale ranging from "strongly disagree" to "strongly agree". The individual items are grouped into three risk factors [(1) financial risk: 7 items, (2) product risk: 6 items, (3) time/convenience risk: 3 items] and four benefit factors [(1) shopping convenience: 4 items, (2) product selection: 4 items, (3) ease/comfort of shopping: 4 items, (4) hedonic/enjoyment: 4 items]. Nomological validity between the risk and benefit factors and the frequency of online shopping ranges from r = -.19 (financial risk) to r = .22 (shopping convenience/product selection).

(1.4) **Ten-Item Personality Inventory.** The Ten-Item Personality Inventory (Gosling et al., 2003) is a short scale for the assessment of the Big Five personality dimensions - extraversion (E), neuroticism (N), openness to experience (O), agreeableness (A), and conscientiousness (C). The questionnaire includes ten items, with two items (one positively coded and one negatively coded) per dimension. Each item consists of two adjectives (e.g., E+: "extraverted, enthusiastic", E-: "reserved, quiet") to be rated on a seven-point Likert-type scale ranging from "strongly disagree" to "strongly agree". Convergent validity between the TIPI and the established 240-item Revised NEO Personality Inventory (NEO-PI-R; Costa & McCrae, 1992) ranges from r = .68 for C to r = .56 for O (Gosling et al., 2003). The test-retest reliability within a six-week period (r = .72) is acceptable (Gosling et al., 2003). Due to the German-speaking sample in this study, the validated German version of the Ten-Item Personality Inventory (TIPI-G) was administered (Muck et al., 2007).

(2) **Attitude-related Questionnaires**

(2.1) **Perception of Signal Constructs.** The perception of signal constructs was assessed through the process of reflective operationalization (Ahrholdt, 2011). For this purpose, subjects were presented short definitions for the ten trust-enhancing signals. For each trust-enhancing signal, participants evaluated to what extent they had the impression that it was implemented in the online shop on a seven-point Likert-type scale ranging from "strongly disagree" to "strongly agree".

(2.2) **Subjective Personalization.** Subjective personalization was assessed through a German translation of two adapted statements by Li (2016) to be assessed on a seven-point Likert-type scale ranging from "strongly disagree" to "strongly agree". Furthermore, a German translation of five adapted statements by Ho and Bodoff (2014) based on Tam and Ho (2006) to be assessed on a seven-point Likert-type scale ranging from "strongly disagree" to "strongly agree" was implemented.

(2.3) **Trusting Beliefs.** Trusting beliefs were assessed via a German translation of the "Trusting Beliefs Scale" by McKnight et al. (2002a). The scale encompasses three subscales (competence: 4 items, benevolence: 3 items, integrity: 4 items), summing up

to eleven items to be assessed on a seven-point Likert-type scale, ranging from “strongly disagree” to “strongly agree”. The convergent validity (tested by individual item lambda coefficients > .70, significant *t*-statistic for each path and each path loading greater than twice the standard error) is fulfilled for all three criteria. The reliability (internal consistency) of items ranges between α = .91 and α = .95 for the three subscales.

(2.4) **Trusting Intentions.** Trusting intentions were assessed via a German translation of the “Trusting Intentions Scale” by McKnight et al. (2002a). The scale encompasses four subscales (general willingness to depend: 4 items, subjective probability of depending: follow advice: 6 items, give information: 3 items, make purchases: 3 items), summing up to 16 items to be assessed on a seven-point Likert-type scale, ranging from “strongly disagree” to “strongly agree”. The subscales “follow advice” and “give information” were thematically adapted to the study context. The convergent validity is fulfilled for all three criteria. The reliability (internal consistency) of items ranges between α =.70 and α =.92 for the four subscales.

(2.5) **Reasons against the Purchase Decision.** Reasons against the purchase decision were assessed with the “Reasons against the Online Purchase” scale by Czajka and Mohr (2010) to be assessed on a seven-point Likert-type scale, ranging from “strongly disagree” to “strongly agree”.

(3) **Online Shop Environment**.

(3.1) **Internal Structure.** The internal structure of the online stores was deliberately kept constant in terms of breadth and depth of the product range to ensure comparability between the three product categories. Accordingly, in each of the three product environments, the internal structure included two broad main categories, with three subcategories each and two products per subcategory, summing up to twelve products (2 [main categories] x 3 [subcategories] x 2 [products]) per online store. The simplicity and clarity of the product spectrum was intended to ensure, on the one hand, that a quick overview of the product range was made possible and, on the other hand, that a broad spectrum of interests was addressed. Figure 20 gives an overview over the internal structure of the three product categories (clothing, electronics, supplements).

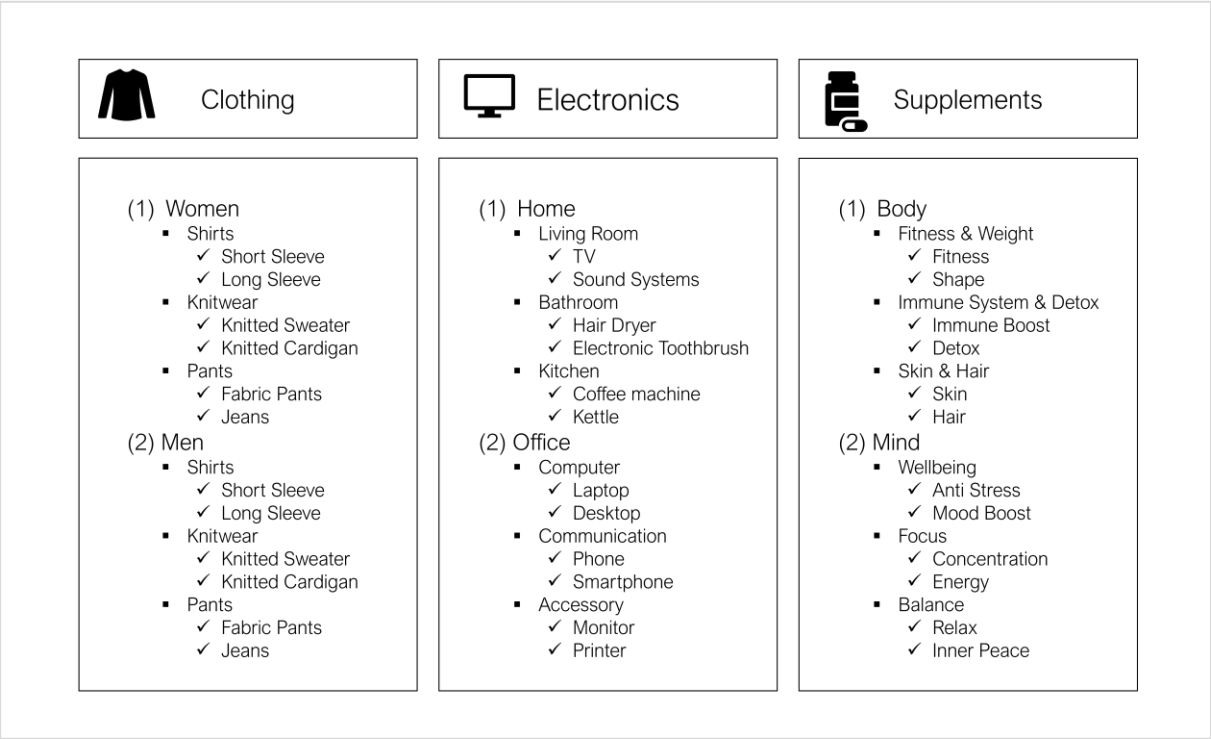


Figure 20. Illustration of the internal (product range) structure.

(3.2) External Structure. The external structure of the websites followed general usability guidelines (Jacobsen & Meyer, 2017) with a common subdivision of page categorizations in *home page* (header, content section, footer), *product-related pages* (product overview, product detail view), *informational pages* (about us, contact, privacy policy, general terms and conditions, frequently asked questions, imprint) and *administrative pages* (transaction-related pages: shopping cart, checkout; Moe & Fader, 2004). In order to avoid effects of individual design preferences, the color scheme and the structural design of the web pages were deliberately held constant in all three product environments.

To ensure that trust-enhancing signals are in a directly visible area of central perception, they were presented on two prominent sections of the home page (highlighted with the red marking in figure 21): right below the header (a short version) and directly above the footer (a detailed version). While the short version gave a brief overview of the signal meaning in four to five words, the detailed version explained the signal meaning in one to two sentences. In contrast to the short version, which was only on the home page, the detailed version of the trust-enhancing signals was additionally presented on all product-related, informational and administrative pages.

The *home page* structure for the three product categories (clothing, electronics, supplements) is illustrated in figure 21. The home page header included the corporate logo, a (fold-out) visual link to the two main categories, a link to frequently asked questions (FAQs) and a box displaying icons and short descriptions of trust-enhancing signals. The central content section contained an image-backed link to the two main categories, a slider with rotation function showing three (randomly selected) "popular" products, and an area with detailed descriptions of the trust-enhancing signals already sketched in the header. The footer contained an order form for the newsletter, a shortcut to the product-related, informational and administrative pages, and an overview of the online store's payment options and shipping partners.

The structure of the *product overview pages* for the three product categories (clothing, electronics, supplements) is illustrated in figure 22. The product overview pages provided an overview of the product range with a presentation of all twelve products offered at a glance, a link to each of the products, and the average star ratings for each product. Additionally, the trust-enhancing signal section was presented directly above the footer. The red marking in figure 22 highlights the presentation area of trust-enhancing signals.

The *product detail pages* provided a detailed product description, close-up images of the products, average star ratings, detailed customer reviews, and a reference to other products of the online store. Trust-enhancing signals were presented in the detailed version just above the footer and as thumbnails just below the header. Figure 23 illustrates the basic structure of the product detail pages.

The *informational pages* provided detailed information on how to contact the seller (contact page), the seller behind the online shop (about us), provider identification (imprint), declaration on the handling of personal data (privacy policy), general terms and conditions (GTC), and a list of answers to frequently asked questions (FAQs). All informational pages displayed a detailed version of trust-enhancing signals directly above the footer. Figure 24 illustrates the structure of the contact, about us, and the imprint page. Figure 25 illustrates the privacy policy, GTC and the FAQ page.

The *administrative pages* (shopping cart, checkout) provided an overview over the products added to the shopping cart, address and payment data. The shopping cart offered the option to change the product quantity, enter a coupon code or empty the shopping cart. In the checkout, the shipping and contact address (placeholder name and address: “John Doe”/ “Jane Doe”), various payment options and an order summary were displayed. At the end of checkout, participants could indicate their buying decision by choosing between “buy” and “not buy”. Figure 26 illustrates the structure of the shopping cart and the checkout.

(3.3) **Behavioral Measures.** The *visit duration* measures the duration of a visit to the online store in units of time (seconds) for the individual user (Ahrholdt et al., 2019). Visit duration was recorded both *distinctively* as visit duration per page and *cumulatively* as total visit duration of the online store. In general, it is assumed that longer visit duration indicates more careful processing of the online store contents to make an informed purchase decision (Ahrholdt et al., 2019). Nevertheless, a longer visit duration may also be associated with higher search effort for (purchase-relevant) information (Bhatnagar et al., 2019).

Page views per visit (also known as visit or click depth) describe the number of pages visited by the visitor in the online store. By dividing the number of pages visited by the total pages in the online store, the focus can be calculated. Both metrics can provide clues as to how engaging, informative or easy to navigate the online store is and be applied to evaluate the intensity of use (Ahrholdt et al., 2019).

As measure of *signal interaction*, hover movements and clicks on trust-enhancing signals were recorded. High correlations between the scan paths for the eye and the mouse suggest a use of mouse movements as an approximation for visual attention (Johnson et al., 2012).

In addition to the *purchase decision*, the value and volume of the *shopping cart* at the end of the online store visit were recorded as behavioral measures indicative of the depth of interest and purchase involvement.

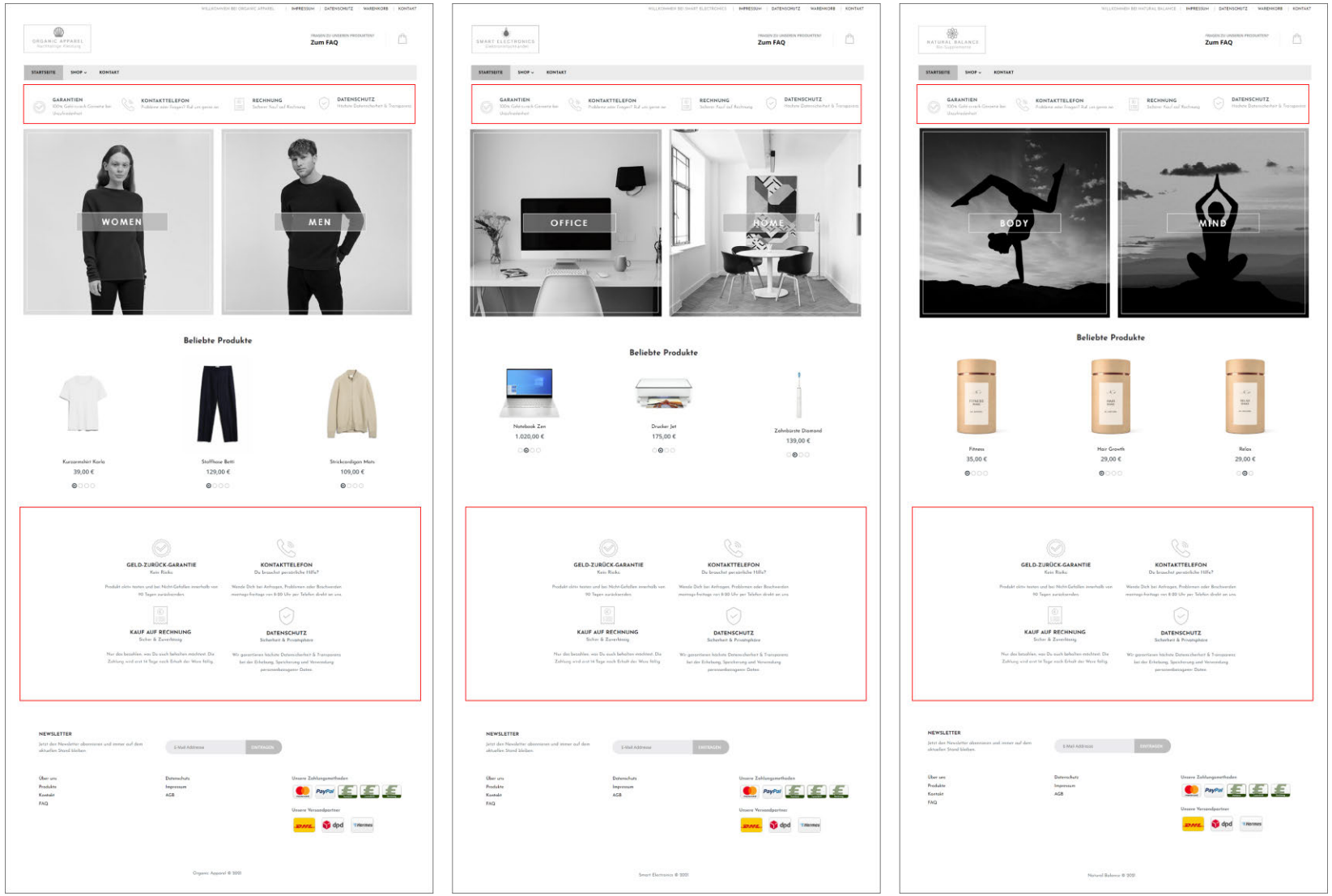


Figure 21. Illustration of the home page structure.

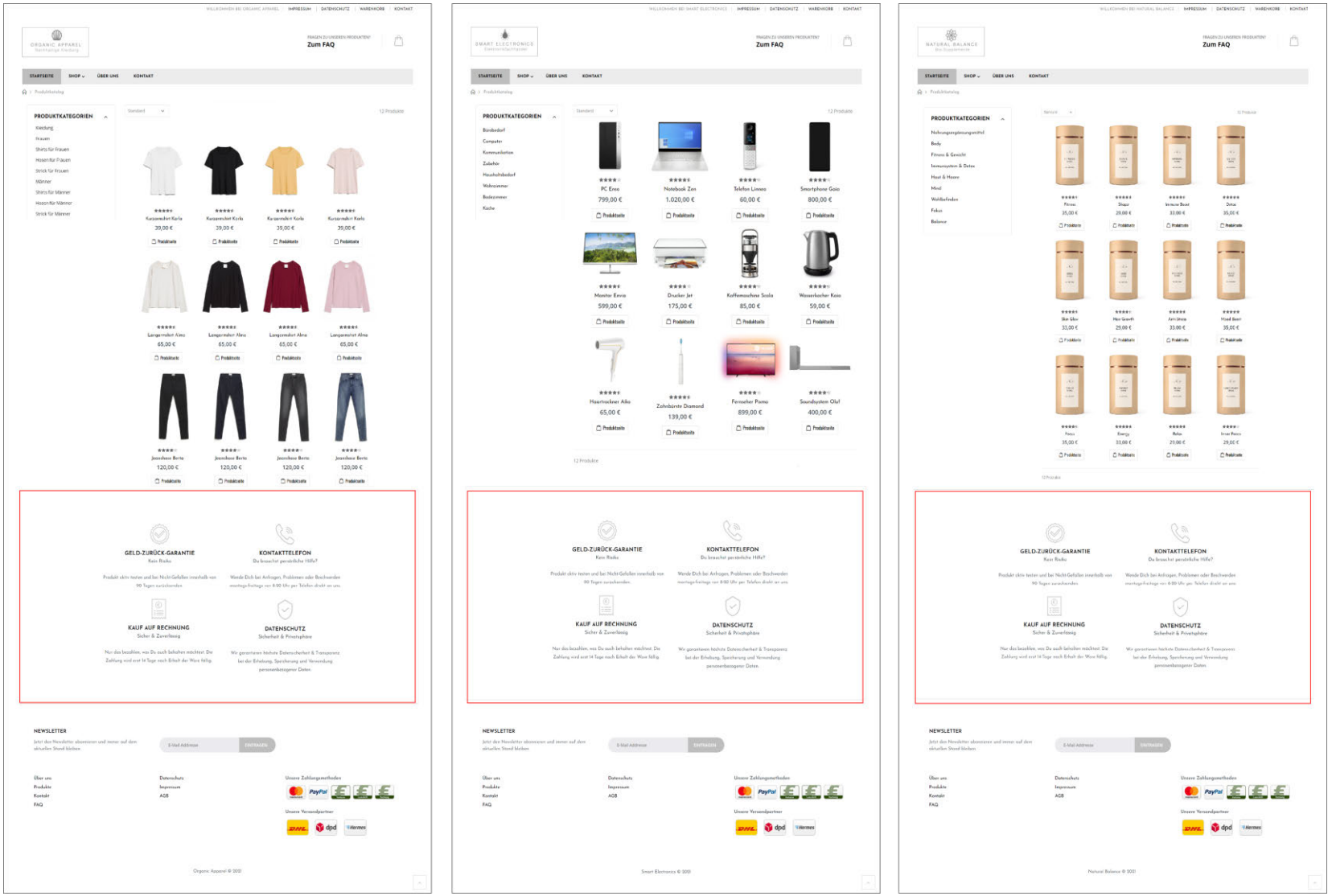


Figure 22. Illustration of the product overview page structure.

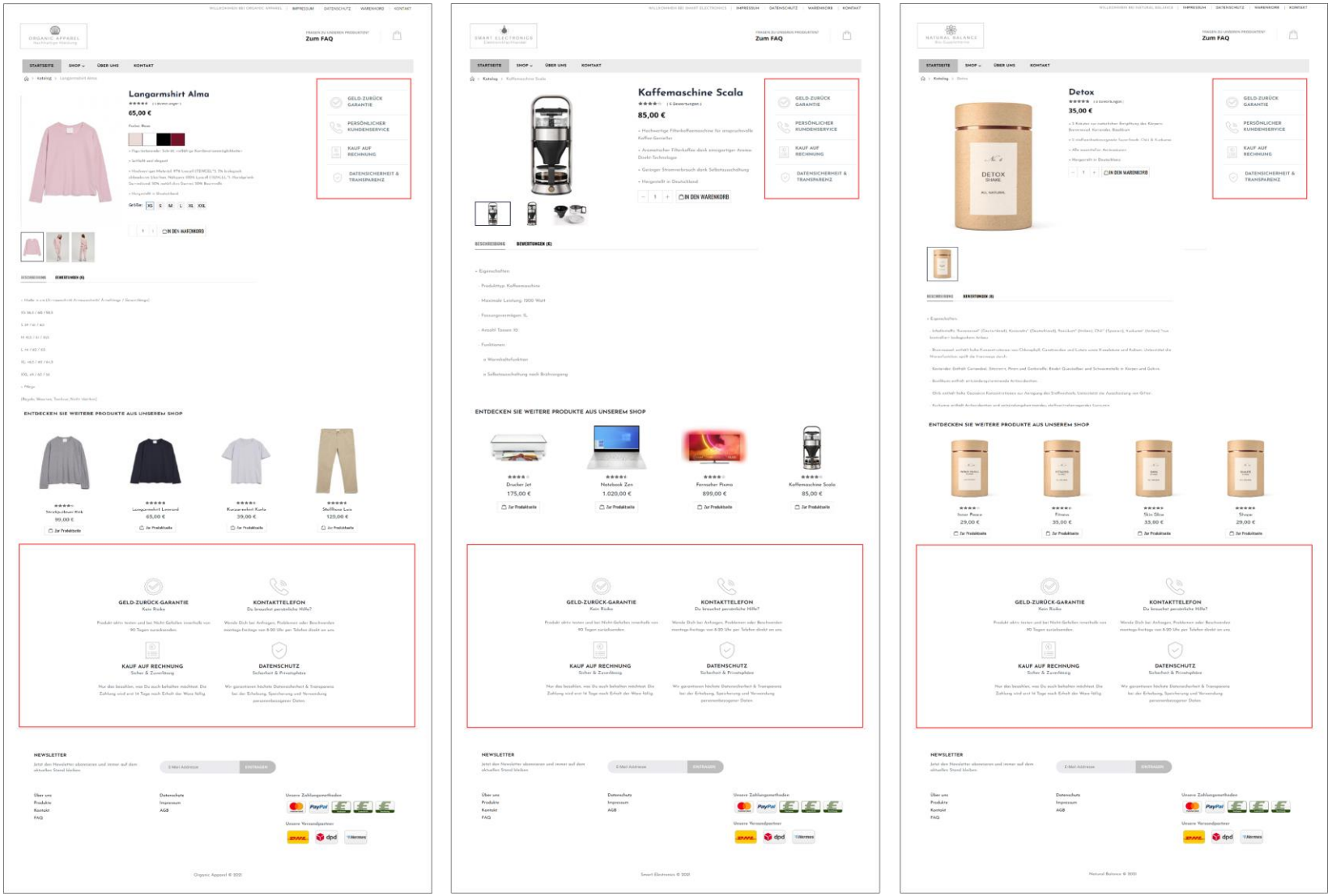


Figure 23. Illustration of the product detail page structure.

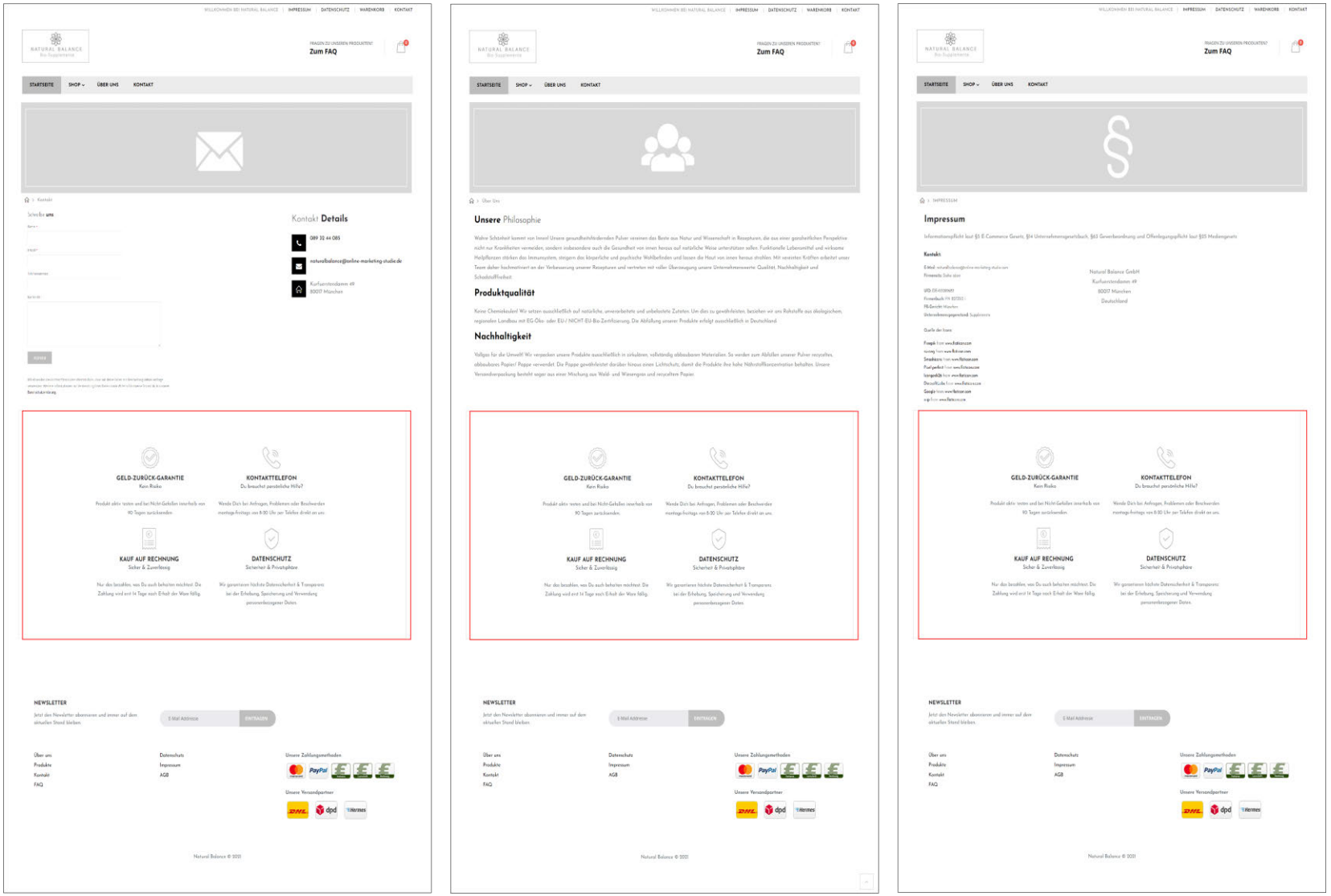


Figure 24. Illustration of the page structure (contact, about us, imprint).

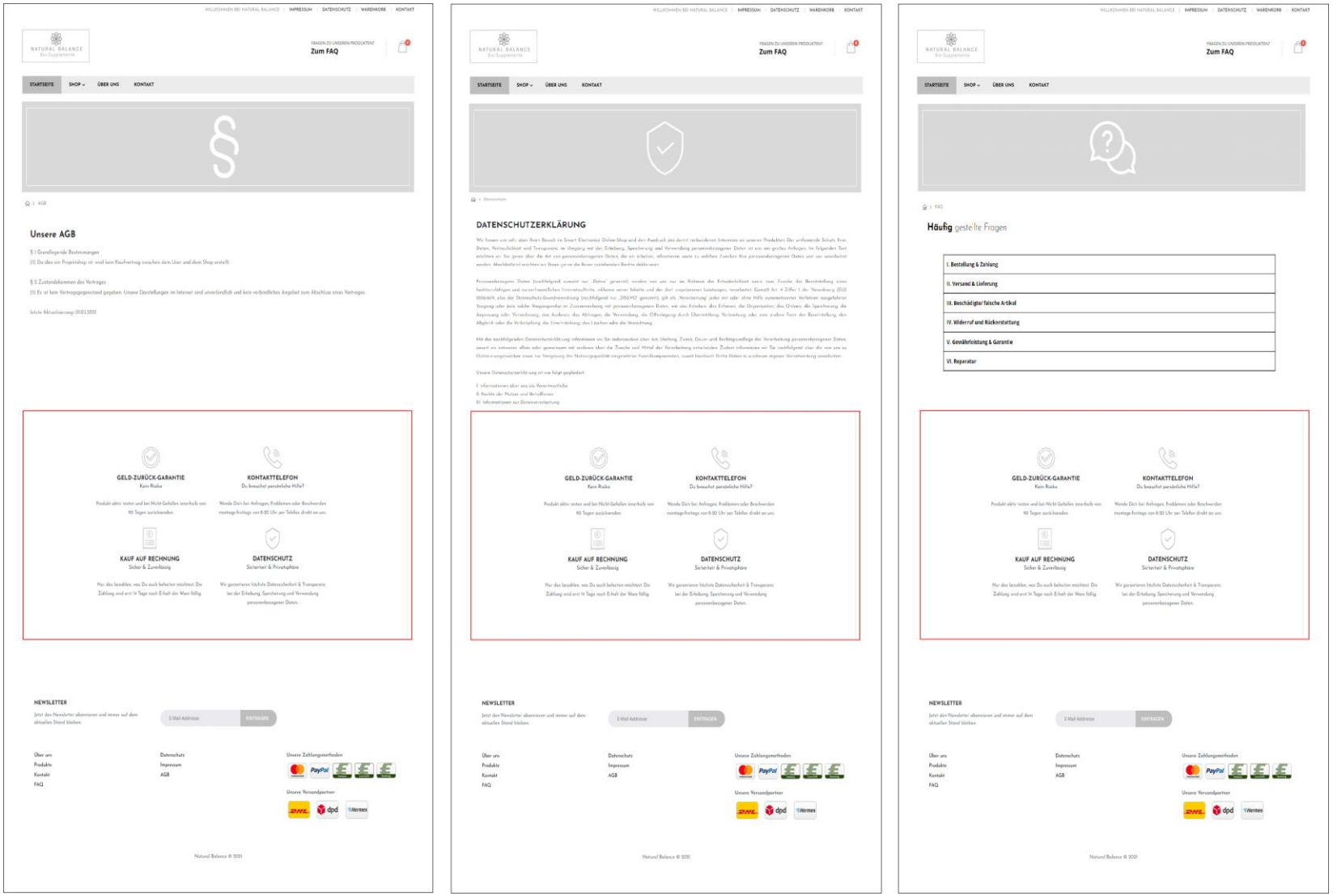


Figure 25. Illustration of the page structure (GTC, privacy policy, FAQs).

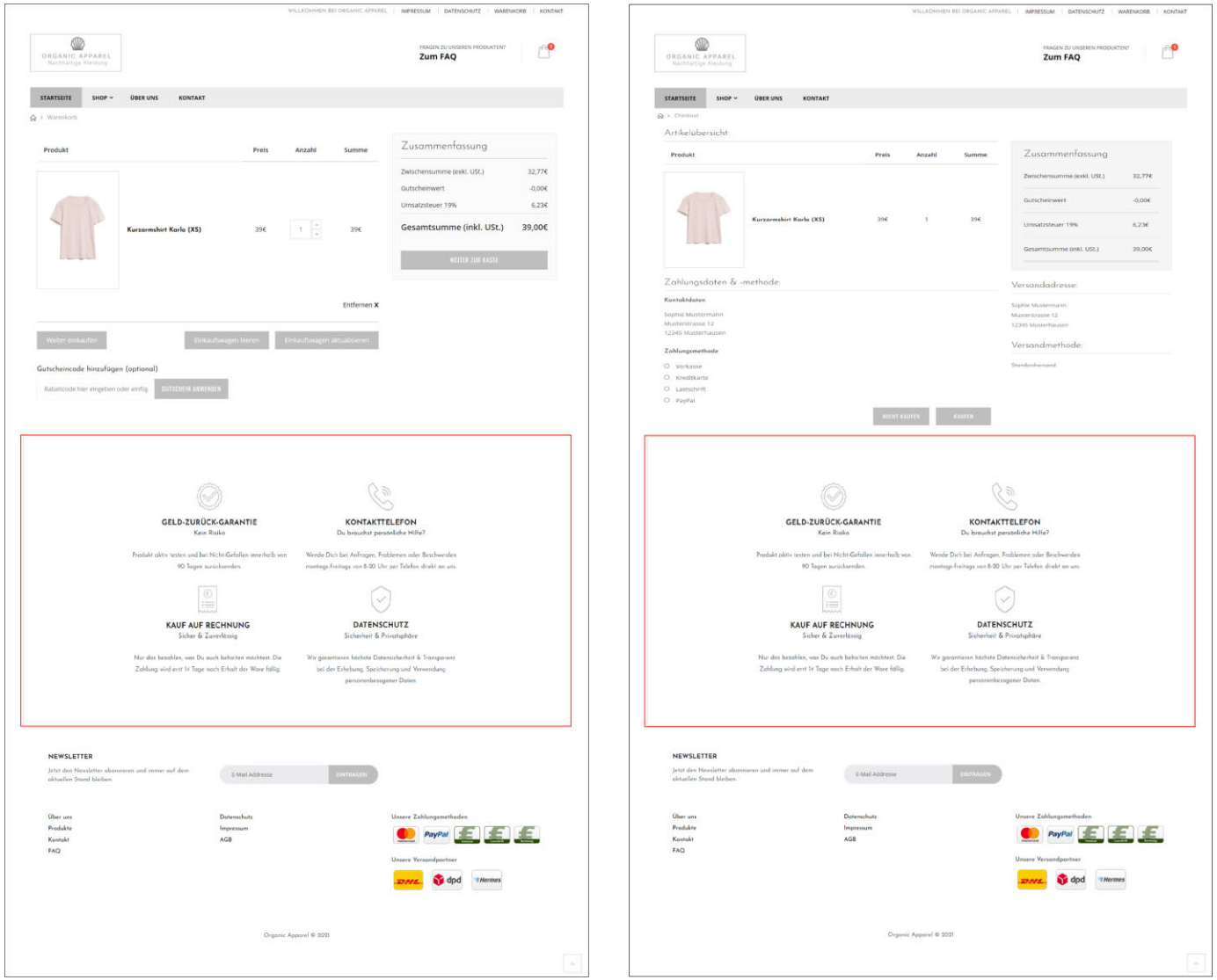


Figure 26. Illustration of the page structure (shopping cart, checkout).

3.2.5 Statistics

For the analysis of the personality-based personalization, a causal analysis (covariance analysis approach) within the framework of structural equation modeling (SEM) using IBM SPSS Amos (Version 28.0.0) was calculated. Before the actual analysis, data preprocessing was performed to check data consistency and SEM assumptions.

(1) Data Preprocessing and SEM Assumptions. In the course of data preprocessing, the data were first screened for *implausible entries* and *missing values*. Fifty-one datasets were affected by data missing completely at random (Little MCAR test: χ^2 (1361) = 1212.95, p = .998), probably caused by server problems. These fifty-one affected datasets were excluded listwise from further analysis.

In the next step, the data were tested for *multiple submissions* by the same respondent. No datasets had features suggestive of multiple submissions.

Subsequently, the data were checked for unusually *low processing time* using the relative speed index (RSI, Leiner (2019)). The RSI is calculated by dividing the sample's median page completion time by the individual page completion time. The recommended threshold for suspicious processing times is an RSI of 2, which means that the respondent has completed a page twice as fast as the typical respondent. Analogous to study 1, the relative processing speed has proven to be related to age (r(578) = -.16, p < .001) and Internet experience (r(578) = .13, p = .002) of the subjects. Since heterogeneity of these characteristics was deliberately aimed for, the decision analogous to study 1 was made to use a more liberal cutoff criterion (RSI > 3). In this context, five datasets with an RSI > 3 were identified and excluded listwise from further analysis.

In a further step, data were screened for *straightlining behavior*, which is the tendency to "use an identical response category for all items in a set" (Herzog & Bachman, 1981, p. 551). Straightlining was investigated with the "standard deviation of the battery method" (Y. Kim et al., 2019) [straightlining defined as SD_{Total} < .25]. No dataset showed characteristics of straightlining behavior.

In the context of this study, the response scales are exclusively seven-point Likert-type scales. Due to their limited seven-point rating, these scales are already exempt from univariate outliers by definition. Therefore, an *outlier analysis* was not performed for the rating scales.

An *outlier analysis* was performed for the behavioral measures (page views, shopping cart volume/value, visit duration). There was evidence of outliers in the data [outlier defined as value $|z| > 3.3$ (Tabachnick & Fidell, 2017)]. Nevertheless, the experimental method of simulation aimed at provoking behavior as natural as possible. Accordingly, no range of behavior that is unusual, implausible, and contradictory from a factual-logical point of view can be specified a priori. Thus, it cannot be ruled out that unusual values not fitting to the distribution of the observed values of a variable nevertheless correspond to the natural behavior of the respondents (Weiber & Mühlhaus, 2014). After the inspection of the problematic data sets, it was decided to retain these data records for the above mentioned reasons.

Multicollinearity was tested using the variance inflation factor (VIF) [multicollinearity defined as VIF > 10 (Bowerman & O'Connell, 1990)]. There was no evidence of multicollinearity in the data (VIF < 10).

Univariate and multivariate normality of the data was tested was tested using critical ratios (C.R.) based on the distribution coefficients of skewness (s_s) and kurtosis (s_k) [C.R.: $s_s/se(s_s)$ / $s_k/se(s_k)$; violation of univariate and multivariate normality distribution defined as $|C.R.| > 2.57$]. The analysis provided evidence of a violation of the (univariate and multivariate) normality assumption.

Accordingly, the robust regression method of *bootstrapping*, which does not rely on assumptions of normality or homoscedasticity, was used to analyze the data (Field, 2013). Accordingly, the associated *p*-values, standard errors (*SE*s) and confidence intervals (*CI*s) are based on bootstrapping with 2000 samples. For the interpretation, standardized regression coefficients for the *metric* independent variables (IVs) and unstandardized regression coefficients for the *dichotomous* IVs were consulted. Bonferroni-Holm correction for multiple comparison was applied to *p*-values.

(2) **Quality Testing of Reflective Measurement Models.** Following the aim of empirically testing theoretically assumed relationships between hypothetical constructs (i.e., latent, unobservable variables), the quality of parameter estimates of the structural model is essentially determined by the quality of the measurement models.

In this sense, incorrectly measured latent constructs ("factors", as operationalized by manifest indicator variables) lead to errors in the estimates of the corresponding construct relationships (Weiber & Mühlhaus, 2014). The following formula clarifies the basic equation for reflective measurement models.

$$x_o = x_T + x_s + x_R$$

The measurement aim is to measure the true value (x_T) of an object. However, empirical measurements (x_o = observed value) are subject to measurement errors (x_s = systematic error resulting from non-random influences and x_R = random error resulting from random influences; Weiber & Mühlhaus, 2014).

Accordingly, the true value (x_T) of an object is only incompletely reflected in the empirical measurement (x_o = observed value). For this reason, the quality testing of reflective measurement models through *reliability* and *validity analyses* on the indicator and construct level prior to testing the structural model is of high importance (Collier, 2020).

Reliability reflects the accuracy of a measurement instrument. Completely reliable measurements are present when no random errors (x_R) occur, while systematic errors (x_s) may be present (Weiber & Mühlhaus, 2014). *Validity* reflects the conceptual correctness of a measurement instrument. Completely valid measurements are present when neither random errors (x_R) nor systematic errors (x_s) occur.

The reliability on the indicator and construct level as well as validity of the measurement models were checked using a Confirmatory Factor Analysis (CFA). Confirmatory Factor Analysis analyzes (1) how well the (manifest) indicators measure the (unobservable) latent constructs and (2) if the (unobserved) latent constructs are uniquely different from one another (Collier, 2020).

(2.1) **Confirmatory Factor Analysis (CFA).** In accordance with the original work of McKnight et al. (2002a), CFA using SEM within each of the four higher-order trust constructs (disposition to trust, institution-based trust, trusting beliefs and trusting intentions) and subjective personalization was calculated to evaluate reliability, validity and model fit. To evaluate model fit, the following indices were applied (Kline, 2016): *comparative fit index* (CFI ≥ .90; Bentler and Bonett (1980)), *root mean square error of approximation* (RMSEA: good fit ≤ .05; adequate fit ≤ .08) and *standardized root mean squared residual* (SRMR: good fit ≤ .05; adequate fit ≤ .09; MacCallum et al., 1996).

Based upon the results of the underlying work of McKnight et al. (2002a), indicators with the highest factor loadings were chosen as *reference indicators*. For the assessment of reliability and validity, *composite reliability* (construct reliability) and *average variance extracted (*construct validity) were calculated.

Construct reliability (CR) indicates the proportion of variance of indicators that is explained by the construct (Bagozzi & Yi, 1988). The cutoff value for good construct reliability commonly used in literature is ≥ 0.6 (Bagozzi & Yi, 1988).

$$Rel(\xi_j) = \frac{(\Sigma\lambda_{ij})^2 \phi_{jj}}{(\Sigma\lambda_{ij})^2 \phi_{jj} + \Sigma\theta_{ii}}$$

Construct validity was assessed with the average variance extracted (AVE). The AVE indicates the percentage of the latent construct dispersion that is on average explained by the indicators (Fornell & Larcker, 1981). The cutoff value for good AVE commonly used in literature is ≥ 0.5 (Fornell & Larcker, 1981).

$$AVE(\xi_j) = \frac{(\Sigma\lambda_{ij}{}^2)\phi_{jj}}{(\Sigma\lambda_{ij}^2) + \Sigma\theta_{ii}}$$

with:

λ_{ij} = estimated factor loading

ϕ_{jj} = estimated variance of the latent variable ξ_j

θ_{ii} = estimated variance of the error variable (= 1-λ_{ij}^2 in case of standardized variables)

Table 1 provides an overview over Greek notations for parameters and variables in the context of structural equation analysis. Figures 27-30 illustrate the measurement models for the four first-order constructs.

Table 1.

Greek notation for parameters and variables in SEM.

Latent Constructs	
ξ (Ksi)	Independent latent (exogenous) variable
η (Eta)	Dependent latent (endogenous) variable
Manifest Variables	
X	Manifest indicator variable for latent exogenous variables
Y	Manifest indicator variable for latent endogenous variables
Structural Relationships	
γ (Gamma)	Path coefficient between exogenous and an endogenous variable
β (Beta)	Path coefficient between two endogenous variables
Error Terms	
ζ (Zeta)	Error term for a latent dependent construct
ε (Epsilon)	Measurement error terms associated with Y items
δ (Delta)	Measurement error terms associated with X items
Measurement Relationships	
λ (Lambda)	Relationship from the latent constructs to indicators
φ (Phi)	Covariance between latent constructs

Note: Table contents adapted from Collier (2020).

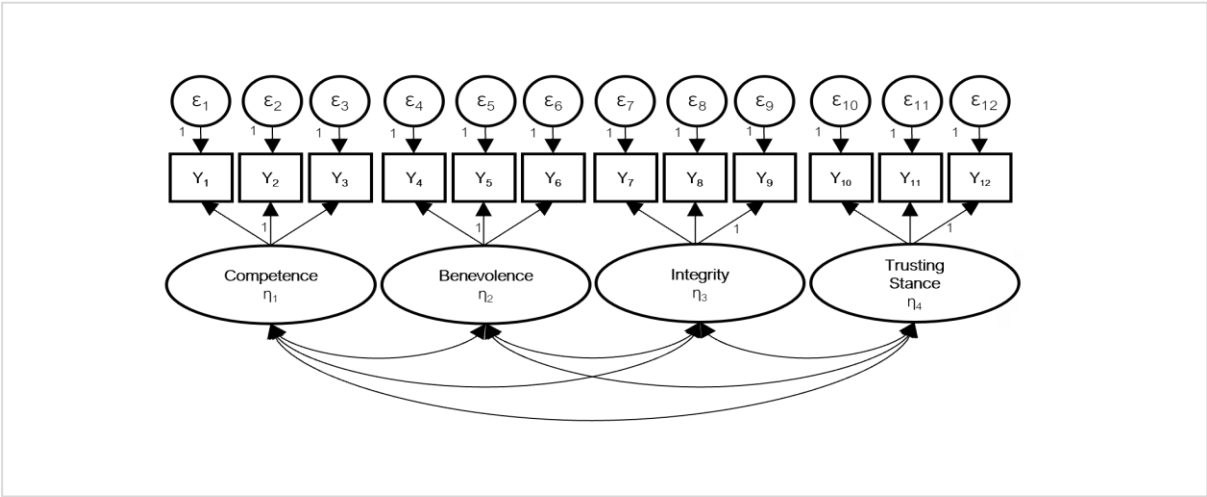


Figure 27. Measurement model (CFA) for disposition to trust.

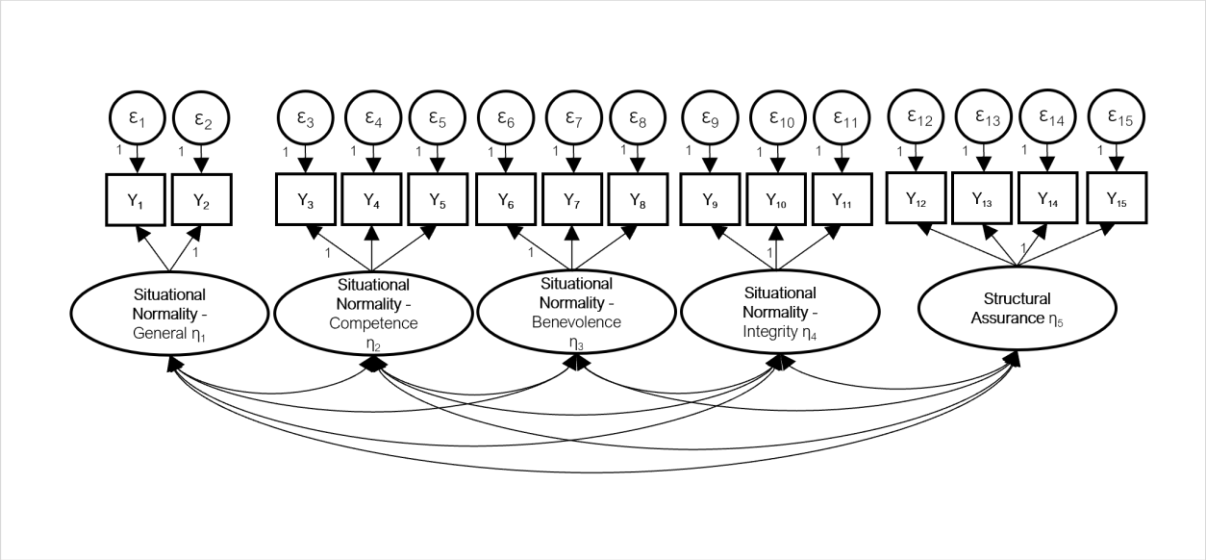


Figure 28. Measurement model (CFA) for institution-based trust.

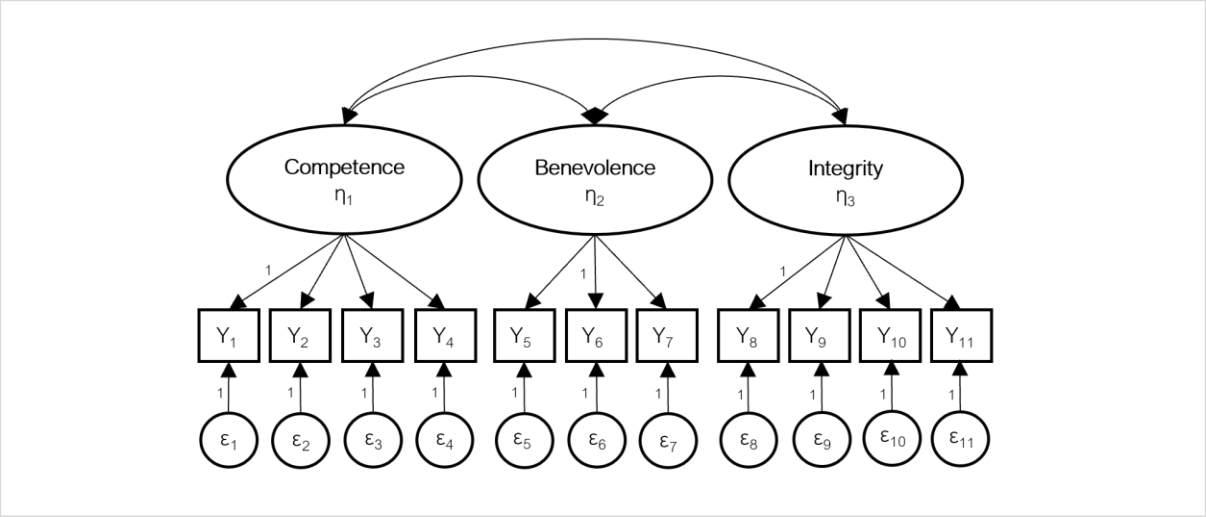


Figure 29. Measurement model (CFA) for trusting beliefs.

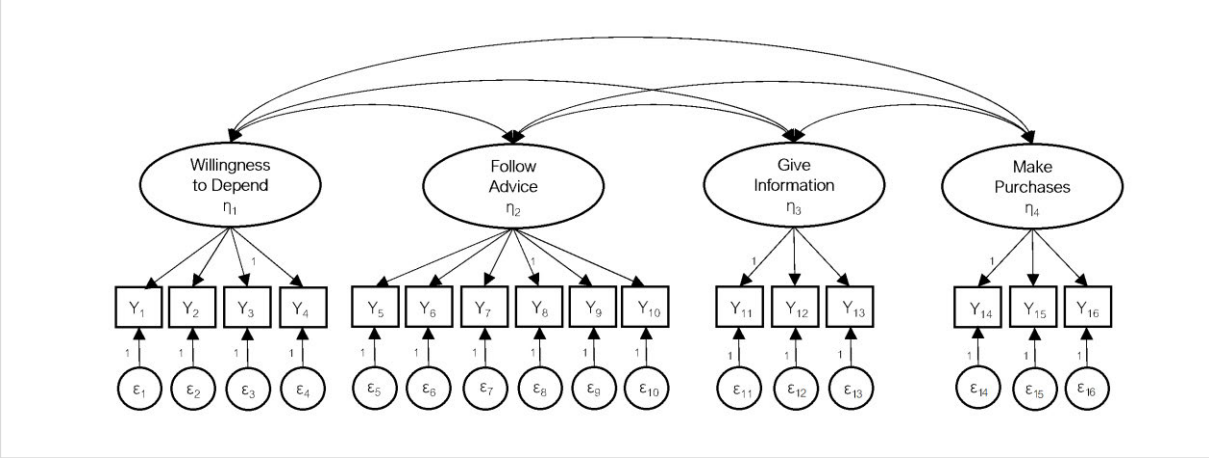


Figure 30. Measurement model (CFA) for trusting intentions.

(2.2) **Second-Order Factor Analysis (SFA).** To account for reflective second-order latent constructs suggested by theory (disposition to trust, institution-based trust, trusting beliefs, trusting intentions), an SFA was conducted. SFA assumes a second-order factor structure, in which the second-order latent construct (e.g., trusting beliefs) is causally responsible for the covariation of the first-order latent constructs (e.g., competence, benevolence, integrity; Weiber & Mühlhaus, 2014).

The selection of *reference indicators* for the second-order latent variables was oriented to the results of the underlying work of McKnight et al. (2002a), whereupon first-order factors with the highest factor loadings were chosen as reference indicators.

The procedure behind SFA followed the widely accepted recommendations of Brown (2015) for the sequence of a CFA-based higher-order factor analysis. In this sense, (1) the development of a well-behaved (i.e., good-fitting and conceptually valid) first-order CFA solution is followed by (2) an examination of the correlations (magnitude and pattern) in the first-order solution and, finally, (3) a conceptually and empirically justified fit of the second-order factor model (Brown, 2015). Figures 31–34 illustrate the measurement models for the four second-order constructs.

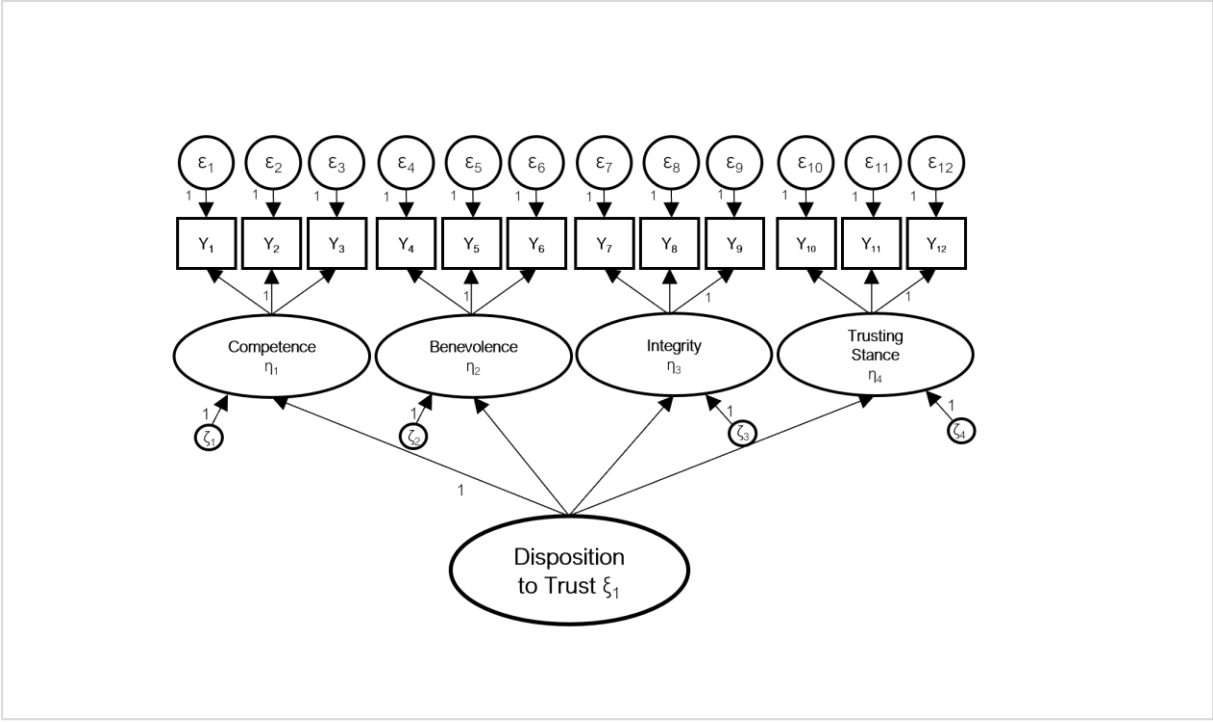


Figure 31. Measurement model (SFA) for disposition to trust.

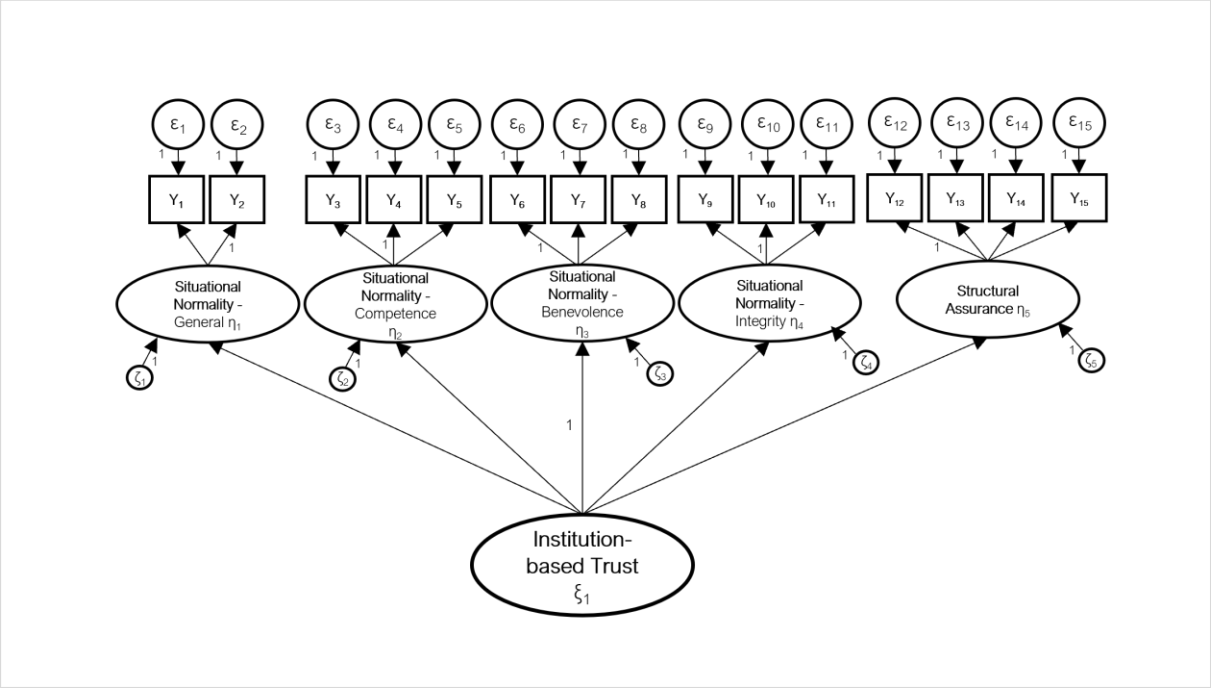


Figure 32. Measurement model (SFA) for institution-based trust.

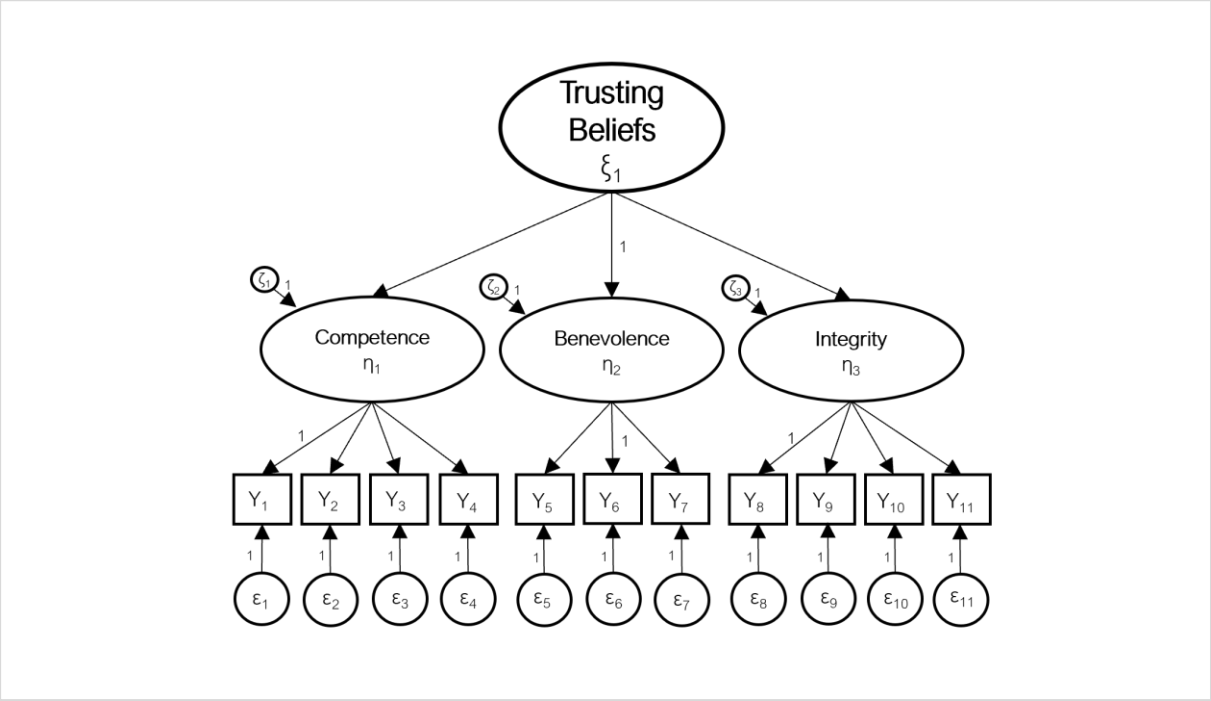


Figure 33. Measurement model (SFA) for trusting beliefs.

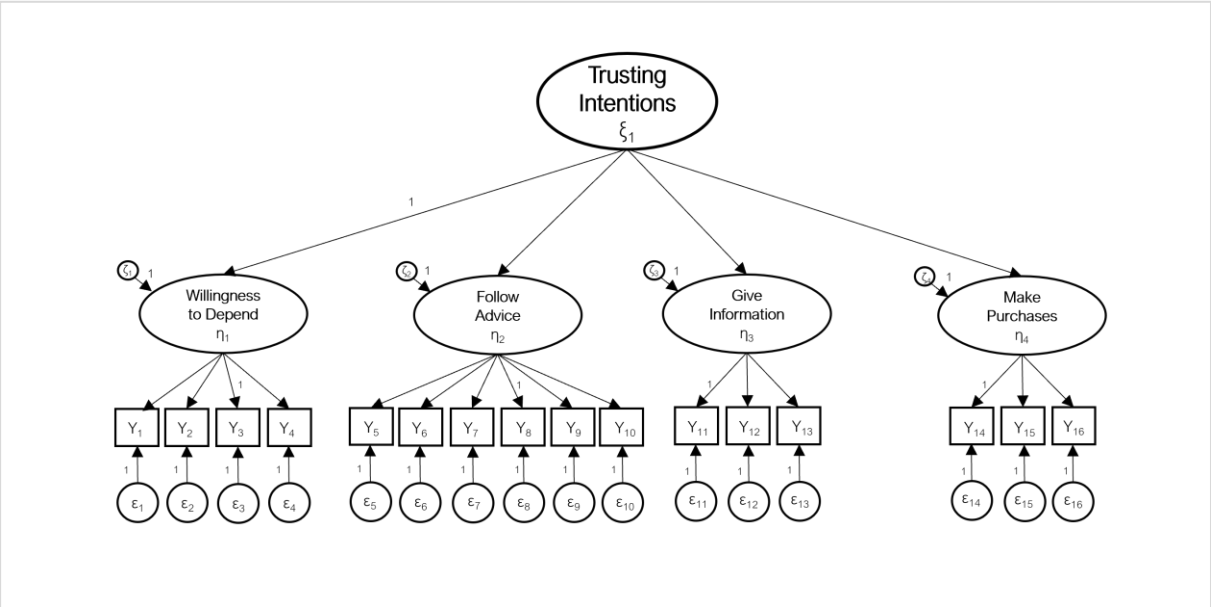


Figure 34. Measurement model (SFA) for trusting intentions.

(3) Common Method Bias. The use of different survey forms (e.g., online, written, or oral) as well as of different measurement instruments (mainly rating scales with different characteristics and designs) in behavioral empirical research may cause the existence of variance components that cannot be explained by causal relationships (Weiber & Mühlhaus, 2014). Instead, the variance components result from the use of the survey methodology (*common method variance*), and thus lead to result distortions (*common method bias).* One of the most widely used techniques used by researchers to address the problem of common method variance is *Harman's single-factor test* (Podsakoff et al., 2003). In order to estimate the involvement of common method bias, all indicator variables in the study are loaded into an exploratory factor analysis. Subsequently, the number of factors necessary to account for the majority of variance in the variables resulting from the unrotated factor solution is examined (Podsakoff et al., 2003).

In this study, common method bias was checked using *Harman's single-factor test*. The first factor accounted for 29 % of the variance. These results indicated that the first factor does not account for the majority of the covariance in the indicator variables, suggesting that common method bias was not of major concern in this study.

(4) **Structural Equation Model.** Following the quality testing of reflective measurement models, a *full structural equation model* including the Big Five personality dimensions, first- and second-order factors and one behavioral measure (purchase decision) was calculated to test the hypothesized path relationships. Given the insufficient theoretical foundation, the ten trust-enhancing signals and the other behavioral measures (visit duration, page views, signal interaction, shopping cart value and volume) were included in separate exploratory (non-hypothesis-driven) analyses.

The *Maximum Likelihood Method* was used to estimate the parameters (factor loadings and correlation of the constructs). This procedure is a parametric estimation method for parameters of an assumed probability distribution, given the observed data. It maximizes the probability that the model-theoretic covariance or correlation matrix produced the empirical covariance or correlation matrix in question (Weiber & Mühlhaus, 2014). In other words, the ML method maximizes a likelihood function in the sense that the observed data is most probable under the assumed statistical model. The Maximum Likelihood Method represents the method of choice in this study because it is the most frequently used method in the context of causal analysis, permits the computation of inference statistics and provides the most precise estimates (Weiber & Mühlhaus, 2014).

In order to account for the non-normal distribution of the data, the robust method of bootstrapping with 2000 samples was applied to the data in combination with the ML method (Collier, 2020; Field, 2013). This resampling procedure does not rely on assumptions of normality or homoscedasticity (Collier, 2020) and allows to improve the parameter estimation based on the maximum likelihood method.

Within each hypothesis, Bonferroni-Holm correction for multiple comparisons was applied in order to prevent alpha inflation (Holm, 1979). The alpha levels applied after adjustment are described separately for each hypothesis.

Depending on the specific hypothesis to be tested, the model was slightly modified. Accordingly, for better comprehensibility, the specific procedure for the respective hypothesis testing is described below.

(4.1) **Hypothesis 1**. With the aim of assessing the effect of an objective personalization of trust-enhancing signals (signal presentation: personalization [P] vs. randomization [R] vs. anti-personalization [AP]) on trusting beliefs (H 1.1), trusting intentions (H 1.2) and trust-related behaviors (H 1.3), signal presentation was included as dummy coded variable in the model. Given the dummy-coded format of the variables, the unstandardized regression coefficients, the associated 95 % *CIs* and *p*-values (both based on bootstrapping) were used to assess the effect of objective personalization. In total, nine tests (3 contrasts x 3 constructs) were performed under hypothesis 1. For this reason, the Bonferroni-Holm adjustment to prevent alpha inflation started at a critical significance level of p_{crit} = .006. Table 2 illustrates the corresponding dummy variables included in the model to test each sub-hypothesis. Figure 35 illustrates the path diagram of the full structural model for hypothesis 1.

Table 2.

Illustration of dummy coded vectors under hypothesis 1.

Dummy coded vectors	*P*	*R*	*AP*
Personalization vs. Randomization:			
(Hypothesis 1.1.1, 1.2.1, 1.3.1)			
D_1	1	0*	0
D_2	0	0*	1
Personalization vs. Anti-Personalization:			
(Hypothesis 1.1.2, 1.2.2, 1.3.2)			
D_1	1	0	0*
D_2	0	1	0*
Anti-Personalization vs. Randomization:			
(Hypothesis 1.1.3, 1.2.3, 1.3.3)			
D_1	0	0*	1
D_2	1	0*	0

Note. * indicates the reference category for the corresponding analysis.

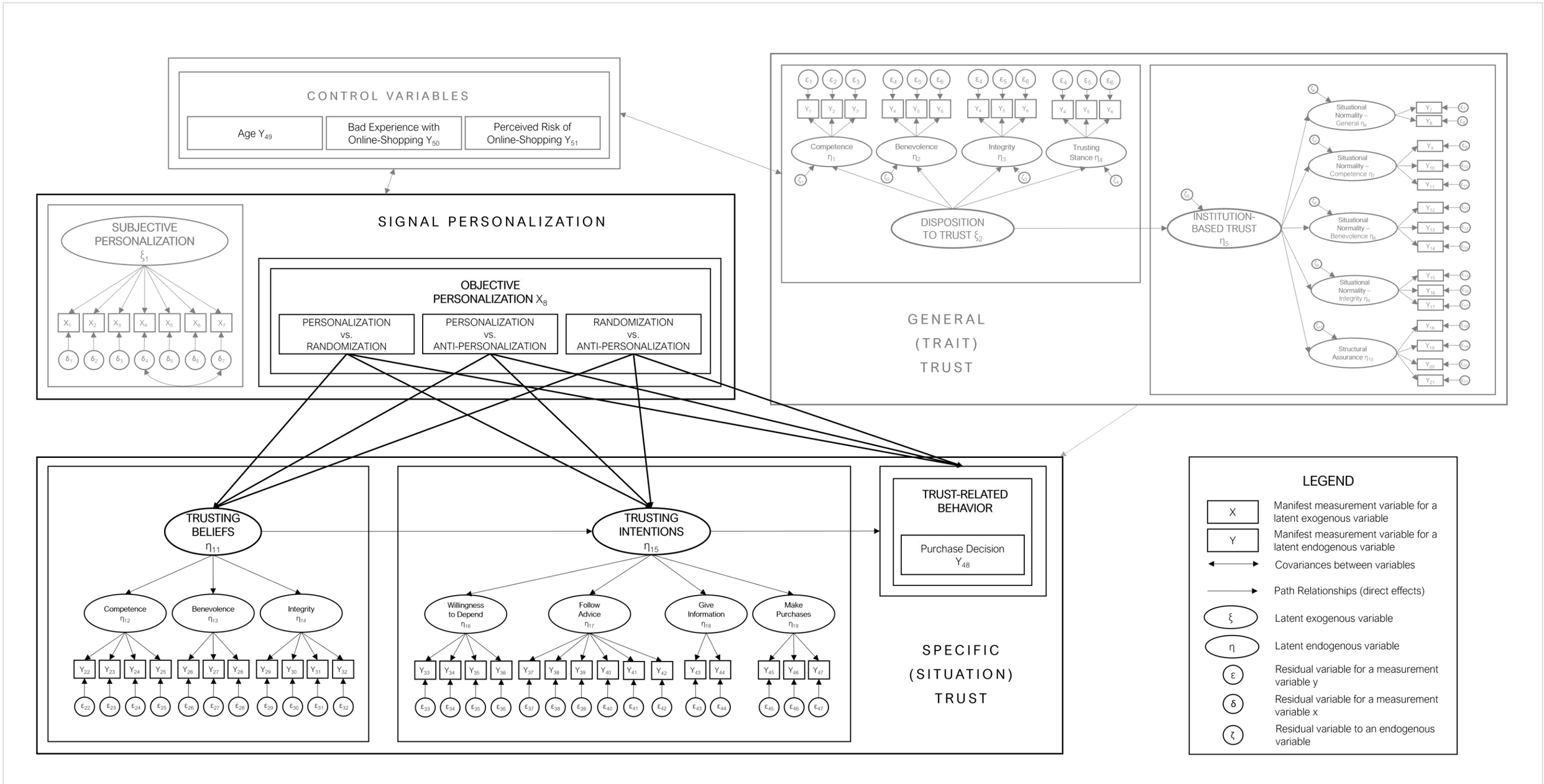


Figure 35. Path Diagram of the full structural model (H1).

(4.2) **Hypothesis 2.** In order to assess the effect of subjective personalization on trusting beliefs (H 2.1), trusting intentions (H 2.2) and trust-related behaviors (H 2.3), the standardized regression coefficients, the associated 95 % *CIs* and *p*-values (both based on bootstrapping) were consulted. To compare the size of the effect of subjective personalization to the size of the effect of objective personalization on trusting beliefs, trusting intentions and trust-related behavior (H 2.4; see table 3), a model constraint was introduced which constrained the relationships between the constructs of interest to be equal. In order to assess whether the effect of subjective personalization is *different* to the effect of objective personalization, *CMIN* (minimum discrepancy) / *df* (degrees of freedom) and corresponding *p*-values for each contrast were consulted. To assess whether the effect of subjective personalization is *greater* than the effect of objective personalization, (unstandardized) regression coefficients were used. In total, six tests (2 types of personalization x 3 constructs) were performed under hypothesis 2. For this reason, the Bonferroni-Holm adjustment started at a critical level of p_{crit} = .008. Figure 36 illustrates the path diagram of the full structural model for hypothesis 2.

Table 3.

Illustration of model constraints under hypothesis 2.4.

Relationships	*Regression Weight*	*Model Constraint*
Hypothesis 2.4.1		
Subjective Personalization → Trusting Beliefs	SP_TB	SP_TB = OP_TB
Objective Personalization → Trusting Beliefs	OP_TB	
Hypothesis 2.4.2		
Subjective Personalization → Trusting Intentions	SP_TI	SP_TI = OP_TI
Objective Personalization → Trusting Intentions	OP_TI	
Hypothesis 2.4.3		
Subjective Personalization → Trust-related Behavior	SP_TRB	SP_TRB = OP_TRB
Objective Personalization → Trust-related Behavior	OP_TRB	

Note. All constrained models were tested against the unconstrained model.

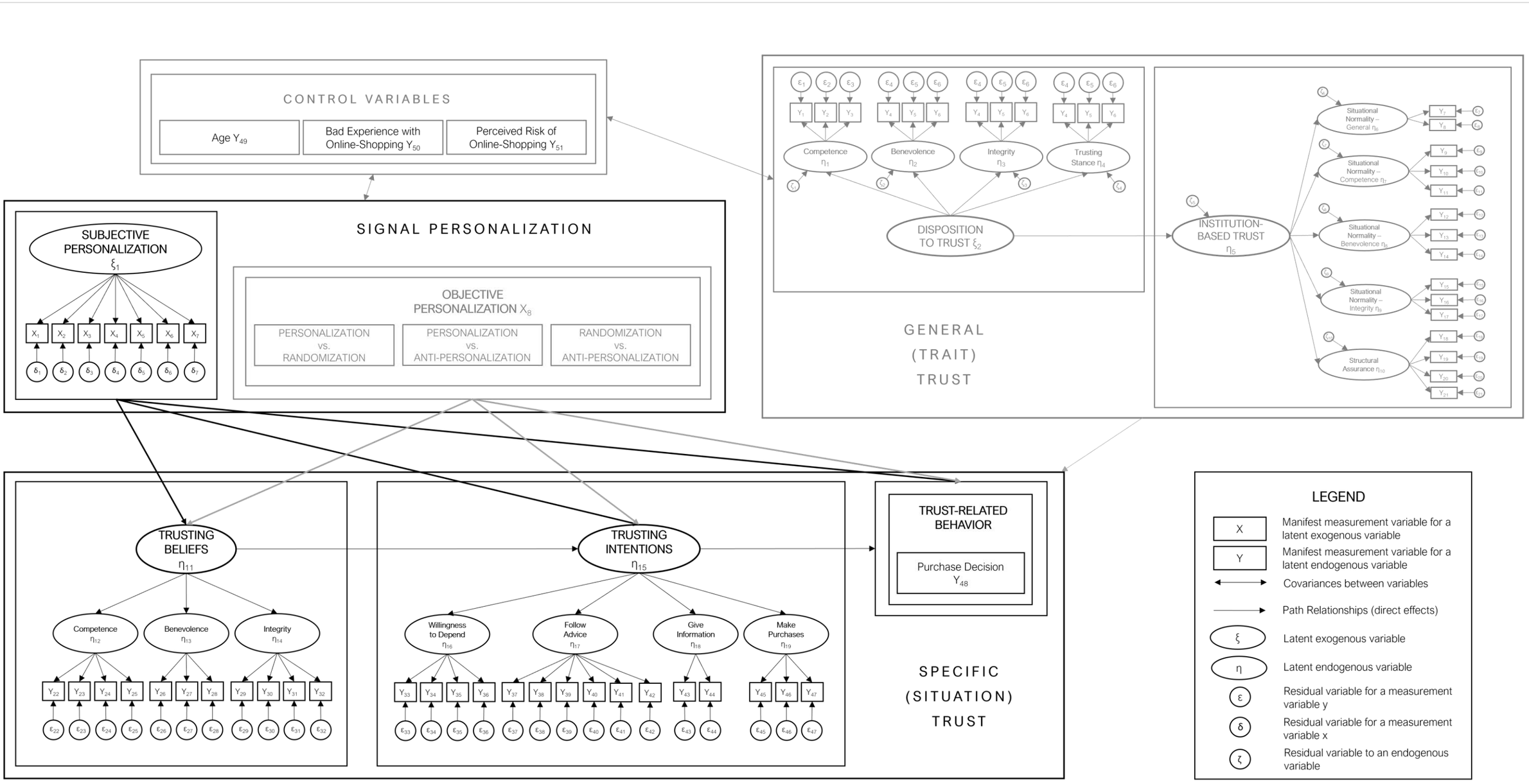


Figure 36. Path Diagram of the full structural model (H2).

(4.3) **Hypothesis 3.** Aiming to estimate the product-category dependent effects of subjective personalization on trust, a *multigroup analysis* (MGA) with product category (search, experience and credence goods) as grouping variable was used. MGA allows for a simultaneous estimation of a causal model across multiple groups. To examine whether the structural relationships between subjective personalization and trusting beliefs (H 3.1), trusting intentions (H 3.2), and trust-related behaviors (H 3.3) differ significantly between the product categories, a structural weights model was applied, which constrains the relationships between the latent constructs of interest to be equal (see table 4). In total, nine tests (3 contrasts x 3 constructs) were performed under hypothesis 3. For this reason, the Bonferroni-Holm adjustment to prevent alpha inflation started at a critical significance level of p_{crit} = .006. Figure 37 illustrates the path diagram of the full structural model for hypothesis 3.

Table 4.

Illustration of model constraints under hypothesis 3.

Relationships	*Regression Weight*	*Model Constraint*
Hypothesis 3.1 (H 3.1.1, H 3.1.2, H 3.1.3)		
Subjective Personalization → Trusting Beliefs (S)	SP_TB_S	SP_TB_C = SP_TB_S
Subjective Personalization → Trusting Beliefs (E)	SP_TB_E	SP_TB_C = SP_TB_E
Subjective Personalization → Trusting Beliefs (C)	SP_TB_C	SP_TB_E = SP_TB_S
Hypothesis 3.2 (H 3.2.1, H 3.2.2, H 3.2.3)		
Subjective Personalization → Trusting Intentions (S)	SP_TI_S	SP_TI_C = SP_TI_S
Subjective Personalization → Trusting Intentions (E)	SP_TI_E	SP_TI_C = SP_TI_E
Subjective Personalization → Trusting Intentions (C)	SP_TI_C	SP_TI_E = SP_TI_S
Hypothesis 3.3 (H 3.3.1, H 3.3.2, H 3.3.3)		
Subjective Personalization → Trust Behavior (S)	SP_TRB_S	SP_TRB_C = SP_TRB_S
Subjective Personalization → Trust Behavior (E)	SP_TRB_E	SP_TRB_C = SP_TRB_E
Subjective Personalization → Trust Behavior (C)	SP_TRB_C	SP_TRB_E = SP_TRB_S

Note. All constrained models were tested against the unconstrained model.

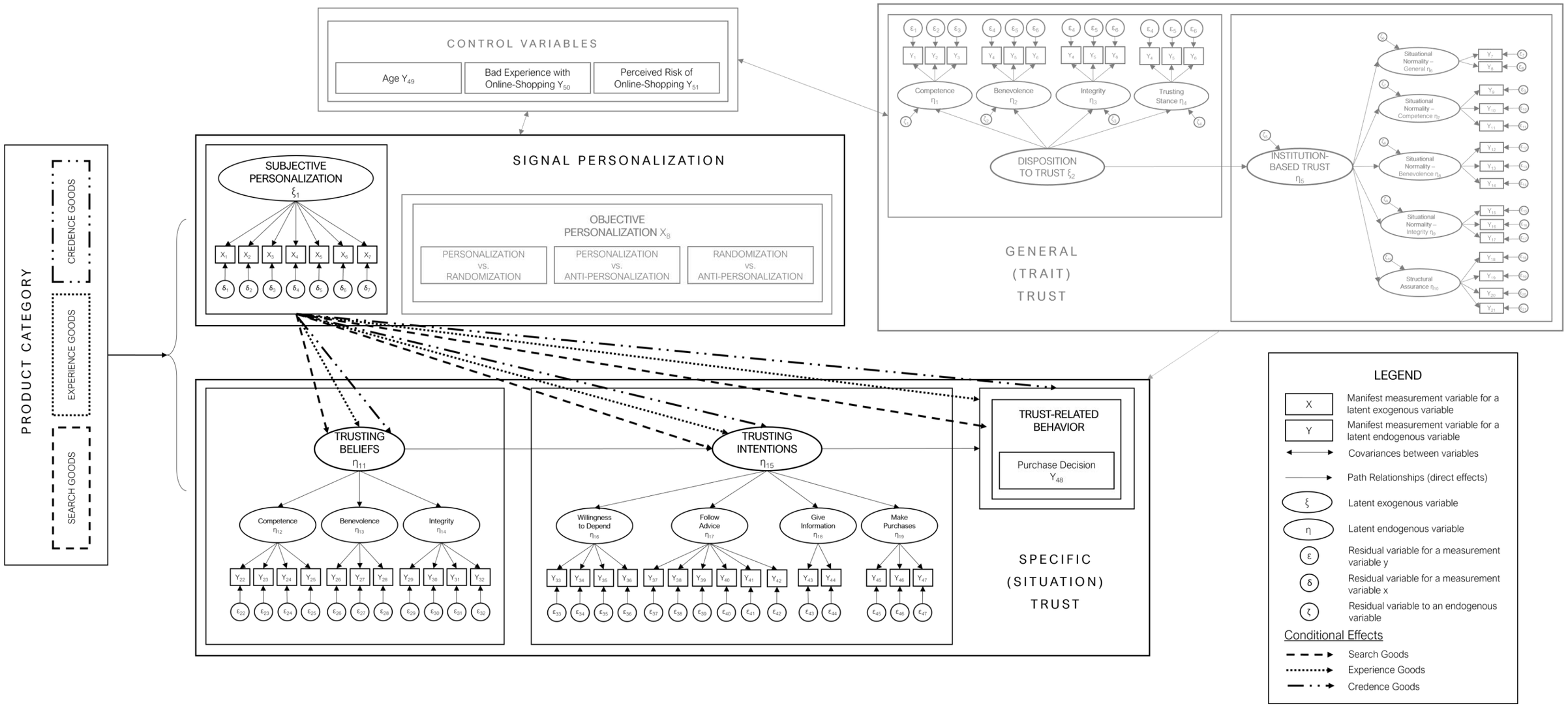


Figure 37. Path Diagram of the full structural model (H3).

(4.4) **Hypothesis 4.** In order to evaluate the personality-moderated effects of subjective personalization on trusting beliefs (H 4.1), trusting intentions (H 4.2) and trust-related behavior (H 4.3), a moderation analysis was calculated. To examine whether the effect of subjective personalization was moderated through the personality dimensions, the recommended procedure for moderation analyses by Hayes (2017), extended by the "full indicator interaction method" for structural models with latent variables as recommended by Collier (2020), was followed. In order to account for potential collinearity issues, the items of the independent variable (subjective personalization) and moderators (Big Five personality dimensions) were mean centered prior to calculating the interaction terms in the second step. The fourteen interaction terms (2 items per personality dimension x 7 personalization items) were then formed as product on the item level and subsequently included in the full structural equation model as indicators of a new latent "interaction variable". To specifically target the interaction effect, the covariances between the latent variables of the personality dimensions, personalization, and the latent interaction variable were included into the model. Figure 38 illustrates the moderation model, figures 39 and 40 illustrate the path diagram of the full structural model for hypothesis 4.

In total, six tests (2 personality dimensions x 3 constructs) were performed under hypothesis 4. For this reason, the Bonferroni-Holm adjustment to prevent alpha inflation started at a significance level of p_{crit} = .008.

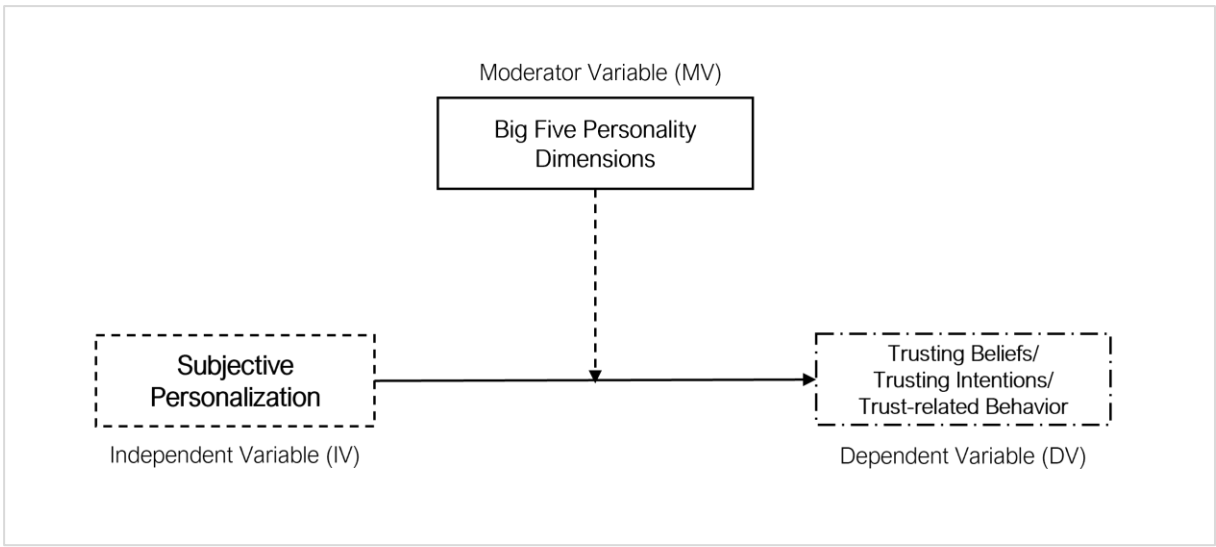


Figure 38. Illustration of the moderation model (H4).

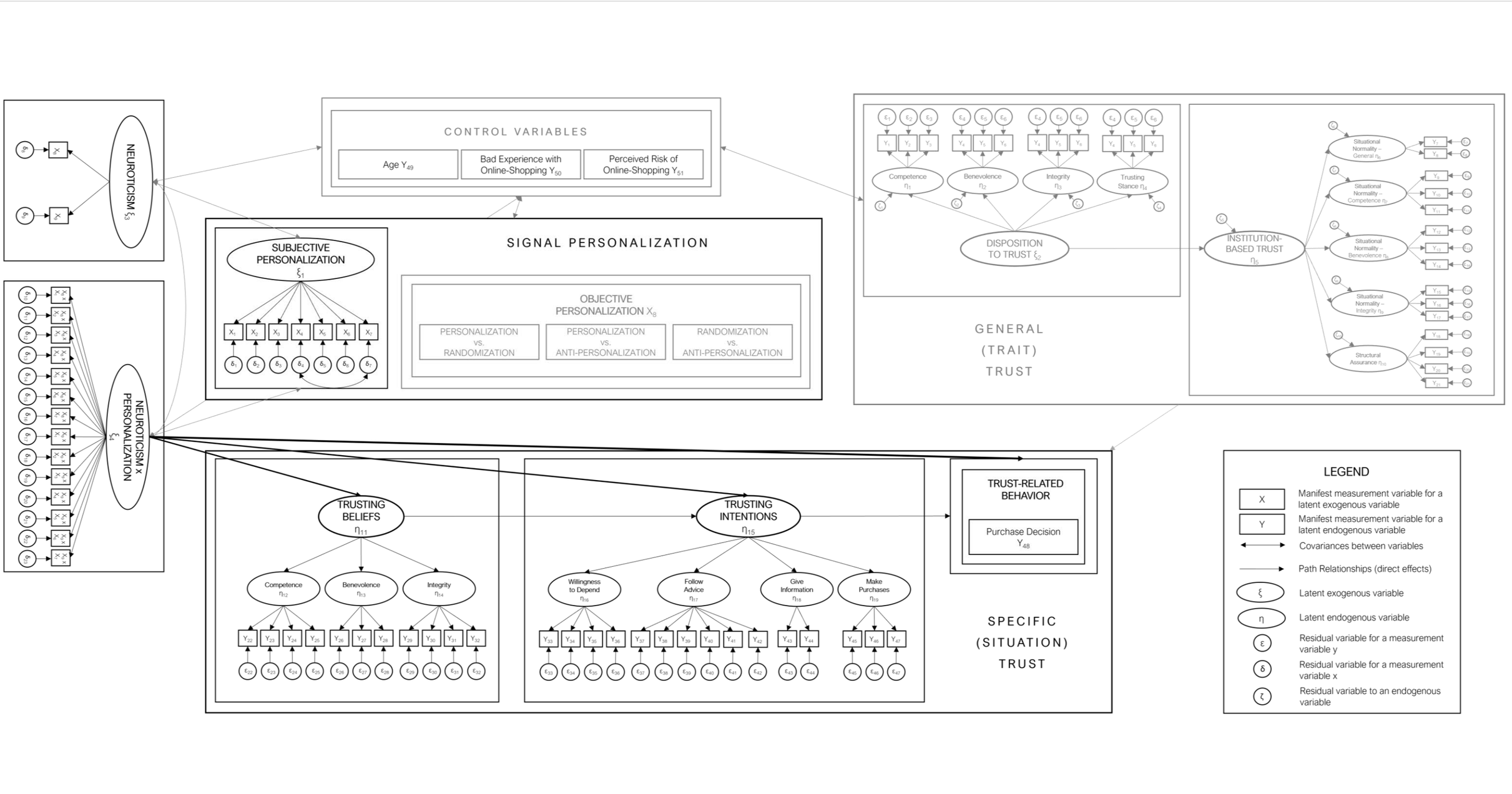


Figure 39. Path Diagram of the full structural model (H4 - Neuroticism).

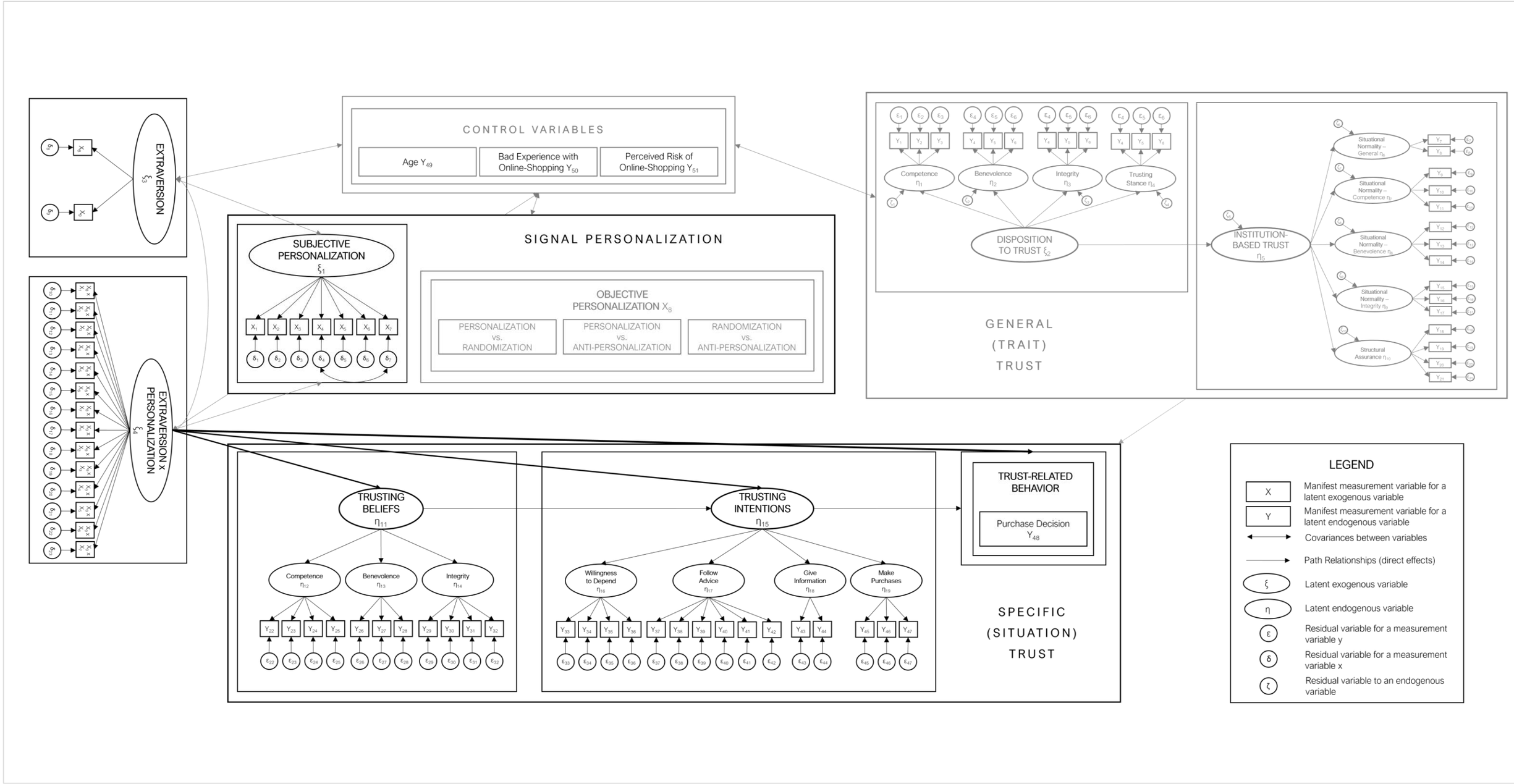


Figure 40. Path Diagram of the full structural model (H4 - Extraversion).

(4.5) **Hypothesis 5.** Aiming to test the personality effects on trust, as moderated by objective personalization, a *multigroup analysis* (MGA) with objective personalization (personalization, randomization and anti-personalization) as grouping variable was used. To examine whether the structural relationships between the personality dimensions and trust-related beliefs (H 5.1), trust-related intentions (H 5.2), and trust-related behaviors (H 5.3) differ significantly between the conditions, a structural weights model was applied, which constrains the relationships between the latent constructs of interest to be equal (see table 5). In total, six tests (2 personality dimensions x 3 constructs) were performed under hypothesis 5. For this reason, the Bonferroni-Holm adjustment to prevent alpha inflation started at a significance level of p_{crit} = .008. Figure 41 illustrates the path diagram of the full structural model for hypothesis 5.

Table 5.

Illustration of model constraints under hypothesis 5.

Relationships	*Regression Weight*	*Model Constraint*
Hypothesis 5.1 (H 5.1.1, H 5.1.2)		
Neuroticism → Trusting Beliefs (P)	N_TB_P	N_TB_P = N_TB_AP
Neuroticism → Trusting Beliefs (AP)	N_TB_AP	
Agreeableness → Trusting Beliefs (P)	A_TB_P	A_TB_P = A_TB_AP
Agreeableness → Trusting Beliefs (AP)	A_TB_AP	
Hypothesis 5.2 (H 5.2.1, H 5.2.2)		
Neuroticism → Trusting Intentions (P)	N_TI_P	N_TI_P = N_TI_AP
Neuroticism → Trusting Intentions (AP)	N_TI_AP	
Agreeableness → Trusting Intentions (P)	A_TI_P	A_TI_P = A_TI_AP
Agreeableness → Trusting Intentions (AP)	A_TI_AP	
Hypothesis 5.3 (H 5.3.1, H 5.3.2)		
Neuroticism → Trust-related behavior (P)	N_TRB_P	N_TRB_P = N_TRB_AP
Neuroticism → Trust-related behavior (AP)	N_TRB_AP	
Agreeableness → Trust-related behavior (P)	A_TRB_P	A_TRB_P = A_TRB_AP
Agreeableness → Trust-related behavior (AP)	A_TRB_AP	

Note. All constrained models were tested against the unconstrained model.

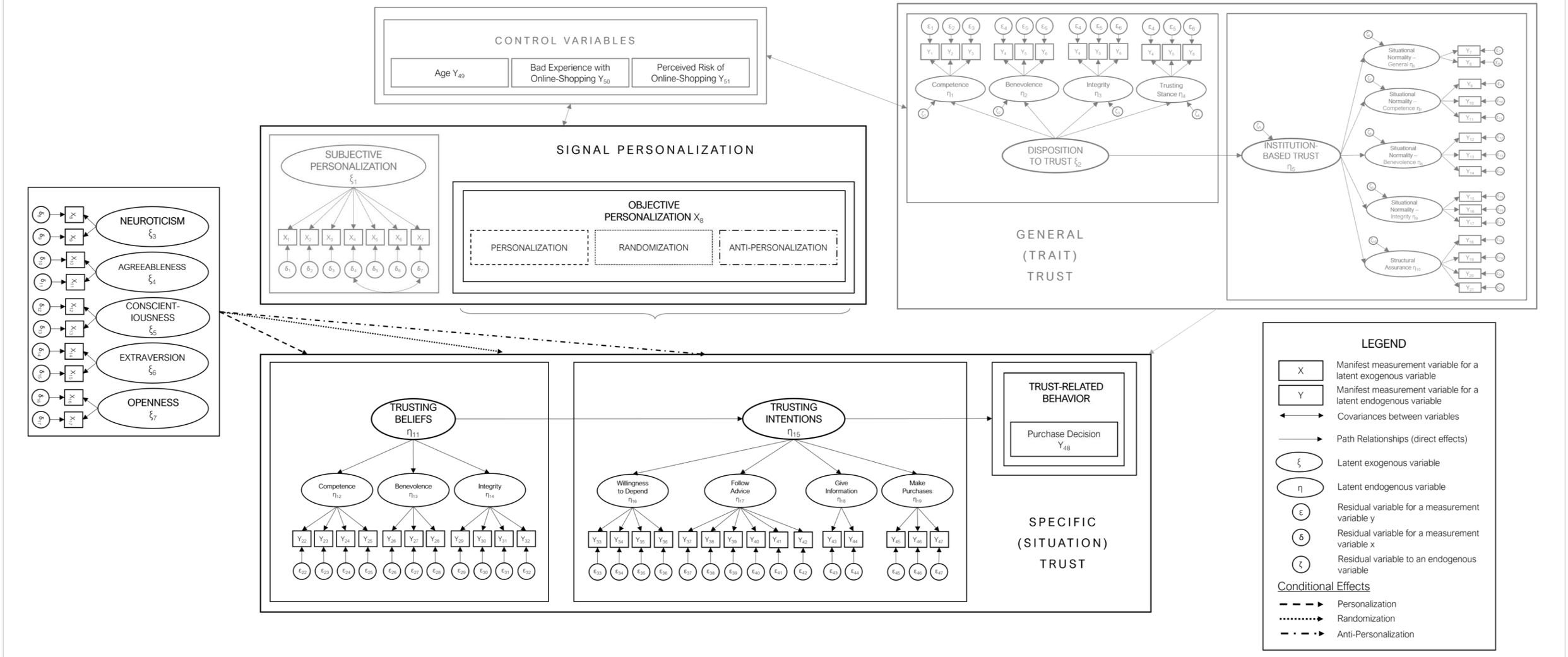


Figure 41. Path Diagram of the full structural model (H5).

4 Results

4.1 Study 1: Personality-Associated Preference of Trust-Enhancing Signals

For the analysis of the personality-associated preference of trust-enhancing signals in study 1, path analyses for each of the Big Five factors including the respective personality dimension as predictor and the ten trust-enhancing signals as criteria were conducted.

Results demonstrated that extraversion predicted the preference for a personal contact option (*ß* = .13, *t*(684) = 3.36, *p* = .003). Neuroticism predicted the preference of a free return option (*ß* = .11, *t*(684) = 2.79, *p* = .008). Openness to experience predicted the preference for about us information (*ß* = .18, *t*(684) = 4.88, *p* = .001). Agreeableness predicted the preference for quality seals (*ß* = .13, *t*(684) = 3.38, *p* = .001). Finally, conscientiousness predicted the preference for payment by invoice (*ß* = .17, *t*(684) = 4.59, *p* = .001). Figure 42 graphically illustrates the regression paths, standardized regression coefficients and 95 % confidence intervals (95 % *CI*) of the beta regression coefficients in square brackets.

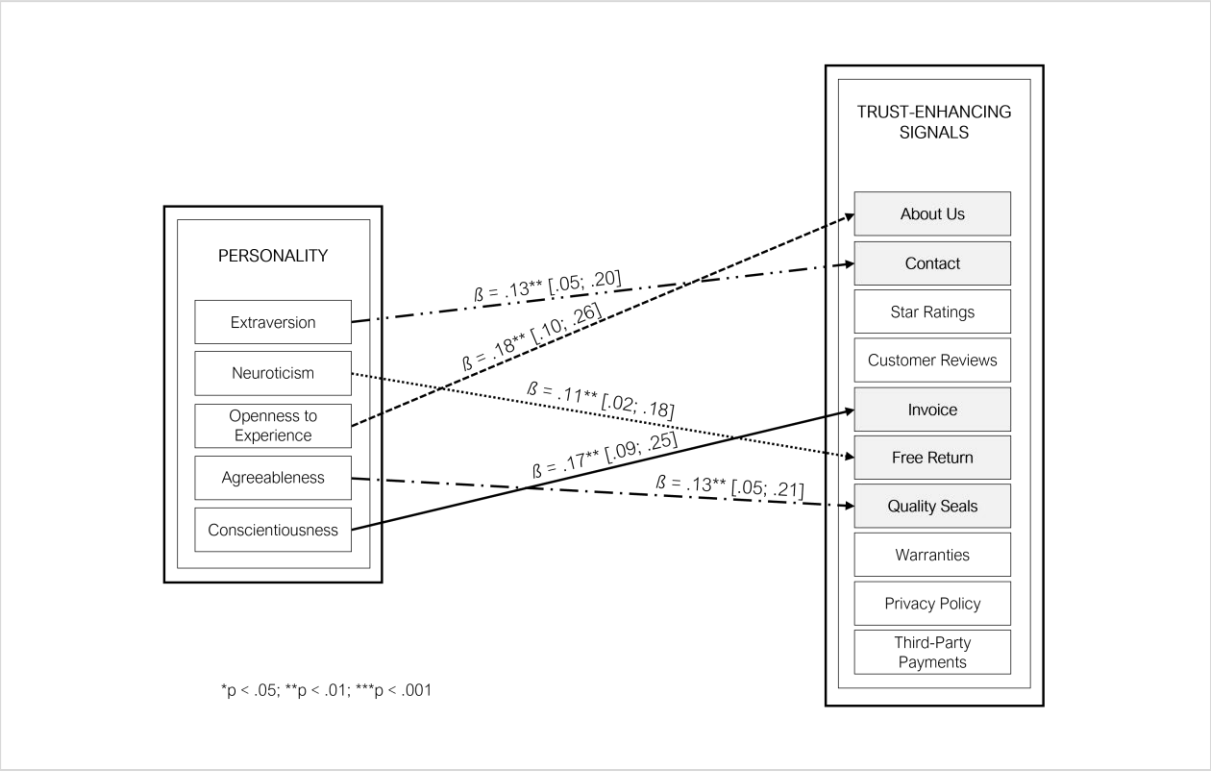


Figure 42. Graphical illustration of model paths (study 1).

4.2 Study 2: Personality-Based Personalization of Trust-Enhancing Signals

In Study 2, the personality-associated trust-enhancing signal preferences from Study 1 were integrated to test the effects of an objective (actual) and subjective (perceived) personalization of trust-enhancing signals, personality, and their interaction on the emergence of trust. Before testing the effects of the experimental manipulation, the measurement models were first checked for quality aspects and modified, if necessary.

4.2.1 Quality Testing of Reflective Measurement Models

(1) **Confirmatory Factor Analysis.** Confirmatory Factor Analysis (CFA) was computed using IBM SPSS Amos (Version 28.0.0) to test the measurement model for the four second-order trust constructs (disposition to trust, institution-based trust, trusting beliefs and trusting intentions) and the first-order construct of subjective personalization. In the following, the results of the CFAs are presented separately for each respective second-order latent construct. The analysis included an evaluation of the measurement models of the individual first-order constructs as well as the model fit of a (joint) CFA with all first-order constructs within the corresponding second-order construct, where the covariances between the first-order constructs are freely estimated.

(1.1) **Disposition to Trust.** In the first step, *factor loadings* were assessed for each item. No item was removed due to low factor loadings (< .50). The *model-fit measures* were used to assess the model's overall goodness of fit (CFI, RMSEA, SRMR) and all values were in their respective common acceptance levels. Accordingly, the four-factor model (competence, benevolence, integrity, trusting stance) yielded a good fit (CFI = .98; RMSEA = .05; SRMR = .03).

Construct reliability was assessed using composite reliability. Composite reliabilities ranged from .71 to .86, which lies above the required threshold of .70 (Hair et al., 2014). Hence, construct reliability was established for each first-order construct in the disposition to trust model.

Convergent validity of scale items was estimated using average variance extracted (Fornell & Larcker, 1981). Except for integrity, the average variance extracted values were

above the threshold value of .50. However, since the value for integrity (AVE = .46) lies close to the required value of .50, the scales were found to have the required convergent validity. Table 6 illustrates the results of the confirmatory factor and reliability analysis for disposition to trust in detail.

Table 6.

Confirmatory factor and reliability analysis for disposition to trust.

Construct	*Standardized Factor Loadings*	*95 % CI [lower, upper]*	*Composite Reliability*	*AVE*
Faith in Humanity (Competence)				
c1	.72	[.66, .78]		
c2**	.78	[.72, .83]	.82	.60
c3	.83	[.74, .89]		
Faith in Humanity (Benevolence)				
b1	.77	[.72, .82]		
b2**	.78	[.72, .83]	.79	.56
b3	.69	[.62, .75]		
Faith in Humanity (Integrity)				
i1	.69	[.62, .75]		
i2	.58	[.51, .65]	.71	.46
i3**	.74	[.67, .80]		
Trusting Stance				
ts1	.85	[.79, .90]		
ts2	.78	[.72, .82]	.86	.68
ts3**	.84	[.78, .89]		

Model Fit Statistics (χ^2 = 104.75, *df* = 48, *p* < .001; CFI = .98; RMSEA = .05; SRMR = .03).
** = Items constrained for identification purposes.

(1.2) Institution-Based Trust. In the first step, *factor loadings* were assessed for each item. No item was removed due to low factor loadings (< .50). The *model-fit measures* used to assess the model's overall goodness of fit (CFI, RMSEA, SRMR) were within their respective common acceptance levels. Accordingly, the five-factor model (situational normality - general, situational normality – competence, situational normality – benevolence, situational normality – integrity, structural assurance) yielded a good fit (CFI = .98; RMSEA = .04; SRMR = .03).

Composite reliabilities ranged from .77 to .88, which lies above the required threshold of .70 (Hair et al., 2014). Hence, construct reliability was established for each first-order construct in the institution-based trust model.

Convergent validity of scale items was estimated using average variance extracted (Fornell & Larcker, 1981). The average variance extracted values for all constructs were above the required threshold value of .50. Accordingly, the scales of the institution-based trust model were found to have the required convergent validity. Table 7 illustrates the results of the confirmatory factor and reliability analysis for institution-based trust in detail.

Table 7.

Confirmatory factor and reliability analysis for institution-based trust.

Construct	*Standardized Factor Loadings*	*95 % CI [lower, upper]*	*Composite Reliability*	*AVE*
Situational Normality (General)				
g1	.75	[.68, .81]	.77	.62
g2**	.83	[.75, .89]		
Situational Normality (Competence)				
c1	.77	[.71, .82]		
c2**	.82	[.78, .86]	.81	.59
c3	.71	[.64, .77]		
Situational Normality (Benevolence)				
b1**	.77	[.71, .82]		
b2	.72	[.65, .77]	.79	.55
b3	.75	[.69, .80]		
Situational Normality (Integrity)				
i1	.71	[.64, .77]		
i2**	.78	[.71, .83]	.80	.58
i3	.79	[.75, .83]		
Structural Assurance				
sa1**	.84	[.79, .87]		
sa2	.80	[.76, .84]	.88	.64
sa3	.80	[.73, .84]		
sa4	.76	[.72, .80]		

Model Fit Statistics (χ^2 = 153.25, *df* = 80, $p < .001$; CFI = .98; RMSEA = .04; SRMR = .03).

** = Items constrained for identification purposes.

(1.3) **Trusting Beliefs.** *Factor loadings* were assessed for each item and no item was removed due to low factor loadings (< .50). The *model-fit measures* (CFI, RMSEA, SRMR) were within their respective common acceptance levels. Accordingly, the three-factor model (competence, benevolence, integrity) yielded a good fit (CFI = .99; RMSEA = .05; SRMR = .02).

Construct reliability was assessed using composite reliability. Composite reliabilities ranged from .88 to .91, which falls above the required threshold of .70 (Hair et al., 2014). Hence, construct reliability was established for each first-order construct in the trusting beliefs model. *Convergent validity* of scale items was estimated using average variance extracted (Fornell & Larcker, 1981). The average variance extracted values exceeded the required threshold value of .50. Accordingly, the trusting belief scales were found to have the required convergent validity. Table 8 illustrates the results of the confirmatory factor and reliability analysis for trusting beliefs in detail.

Table 8.

Confirmatory factor and reliability analysis for trusting beliefs.

Construct	*Standardized Factor Loadings*	*95 % CI [lower, upper]*	*Composite Reliability*	*AVE*
Competence				
c1**	.85	[.83, .86]	.91	.72
c2	.84	[.82, .86]		
c3	.85	[.82, .87]		
c4	.85	[.83, .87]		
Benevolence				
b1	.88	[.86, .90]	.88	.71
b2**	.82	[.80, .85]		
b3	.82	[.79, .84]		
Integrity				
i1**	.85	[.83, .87]	.91	.71
i2	.88	[.86, .90]		
i3	.77	[.74, .80]		
i4	.87	[.85, .88]		

Model Fit Statistics (χ^2 = 230.42, *df* = 41, p < .001; CFI = .99; RMSEA = .05; SRMR = .02).

** = Items constrained for identification purposes.

(1.4) **Trusting Intentions.** An examination of the *factor loadings* revealed a low factor loading of .33 (item gi2, "give information"-scale). In order to improve model fit, it was decided to remove this item. After the item exclusion, the *model-fit measure* of CFI indicated a good model fit, RMSEA and SRMR indicated an adequate model fit (CFI = .95; RMSEA = .08; SRMR = .06).

Construct reliability was assessed using composite reliability. Composite reliabilities ranged from .66 to .92, approaching or falling above the required threshold of .70 (Hair et al., 2014). *Convergent validity* of scale items was estimated using average variance extracted (Fornell & Larcker, 1981). The AVE values approached (in the "give information"-scale) or exceeded the threshold value of .50. Table 9 illustrates the results of the confirmatory factor and reliability analysis for trusting intentions in detail.

Table 9.

Confirmatory factor and reliability analysis for trusting intentions.

Construct	*Standardized Factor Loadings*	*95 % CI [lower, upper]*	*Composite Reliability*	*AVE*
Willingness to Depend				
wtd1	.85	[.83, .87]	.90	.70
wtd2	.84	[.82, .86]		
wtd3	.87	[.85, .88]		
wtd4**	.78	[.75, .80]		
Follow Advice				
fa1	.69	[.66, .72]	.92	.66
fa2	.85	[.83, .87]		
fa3	.79	[.76, .81]		
fa4**	.86	[.85, .88]		
fa5	.87	[.86, .89]		
fa6	.78	[.75, .80]		
Give Information				
gi1**	.70	[.66, .74]	.66	.49
gi3	.70	[.65, .74]		
Make Purchases				
mp1**	.91	[.89, .92]	.82	.62
mp2	.52	[.48, .57]		
mp3	.88	[.86, .90]		

Model Fit Statistics (χ^2 = 1091.43, *df* = 84, $p < .001$; CFI = .95; RMSEA = .08; SRMR = .06).
** = Items constrained for identification purposes.

(1.5) **Subjective Personalization.** *Factor loadings* were assessed for each item and no item was removed due to low factor loadings (< .50). The *model-fit measures* were used to assess the model's overall goodness of fit (CFI, RMSEA, SRMR). While CFI and SRMR values were within their respective common acceptance levels, RMSEA exceeded the acceptable threshold for an adequate model fit (CFI = .93; RMSEA = .17; SRMR = .06). Following the aim of improving model fit with regard to RMSEA, modification indices were taken into account. Respectively, an inclusion of a covariance between the error terms of items pp4 and pp7 could significantly improve model fit indices (CFI = .99; RMSEA = .06; SRMR = .02).

Construct reliability was assessed using composite reliability. Composite reliability exceeded the required threshold of .70 (Hair et al., 2014; Nunnally & Bernstein, 1978). Hence, construct reliability was established in the subjective personalization model.

Convergent validity of scale items was estimated using average variance extracted (Fornell & Larcker, 1981). The average variance-extracted value was above the threshold value of .50. Accordingly, the scale was found to have the required convergent validity. Table 10 illustrates the results of the confirmatory factor and reliability analysis for subjective personalization in detail. Figure 43 illustrates the path diagrams of CFA and standardized parameter estimates for the four second-order models.

Table 10.

Confirmatory factor and reliability analysis for subjective personalization.

Construct	*Standardized Factor Loadings*	*95 % CI [lower, upper]*	*Composite Reliability*	*AVE*
Subjective Personalization				
pp1**	.85	[.82, .87]	.93	.66
pp2	.82	[.79, .84]		
pp3	.88	[.86, .89]		
pp4	.64	[.61, .68]		
pp5	.90	[.88, .91]		
pp6	.88	[.87, .90]		
pp7	.67	[.63, .70]		

Model Fit Statistics (χ^2 = 100.81, *df* = 13, p < .001; CFI = .99; RMSEA = .06; SRMR = .02).
** = Items constrained for identification purposes

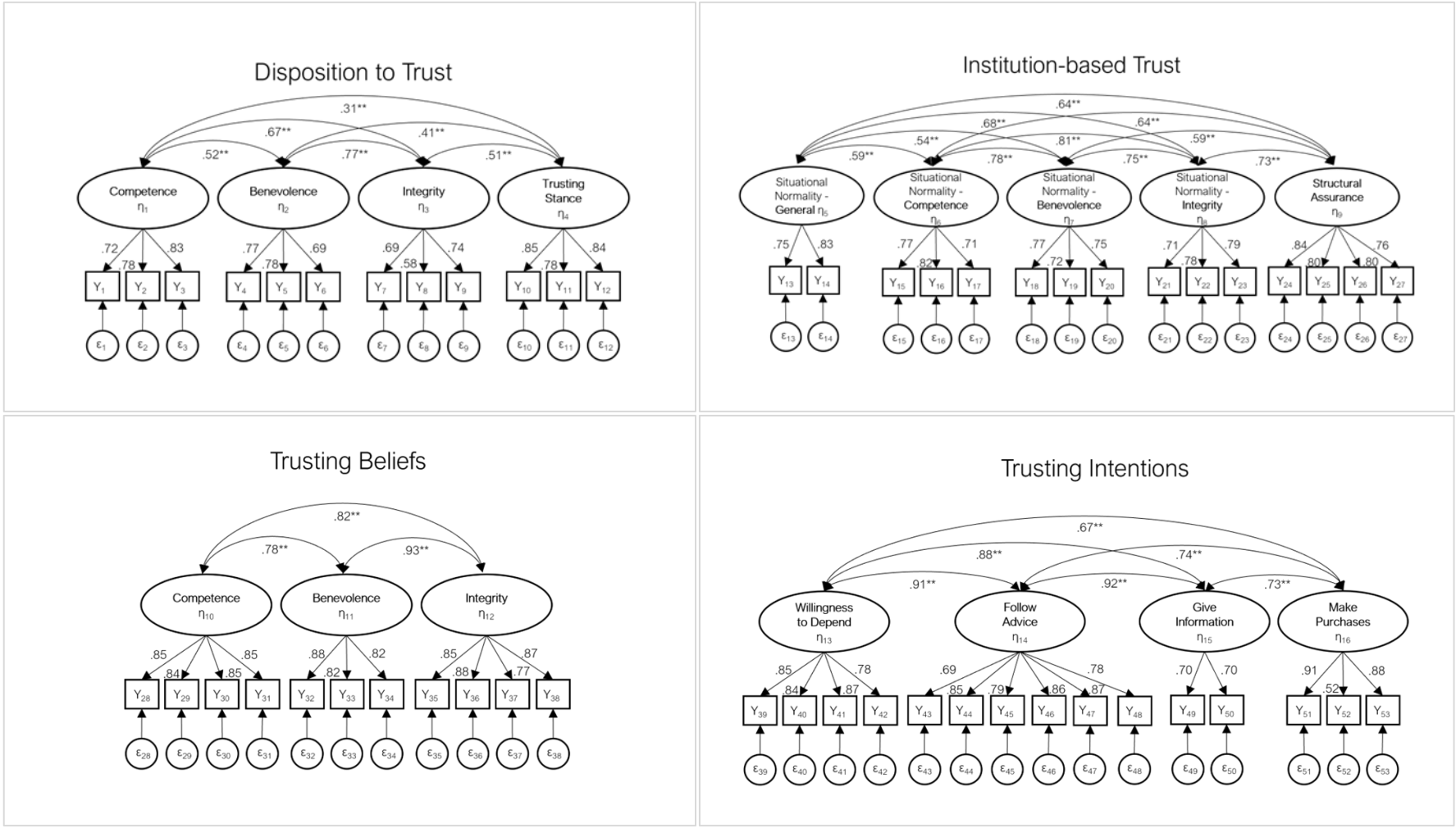


Figure 43. Results for the measurement models (CFA).

(2) **Second-Order Factor Analysis.** Second-Order Factor Analysis (SFA) was computed using IBM SPSS Amos (Version 28.0.0) to test the measurement model for the four second-order constructs (disposition to trust, institution-based trust, trusting beliefs and trusting intentions). In the following, the results of the SFAs are presented separately for each respective second-order latent construct. The analysis included an examination of the covariances between the first-order constructs and the assessment of the overall second-order model based on this.

(2.1) **Disposition to Trust.** Table 11 provides an overview over the *correlations between the first-order latent constructs* of disposition to trust. Consistent with the theoretical assumptions, all factors were significantly interrelated (range of correlations = .31 - .77).

Accordingly, the pattern of correlations speaks to the viability of the postulated second-order model. While the factor "faith in humanity – integrity" showed the strongest correlation to "faith in humanity – benevolence", "trusting stance" showed the weakest correlation to "faith in humanity – competence".

Table 11.

Correlations between the first-order latent constructs of disposition to trust.

Construct	*1*	*2*	*3*	*4*
1. Faith in Humanity *(Competence)*	—			
2. Faith in Humanity *(Benevolence)*	.52** [.41; .61]	—		
3. Faith in Humanity *(Integrity)*	.67** [.58; .76]	.77** [.68, .85]	—	
4. Trusting Stance	.31** [.20; .42]	.41** [.31, .50]	.51** [.41; .60]	—

Note. Values in square brackets indicate the 95 % *CI* for each correlation; ** $p < .01$.

Table 12 provides an overview over the results for the second-order factor analysis. Each of the first-order factors loaded strongly on the second-order factor (range of loadings =

.51–.99). "Faith in humanity – integrity" showed the strongest factor loading on disposition to trust and "trusting stance" the weakest.

Composite reliability exceeded the required threshold of .70 (Hair et al., 2014; Nunnally & Bernstein, 1978) and *average variance extracted* the threshold of .50 (Fornell & Larcker, 1981). Further, the higher-order solution did not result in a significant decrease in model fit compared to the first-order solution ($\chi^2_{diff} = .89$, $df_{diff} = 2$, $p = .640$).

Finally, *model-fit measures* indicated a good model fit of the second-order model ($\chi^2 = 105.65$, $df = 50$, $p < .001$; CFI = .98; RMSEA = .04; SRMR = .03). Thus, it can be concluded that the higher-order model of disposition to trust provided a good account for the correlations among the first-order factors and the viability of the second-order model structure.

Table 12.

Second-order factor and reliability analysis for disposition to trust.

Construct	*Standardized Factor Loadings*	*95 % CI [lower, upper]*	*Composite Reliability*	*AVE*
Disposition to Trust				
Faith in Humanity *(Competence)***	.67	[.58, .74]	.84	.57
Faith in Humanity *(Benevolence)*	.77	[.68, .86]		
Faith in Humanity *(Integrity)*	.99	[.92, 1.0]		
Trusting Stance	.51	[.42, .60]		

Model Fit Statistics ($\chi^2 = 105.65$, $df = 50$, $p < .001$; CFI = .98; RMSEA = .04; SRMR = .03).
** = Items constrained for identification purposes.

(2.2) **Institution-based Trust.** Table 13 gives an overview over the *correlations between the first-order latent constructs* of institution-based trust. Consistent with the theoretical assumptions, all factors were significantly interrelated (range of correlations = .54 - .81). Accordingly, the pattern of correlations speaks to the viability of the postulated second-order model.

While the factor "situational normality – integrity" showed the strongest correlation to "situational normality – competence", the factor "structural assurance" showed the weakest correlation to "situational normality – general".

Table 13.

Correlations between the first-order latent constructs of institution-based trust.

Construct	*1*	*2*	*3*	*4*	*5*
1. Situational Normality *(General)*	—				
2. Situational Normality *(Competence)*	.59** [.50; .67]	—			
3. Situational Normality *(Benevolence)*	.54** [.46; .63]	.78** [.71, .85]	—		
4. Situational Normality *(Integrity)*	.68** [.60; .76]	.81** [.73, .86]	.75** [.68; .81]	—	
5. Structural Assurance	.64** [.57; .72]	.64** [.56, .71]	.59** [.50; .66]	.73** [.66; .79]	—

Note. Values in square brackets indicate the 95 % *CI* for each correlation; ** $p < .01$.

Table 14 provides an overview over the results for the second-order factor analysis. Each of the first-order factors loaded strongly on the second-order factor (range of loadings = .73–.93). While "situational normality – integrity" displayed the strongest factor loading on "institution-based trust", "situational normality – general" showed the weakest.

Composite reliability exceeded the required threshold of .70 (Hair et al., 2014; Nunnally & Bernstein, 1978) and *average variance extracted* exceeded the threshold of .50 (Fornell & Larcker, 1981).

Still, the higher-order solution resulted in a significant decrease in model fit (χ^2_{diff} = 29.52, df_{diff} = 5, p < .001). Nevertheless, model-fit measures indicated a good model fit of the higher-order solution (χ^2 = 182.77, df = 85, p < .001; CFI = .98; RMSEA = .05; SRMR = .04).

Thus, from a logical and a theoretical point of view, it can be concluded that the higher-order model for institution-based trust provides a good account for the correlations among the first-order factors and the viability of the second-order model structure.

Table 14.

Second-order factor and reliability analysis for institution-based trust.

Construct	*Standardized Factor Loadings*	*95 % CI [lower, upper]*	*Composite Reliability*	*AVE*
Institution-based Trust				
Situational Normality *(General)*	.73	[.66, .79]		
Situational Normality *(Competence)*	.87	[.81, .92]		
Situational Normality *(Benevolence)***	.81	[.75, .87]	.91	.68
Situational Normality *(Integrity)*	.93	[.89, .97]		
Structural Assurance	.77	[.71, .82]		

Model Fit Statistics (χ^2 = 182.77, df = 85, p < .001; CFI = .98; RMSEA = .05; SRMR = .04).
** = Items constrained for identification purposes.

(2.3) **Trusting Beliefs.** Table 15 gives an overview over the *correlations between the first-order latent constructs* of trusting beliefs. Consistent with the theoretical assumptions, all factors were significantly interrelated (range of correlations = .78 - .93). Accordingly, the pattern of correlations speaks to the viability of the postulated second-order model. While the factor "integrity" showed the strongest correlation to the factor "benevolence", the factor "competence" showed the weakest correlation to "benevolence".

Table 15.

Correlations between the first-order latent constructs of trusting beliefs.

Construct	*1*	*2*	*3*
1. Competence	___		
2. Benevolence	.78** [.75; .81]	___	
3. Integrity	.82** [.79; .85]	.93** [.91, .95]	___

Note. Values in square brackets indicate the 95 % *CI* for each correlation; ** $p < .01$.

Table 16 provides an overview over the results for the second-order factor analysis. Each of the first-order factors loaded strongly on the second-order factor (range of loadings = .83–.99). While "integrity" displayed the strongest factor loading on trusting beliefs, "competence" showed the weakest.

Composite reliability exceeded the required threshold of .70 (Hair et al., 2014; Nunnally & Bernstein, 1978) and *average variance-extracted* exceeded the threshold of .50 (Fornell & Larcker, 1981). With exactly three constructs, both (first- and second-order) models are identical with respect to the number of parameters to be estimated, because the three factor loadings are confronted with three covariances to be assessed (Weiber & Mühlhaus, 2014). For this reason, the adequacy of the second-order model structure for trusting beliefs cannot be evaluated.

Table 16.

Second-order factor and reliability analysis for trusting beliefs.

Construct	*Standardized Factor Loadings*	*95 % CI [lower, upper]*	*Composite Reliability*	*AVE*
Trusting Beliefs				
Competence	.83	[.80, .86]		
*Benevolence***	.94	[.92, .96]	.94	.85
Integrity	.99	[.97, 1.00]		

Model Fit Statistics (χ^2 = 230.42, *df* = 41, *p* < .001; CFI = .99; RMSEA = .05; SRMR = .02).
** = Items constrained for identification purposes.

(2.4) **Trusting Intentions.** Table 17 gives an overview over the *correlations between the first-order latent constructs* of trusting intentions. Consistent with the theoretical assumptions, all factors were significantly interrelated (range of correlations = .67 - .92). Accordingly, the pattern of correlations speaks to the viability of the postulated second-order model. While the factor "give information" showed the strongest correlation to "follow advice", the factor "make purchases" showed the weakest correlation to "willingness to depend".

Table 17.

Correlations between the first-order latent constructs of trusting intentions.

Construct	*1*	*2*	*3*	*4*
*1. Willingness to Depend***	—			
2. Follow Advice	.91** [.89; .92]	—		
3. Give Information	.88** [.84; .92]	.92** [.89, .96]	—	
4. Make Purchases	.67** [.63; .71]	.74** [.70, .77]	.73** [.68, .78]	—

Note. Values in square brackets indicate the 95 % *CI* for each correlation; ** p < .01.

Table 18 provides an overview over the results for the second-order factor analysis. Each of the first-order factors loaded strongly on the second-order factor (range of loadings = .75–.98). While "follow advice" displayed the strongest factor loading on "trusting intentions", the factor "make purchases" showed the weakest.

Composite reliability exceeded the required threshold of .70 (Hair et al., 2014; Nunnally & Bernstein, 1978) and *average variance extracted* exceeded the threshold of .50 (Fornell & Larcker, 1981).

Still, the higher-order solution did result in a significant decrease in model fit (χ^2_{diff} = 7.96, df_{diff} = 2, p < .05). Nevertheless, model-fit measures indicated a reasonable model fit (χ^2 = 1099.40, df = 86, p < .001; CFI = .95; RMSEA = .08; SRMR = .06). Thus, from a logical and a theoretical point of view, it can be concluded that the higher-order model for trusting intentions provides a good account for the correlations among the first-order factors and the viability of the second-order model structure.

Figure 44 illustrates the path diagrams of SFA and standardized parameter estimates for the four second-order models.

Table 18.

Second-order factor and reliability analysis for trusting intentions.

Construct	*Standardized Factor Loadings*	*95 % CI [lower, upper]*	*Composite Reliability*	*AVE*
Trusting Intentions				
*Willingness to Depend***	.92	[.91, .94]		
Follow Advice	.98	[.97, .99]	.95	.82
Give Information	.95	[.91, .98]		
Make Purchases	.75	[.71, .78]		

Model Fit Statistics (χ^2 = 1099.40, df = 86, p < .001; CFI = .95; RMSEA = .08; SRMR = .06).
** = Items constrained for identification purposes.

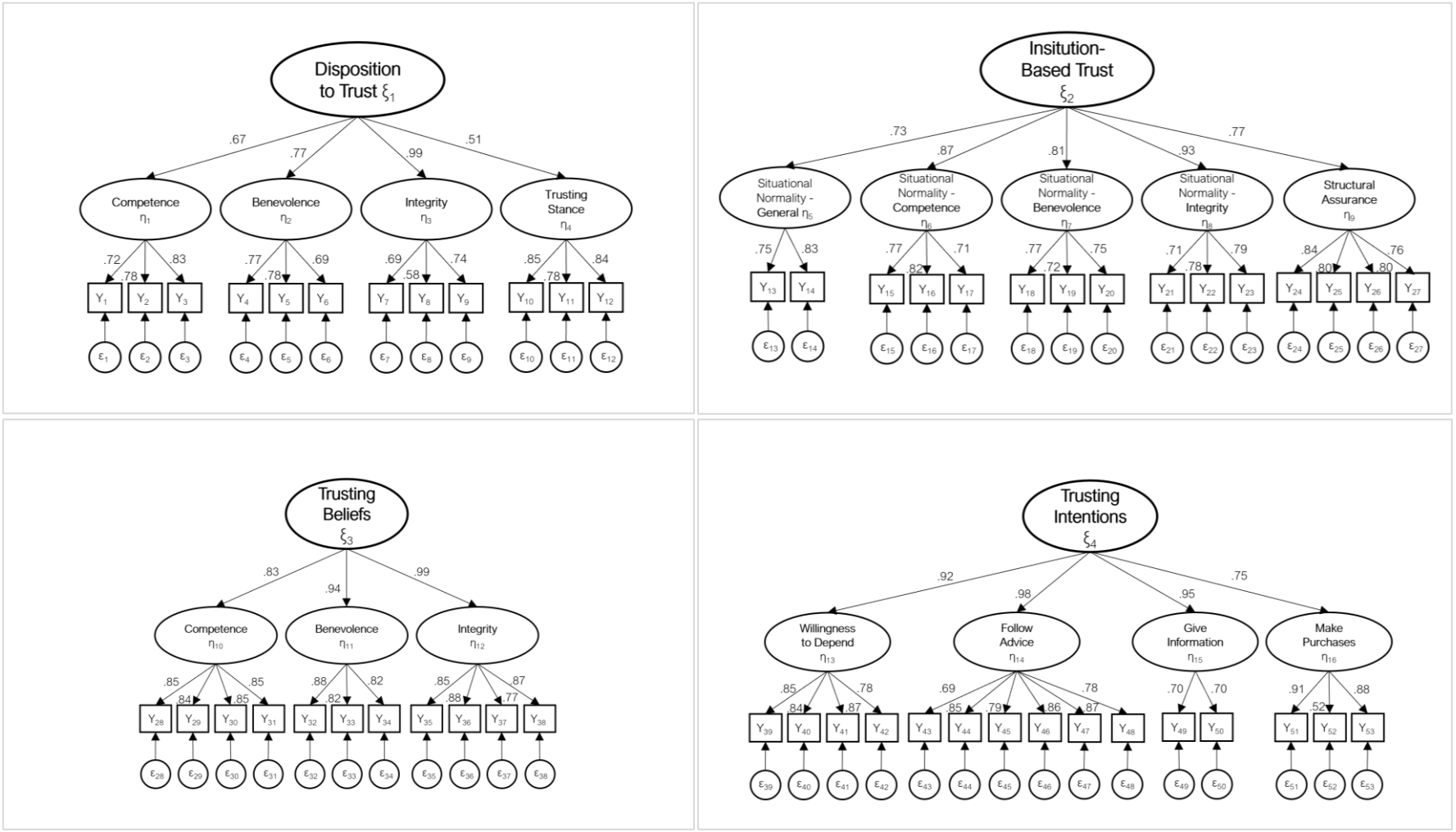


Figure 44. Results for the measurement models (SFA).

4.2.2 Confirmative Analyses

A structural equation model using IBM SPSS Amos (Version 28.0.0) was calculated to test the hypothesized relationships. A good-fitting model is accepted if the value of the *comparative fit index* (CFI) is ≥. 90 (Bentler & Bonett, 1980), the *root mean square error of approximation* (RMSEA) is ≤ .05 (Steiger, 1990) and the *standardized root mean squared residual* (SRMR) is ≤ .05 (L. Hu & Bentler, 1999). An adequately-fitting model is accepted if the value for the root mean square error of approximation (RMSEA) is ≤ .08 (Steiger, 1990) and the standardized root mean squared residual (SRMR) is ≤ .09 (L. Hu & Bentler, 1999).

4.2.2.1 Hypothesis 1: Objective Personalization Effects on Trust

Hypothesis 1 aimed at investigating the effect of an objective (external) personalization of trust-enhancing signals on trusting beliefs (H 1.1), trusting intentions (H 1.2) and trust-related behavior (H 1.3). It was hypothesized that personalized information increases personal relevance of the information, which promotes deeper information processing, ultimately reduces information asymmetries and increases trust in the web vendor. Hypothesis 1 was tested within a structural equation model. In order to separate the effect of objective personalization from the effect of subjective personalization, the latter construct was included as control variable into the model.

Table 19 illustrates the results of the analysis for hypothesis 1, the squared multiple correlations for the constructs and model fit indices. The model fit indices fell within the acceptable range (χ^2 = 7857.34, *df* = 2023, $p < .001$; CFI = .92; RMSEA = .04; SRMR = .06). While CFI and RMSEA fell in the range for a good-fitting model, SRMR reached an acceptable value.

The results demonstrate that, as hypothesized, objective personalization has a significant positive effect on trusting beliefs compared to both randomization and anti-personalization. The regression coefficients indicated that (controlling for the effect of subjective personalization on trusting beliefs), in the personalized condition, trusting beliefs were .17 units higher than in the anti-personalized and .15 units higher than in the randomized signal presentation.

In contrast to trusting beliefs, objective personalization did not have a (direct) effect on trusting intentions and trust-related behaviors independent of subjective personalization. Nevertheless, exploratory analyses revealed a full mediation effect of objective personalization on trusting intentions through trusting beliefs (b = .19, 95 % *CI* [.07; .30], p = .004) and a small serial mediation effect on trust-related behavior through trusting beliefs and trusting intentions (b = .02, 95 % *CI* [.01; 03], p = .002).

Table 19.

Structural model test results for hypothesis 1.

Hypothesized Relationships	*Regression Weights*	*95 % CI [lower, upper]*	*p-value*	*Hypothesis supported*
1.1 Obj. Personalization → Trusting Beliefs				
1.1.1 Personalization vs. Randomization	.15	[.04, .26]	.005	✓
1.1.2 Personalization vs. Anti-Personalization	.17	[.06, .28]	.001	✓
1.1.3 Randomization vs. Anti-Personalization	.02	[-.09, .13]	.730	X
1.2 Obj. Personalization → Trusting Intentions				
1.2.1 Personalization vs. Randomization	-.05	[-.13, .04]	.272	X
1.2.2 Personalization vs. Anti-Personalization	.01	[-.07, .10]	.712	X
1.2.3 Randomization vs. Anti-Personalization	.06	[-.02, .14]	.159	X
1.3 Obj. Personalization → Trust Behavior				
1.3.1 Personalization vs. Randomization	.01	[-.05, .05]	.905	X
1.3.2 Personalization vs. Anti-Personalization	-.01	[-.06, .04]	.737	X
1.3.3 Randomization vs. Anti-Personalization	-.01	[-.07, .04]	.598	X
Squared Multiple Correlation (R^2):				
Trusting Beliefs	.347	[.30, .39]	.004	
Trusting Intentions	.767	[.72, .80]	.002	
Trust-Related Behavior	.065	[.04, .08]	.018	
Model Fit Statistics:				
χ^2 = 7857.34, df = 2023, p < .001; CFI = .92; RMSEA = .04; SRMR = .06				

Figure 45 graphically illustrates the means and 95 % *CI*s for the trusting belief sub-facets, separated by the condition of signal presentation. Table 20 illustrates the means, standard deviations and 95 % *CI*s for trusting beliefs and trusting intentions and the frequencies of purchase decisions (trust-related behavior), separated by condition.

Exploratory examination of the sub-facets of trusting beliefs revealed that factor scores on *benevolence* were significantly higher under personalization than under randomization (t (579) = 9.65, p < .001, d = .45) and anti-personalization (t (579) = 10.71, p < .001, d = .40). Nevertheless, the factor scores on benevolence did not differ between randomization and anti-personalization (t (579) = -.30, p = .767). While the factor scores on the sub-facet of *integrity* did not differ between personalization and randomization (t (579) = 1.26, p = .207), they yielded larger values under personalization compared to anti-personalization (t (579) = 4.59, p < .001, d = .19) and under randomization compared to anti-personalization (t (579) = 3.87, p < .001, d = .16). Interestingly, the pattern of results for the *competence* sub-facet was contrary to expectations, with lower factor scores on personalization compared to anti-personalization (t (579) = -6.02, p < .001, d = -.25), lower scores on randomization compared to anti-personalization (t (579) = -4.38, p < .001, d = -.18), but no difference between personalization and randomization (t (579) = -1.99, p = .047). Figure 46 illustrates the path diagram of the structural model for hypothesis 1.

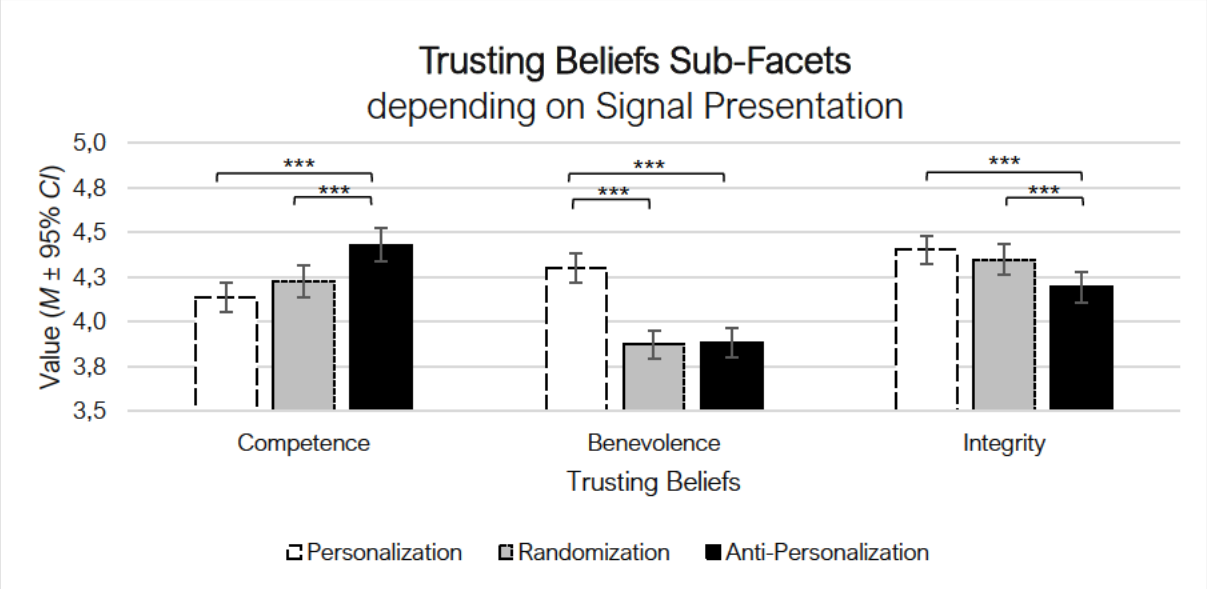


Figure 45. Factor scores of trusting beliefs sub-facets.

Table 20.

Descriptive statistics and 95 % CIs for TBs, TIs & TRB.

Condition	*Personalization*			*Randomization*			*Anti-Personalization*		
Construct	*M*	*SD*	*95 % CI [lower, upper]*	*M*	*SD*	*95 % CI [lower, upper]*	*M*	*SD*	*95 % CI [lower, upper]*
Trusting Beliefs	**4.29**	.97	[4.21, 4.37]	**3.82**	.90	[3.74, 3.89]	**3.75**	.92	[3.68, 3.83]
Competence	4.14	1.00	[4.06, 4.22]	4.23	1.07	[4.14, 4.31]	4.43	1.12	[4.34, 4.52]
Benevolence	4.30	1.01	[4.22, 4.38]	3.87	.96	[3.80, 3.95]	3.88	.98	[3.80, 3.96]
Integrity	4.40	.99	[4.32, 4.48]	4.35	1.03	[4.27, 4.43]	4.19	1.03	[4.11, 4.28]
Trusting Intentions	**4.10**	1.06	[4.01, 4.19]	**3.79**	1.06	[3.70, 3.88]	**3.90**	1.10	[3.81, 3.99]
Willingness to Depend	4.30	1.14	[4.20, 4.39]	3.97	1.13	[3.87, 4.06]	4.18	1.21	[4.08, 4.28]
Follow Advice	4.49	1.19	[4.39, 4.58]	4.32	1.22	[4.22, 4.42]	4.36	1.25	[4.25, 4.46]
Give Information	4.21	1.07	[4.12, 4.30]	3.76	1.22	[3.68, 3.85]	3.82	1.07	[3.73, 3.90]
Make Purchases	4.09	1.50	[3.97, 4.22]	4.11	1.55	[3.98, 4.23]	3.91	1.46	[3.78, 4.02]
Trust-Related Behavior		*N*			*N*			*N*	
Purchase Decision		405			395			399	
No Purchase Decision		175			185			181	

Note. The depicted mean values, standard deviations and 95 % *CI*s result from the latent factor scores.

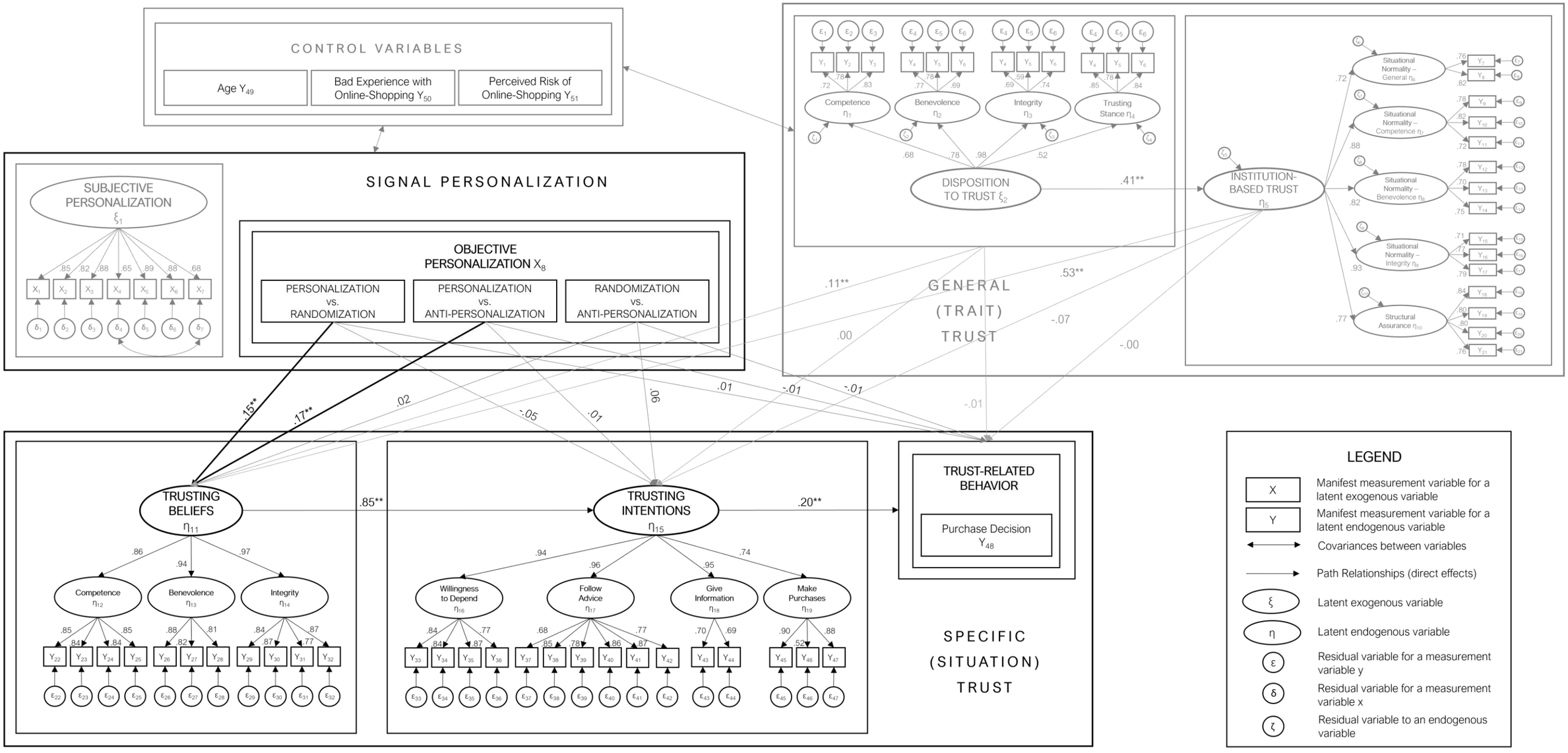


Figure 46. Results for the full structural model (H1).

4.2.2.2 Hypothesis 2: Subjective (vs. Objective) Personalization Effects on Trust

Hypothesis 2 aimed at investigating the effect of subjective (perceived) personalization of trust-enhancing signals on trusting beliefs (H 2.1), trusting intentions (H 2.2) and trust-related behavior (H 2.3). Furthermore, the effect of subjective and objective personalization on trust should be compared to each other (H 2.4). In order to separate the effect of subjective personalization from the effect of objective personalization, the latter construct was included as control variable into the model. It was hypothesized that subjective personalization exerts a positive effect on trust that is independent of objective personalization. Further, the effect of subjective personalization was expected to be stronger than the effect of objective personalization. Hypothesis 2 was tested within a structural equation model.

Table 21 illustrates the results of the analysis for hypothesis 2, the (model-compliant) effects of trusting beliefs on trusting intentions and on trust-related behavior, mean values, standard deviations and 95 % *CI*s for subjective personalization and model fit indices. The results for hypotheses 2.1, 2.2 and 2.3 illustrated that in contrast to objective personalization, subjective personalization had a significant positive effect on all of the three trust-related constructs (trusting beliefs, trusting intentions and trust-related behavior). The standardized regression coefficients indicated for every unit by which subjective personalization increased, trusting beliefs increased by .40 units, trusting intentions by .07 units and the probability for trust-related behavior by 7 %. The result for H 2.3 must be considered with caution since the critical Bonferroni-Holm corrected p-value for multiple comparisons was not reached (p_{crit} = .008).

The results for hypothesis 2.4 illustrated that the effect size of subjective and objective personalization in their effect on trusting beliefs differs significantly. A comparison between the regression coefficients showed the direction of the significant difference: the effect of subjective personalization on trusting beliefs (.41) [unstandardized regression coefficient] was greater than the effect of objective personalization on trusting beliefs (.17). Interestingly, no differences in the effect size of subjective and objective personalization in their effect on either trusting intentions or on trust-related behavior could be found.

In the context of testing effect differences, a further (exploratory) examination included the investigation of differences in subjective personalization depending on objective personalization. Results revealed that subjective personalization (latent factor scores) did not differ significantly between the (objective) personalized (M = 2.68, SD = 1.19) and randomized (M = 2.68, SD = 1.20) [$t(579)$ = .101, p = .460], or between the (objective) personalized and the anti-personalized condition (M = 2.70, SD = 1.21) [$t(579)$ = -.453, p = .326], or between the randomized and the anti-personalized condition ($t(579)$ = -.605, p = .273). Figure 47 illustrates the path diagram of the structural model for hypothesis 2.

Table 21.

Structural model test results for hypothesis 2.

Hypothesized Relationships	*Standardized Estimates*	*95 % CI [lower, upper]*	*p*	*Hypothesis supported*
2.1 Subj. Personalization → Trusting Beliefs	.40	[.36, .45]	.001	✓
2.2 Subj. Personalization → Trusting Intentions	.07	[.04, .12]	.001	✓
2.3 Subj. Personalization → Trust Behavior	.07	[.02, .13]	.012	✓
Trusting Beliefs → Trusting Intentions	.85	[.81, .89]	.001	
Trusting Intentions → Trust-Related Behavior	.20	[.13, .26]	.001	
2.4 Subjective vs. Objective Personalization	*CMIN/ df*	*p-value*		
2.4.1 Trusting Beliefs	15.61	<.001		✓
2.4.2 Trusting Intentions	2.03	.155		X
2.4.3 Trust-related Behavior	1.73	.188		X
Perceived Personalization	*M*	*SD*	*95 % CI*	
Personalization	2.68	1.19	[2.58, 2.78]	
Randomization	2.68	1.20	[2.58, 2.77]	
Anti-Personalization	2.70	1.21	[2.60, 2.80]	

Model Fit Statistics:

χ^2 = 7857.34, df = 2023, p < .001; CFI = .92; RMSEA = .04; SRMR = .06

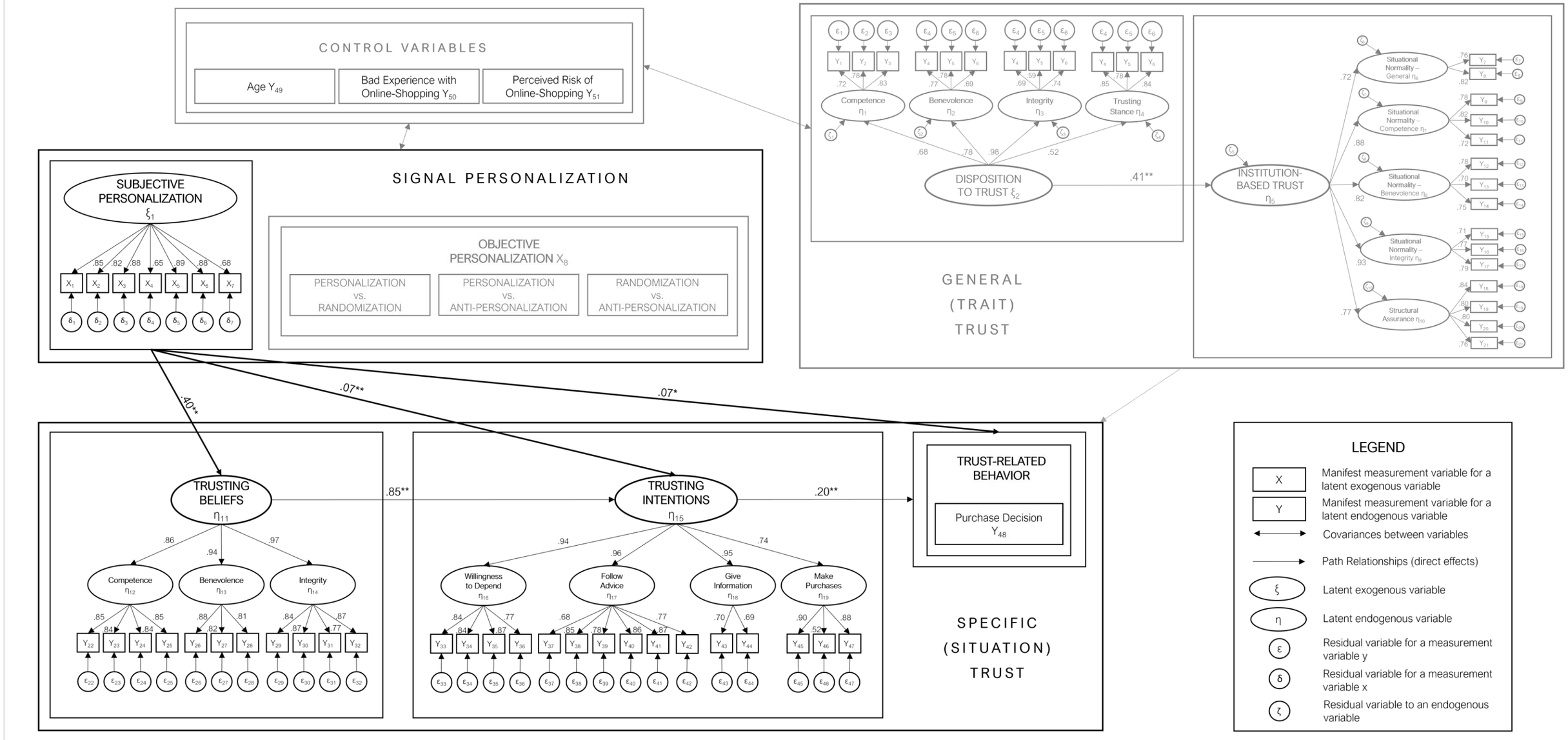


Figure 47. Results for the full structural model (H2).

4.2.2.3 Hypothesis 3: Product-Category Dependent Personalization Effects on Trust

Hypothesis 3 aimed at investigating the product-category dependent effect of subjective personalization on trusting beliefs (H 3.1), trusting intentions (H 3.2) and trust-related behavior (H 3.3). It was hypothesized that in the light of product category-dependent, a priori existing information asymmetries, subjective personalization has the greatest potential to reduce information asymmetries in credence goods, followed by experience and finally search goods. Hypothesis 3 was tested within a multigroup analysis with product category (search, experience and credence goods) as grouping variable in a structural equation model.

Table 22 illustrates the results of the analysis for hypothesis 3, the squared multiple correlations for the constructs and model fit indices. The results showed that subjective personalization exerted a significant positive effect on trusting beliefs in all three product categories. As hypothesized, subjective personalization had the strongest effect on trusting beliefs in credence goods and the weakest effect in search goods. While the effect of subjective personalization on trusting beliefs was significantly greater in credence goods than in search goods (H 3.1.1), contrary to the hypotheses (H 3.1.2, H 3.1.3), the effect sizes between other product categories did not differ statistically. The results for H 3.1.1 must be considered with caution, since the critical Bonferroni-Holm corrected *p*-value for multiple comparisons was not reached (p_{crit} = .006). Unlike trusting beliefs, subjective personalization influenced trusting intentions only in the product categories of credence and search goods. Yet, contrary to the hypotheses (3.2.1, 3.2.2, 3.2.3), the effect sizes between the three product categories did not differ statistically in size.

Finally, subjective personalization influenced trust-related behaviors only in the product category of credence goods. Still, contrary to the hypotheses (3.3.1, 3.3.2, 3.3.3), the effect sizes between the three product categories did not differ statistically in size. The results for search (trusting intentions) and credence goods (trust-related behavior) must be considered with caution since the critical Bonferroni-Holm corrected *p*-value for multiple comparisons was not reached (p_{crit} = .006). Figure 48 illustrates the path diagram of the full structural model for hypothesis 3.

Table 22.

Structural model test results for hypothesis 3.

Hypothesized Relationships	*Standardized Estimates*	*95 % CI [lower, upper]*	*p-value*
H 3.1 Subj. Personalization → Trusting Beliefs			
Search Goods	.34	[.26, .43]	.001
Experience Goods	.41	[.33, .48]	.001
Credence Goods	.43	[.35, .50]	.001
H 3.2 Subj. Personalization → Trusting Intentions			
Search Goods	.06	[.01, .14]	.033
Experience Goods	.06	[-.01, .13]	.115
Credence Goods	.10	[.03, .17]	.002
H 3.3 Subj. Personalization → Trusting Behavior			
Search Goods	.05	[-.05, .15]	.283
Experience Goods	.07	[-.04, .16]	.247
Credence Goods	.10	[.00, .19]	.041

Constraint Multi-Group Analysis	*Group Differences [Δ χ^2/df]*	*p-value*	*Hypothesis supported*
3.1.1 Credence vs. Search Goods	4.22	.040	✓
3.1.2 Credence vs. Experience Goods	3.47	.063	X
3.1.3 Experience vs. Search Goods	.01	.921	X
3.2.1 Credence vs. Search Goods	.70	.404	X
3.2.2 Credence vs. Experience Goods	.00	.995	X
3.2.3 Experience vs. Search Goods	.57	.451	X
3.3.1 Credence vs. Search Goods	.42	.519	X
3.3.2 Credence vs. Experience Goods	.05	.820	X
3.3.3 Experience vs. Search Goods	.16	.688	X

Model Fit Statistics:

χ^2 = 11875.58, *df* = 6069, $p < .001$; CFI = .92; RMSEA = .02; SRMR = .07

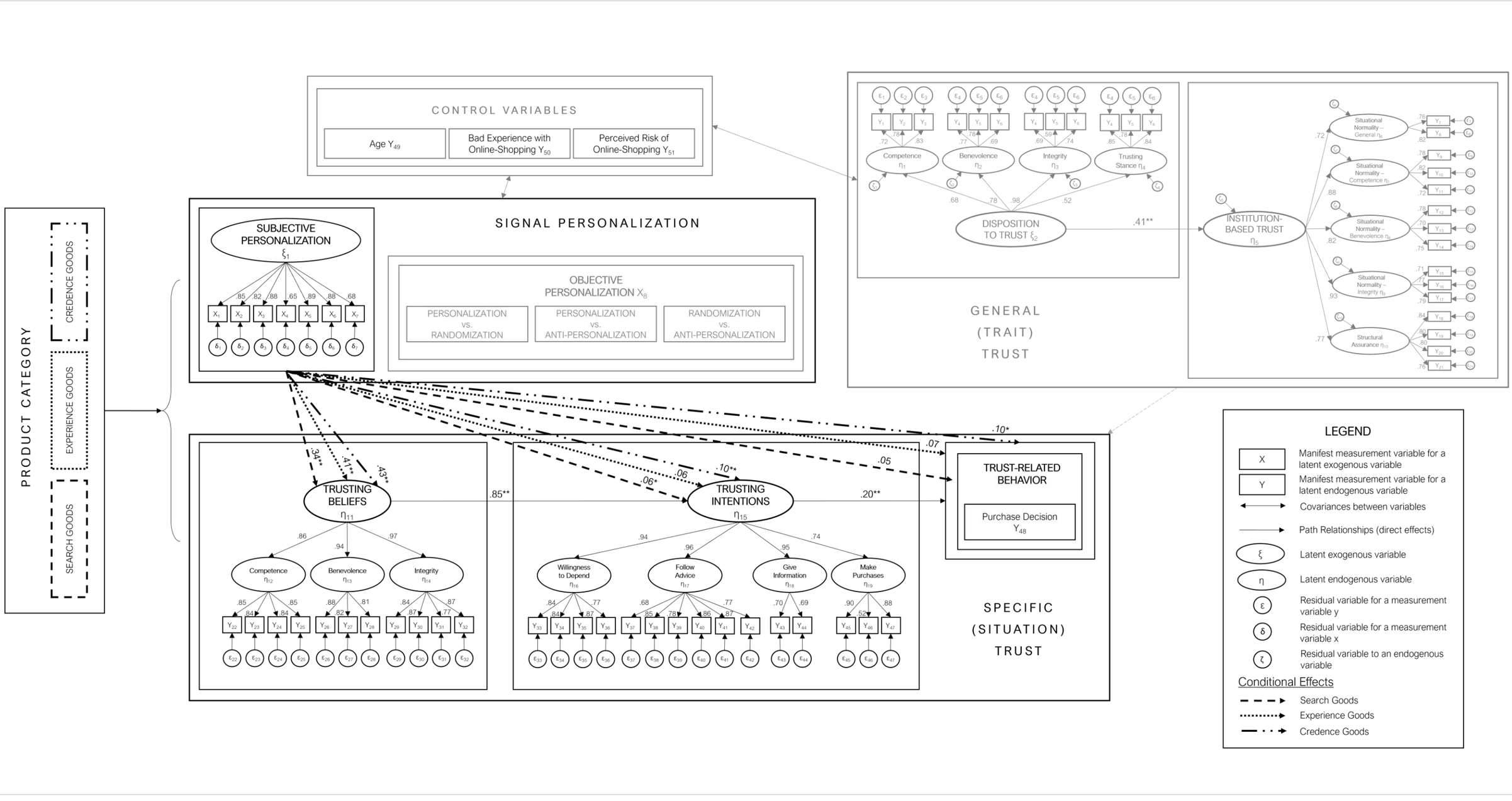


Figure 48. Results for the full structural model (H3).

4.2.2.4 Hypothesis 4: Personality-Moderated Effect of subj. Personalization on Trust

Hypothesis 4 aimed at testing the personality-moderated effects of subjective personalization on trusting beliefs (H 4.1), trusting intentions (H 4.2) and trust-related behavior (H 4.3). Since extraversion and neuroticism are the personality dimensions involving a special sensitivity to rewards/threats of the environment, it was hypothesized that the effect of subjective personalization is moderated by extraversion and neuroticism. In detail, it was assumed that the perception of self-relevant information as reflected in subjective personalization should be perceived as rather rewarding ("center of (social) attention") in higher levels of extraversion and rather threatening ("privacy invasion") in higher levels of neuroticism.

Hypothesis 4 was tested through a moderation analysis using IBM SPSS Amos with subjective personalization as independent variable, the Big Five personality dimensions as moderator variables and trusting beliefs/trusting intentions/trust-related behaviors as dependent variables.

Table 23 illustrates the results of the analysis for hypothesis 4 and model fit indices. The confirmatory results showed that, contrary to hypothesis 4.1, 4.2 and 4.3, the effect of subjective personalization on trusting beliefs, trusting intentions and trust-related behaviors was moderated neither through neuroticism nor through extraversion. Yet, as hypothesized, extraversion moderated the effect of subjective personalization on trust-related behavior. However, this result must be considered with caution since the critical Bonferroni-Holm corrected *p*-value for multiple comparisons was not reached (p_{crit} = .008).

Exploratory results for the other Big Five personality dimensions (agreeableness, openness to experience and conscientiousness) showed that none of them had a moderating role in the effect of subjective personalization on either trusting beliefs, trusting intentions or trust-related behavior. Accordingly, the results indicate that subjective personalization primarily influences trust directly without the involvement of personality-specific components. Figures 49 (Neuroticism) and 50 (Extraversion) illustrate the path diagram of the full structural model for hypothesis 4.

Table 23.

Structural model test results for hypothesis 4.1, 4.2, 4.3.

Relationships	*Standardized Estimates*	*95 % CI [lower, upper]*	*p-value*	*Hypothesis supported?*
H 4.1 Trusting Beliefs				
Personalization x Neuroticism → Trusting Beliefs	-.01	[-.06, .04]	.635	X
Personalization x Extraversion → Trusting Beliefs	.01	[-.04, .06]	.591	X
H 4.2 Trusting Intentions				
Personalization x Neuroticism → Trusting Intentions	-.01	[-.05, .02]	.407	X
Personalization x Extraversion → Trusting Intentions	.00	[-.03, .03]	.803	X
H 4.3 Trust-Related Behavior				
Personalization x Neuroticism → Trust Behavior	.03	[-.01, .08]	.179	X
Personalization x Extraversion → Trust Behavior	.06	[.01, .11]	.019	✓

Model Fit Statistics:

Extraversion: χ^2 = 21590.13, *df* = 3021, $p < .001$; CFI = .82; RMSEA = .06; SRMR = .06
Neuroticism: χ^2 = 20585.83, *df* = 3021, $p < .001$; CFI = .82; RMSEA = .06; SRMR = .06

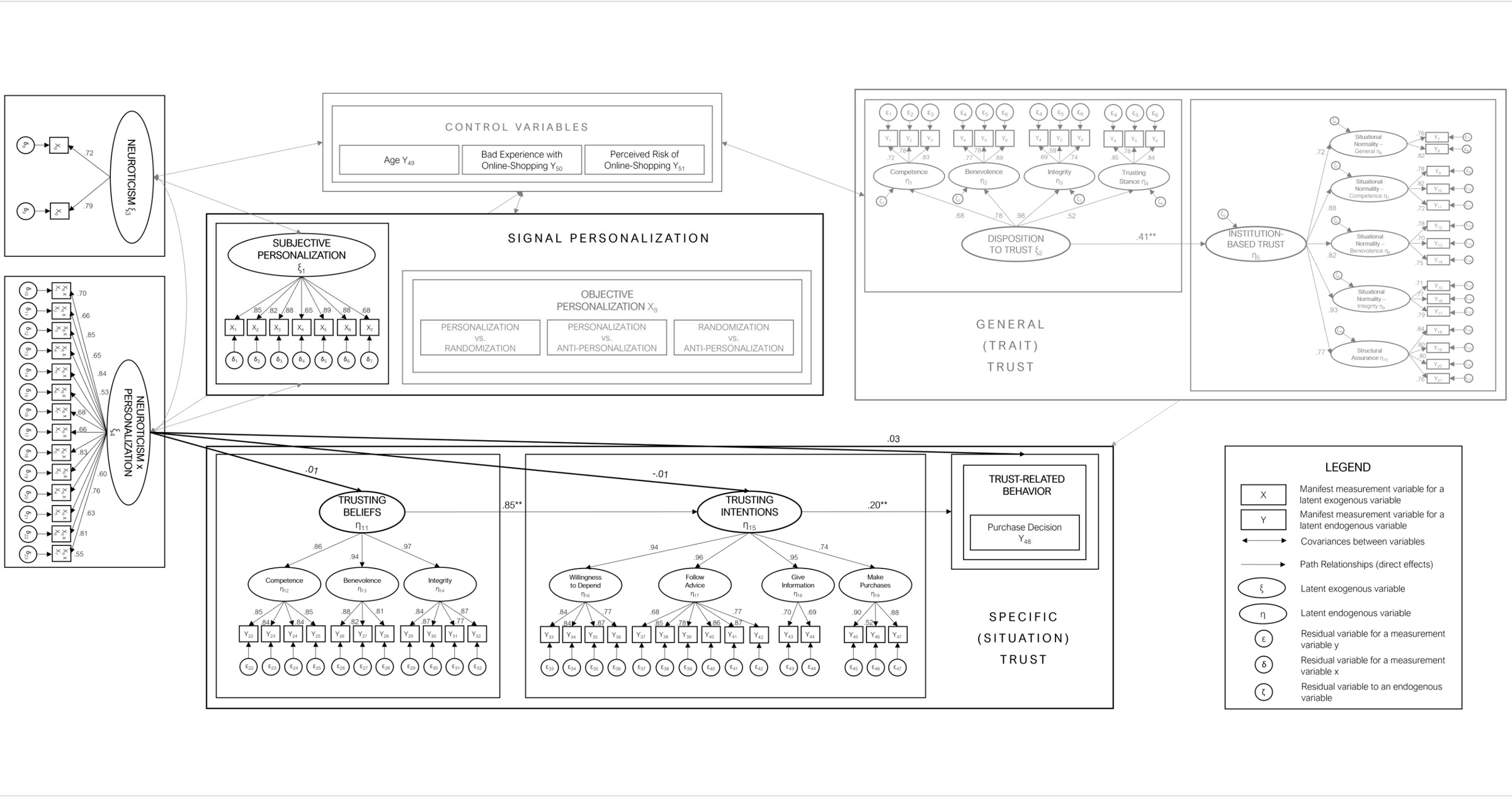


Figure 49. Results for the full structural model (H4 - Neuroticism).

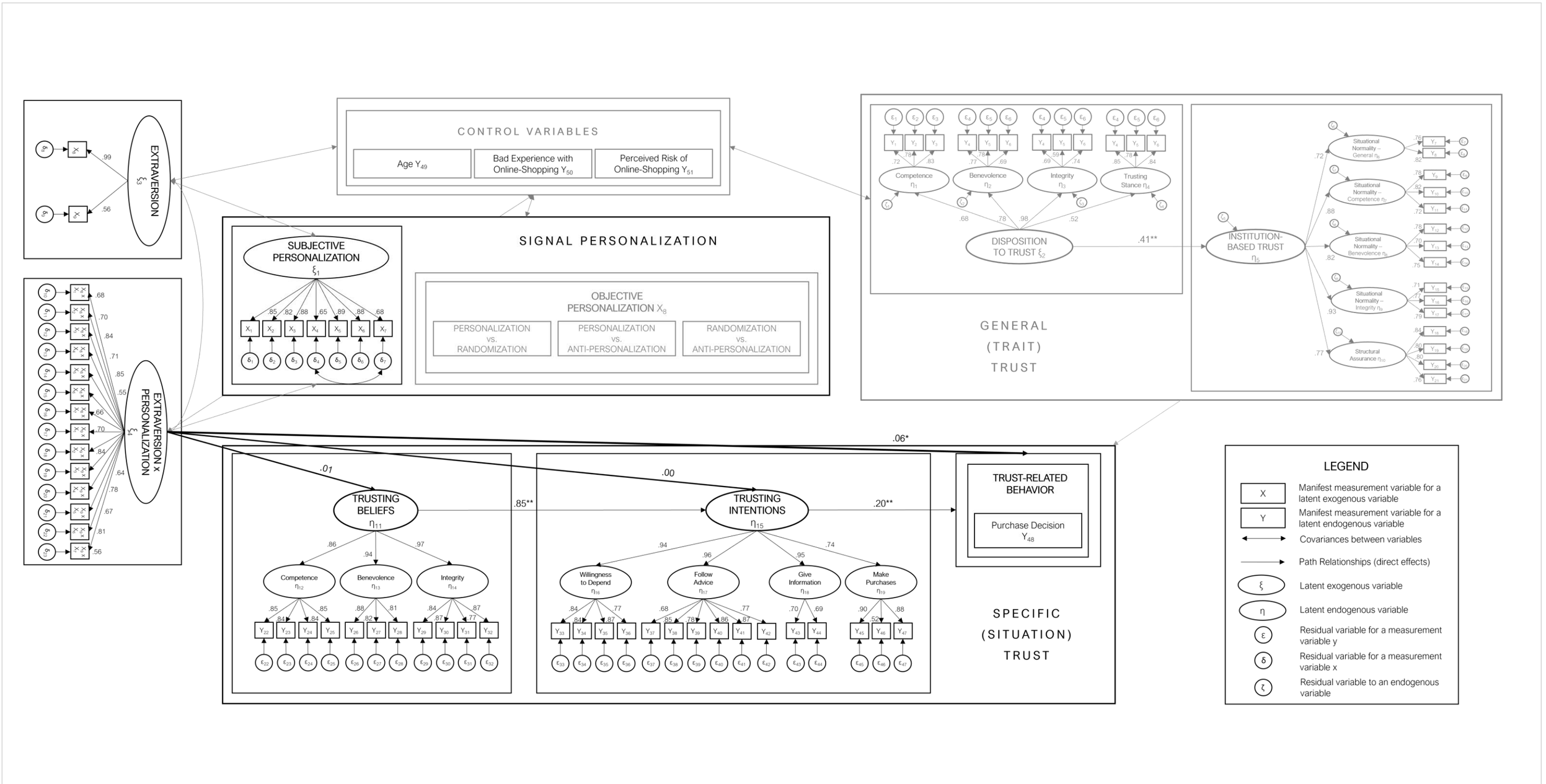


Figure 50. Results for the full structural model (H4 - Extraversion).

4.2.2.5 Hypothesis 5: Obj. Personalization-Moderated Personality Effects on Trust

Hypothesis 5 aimed at testing the personalization-moderated effects of personality on trusting beliefs (H 5.1), trusting intentions (H 5.2) and trust-related behavior (H 5.3). The high degree of information asymmetry in B2C e-commerce classifies it as trait-relevant situation for the expression of personality. Information asymmetry is, by theory, further amplified by an anti-personalized and mitigated by a personalized presentation of trust-enhancing signals. For this reason, it was assumed that the effect of personality on trust will depend on the degree of (objective) personalization. More specifically, the (negative) effect of neuroticism on trust was hypothesized to be larger in anti-personalization compared to randomization and the (positive) effect of agreeableness was expected to be larger in personalization compared to randomization. Hypothesis 5 was tested within a multigroup analysis with objective personalization (personalization, randomization and anti-personalization) as grouping variable in a structural equation model. Tables 24 - 26 illustrate the results for hypotheses 5.1, 5.2 and 5.3.

The results for neuroticism showed that, contrary to hypothesis 5.1.1, the effect of neuroticism on trusting beliefs was only present under a randomized signal presentation. As opposed to the literature-based assumption, this effect was positive. Unlike trusting beliefs, neuroticism had no effect on trusting intentions (5.2.1) or on trust-related behavior (5.3.1) in any of the presentation conditions. The results for agreeableness showed that the positive effect on trusting beliefs was only present under a personalized signal presentation. Yet, contrary to hypothesis 5.1.2, this effect was not larger under a personalized compared to a randomized signal presentation. Unlike trusting beliefs, agreeableness did neither affect trusting intentions (5.2.2) nor trust-related behavior (5.3.2) in any of the presentation conditions.

Exploratory results for the personality dimensions of openness and conscientiousness revealed a negative effect of openness on trusting beliefs as well as of conscientiousness on trust-related behavior, both under an anti-personalized signal presentation. In addition, openness exerted a positive effect on trusting intentions under an anti-personalized signal presentation. Figure 51 illustrates the path diagram of the full structural model for hypothesis 5. Figure 52 graphically summarizes the hypothesis-driven results.

Table 24.

Structural model test results for hypothesis 5.1.

Hypothesized Relationships	*Standardized Estimates*	*95 % CI [lower, upper]*	*p-value*
Neuroticism → Trusting Beliefs			
Personalization	.02	[-.07, .10]	.674
Randomization	.10	[.03, .18]	.009
Anti-Personalization	.04	[-.04, .12]	.347
Agreeableness → Trusting Beliefs			
Personalization	.11	[.02, .20]	.013
Randomization	.05	[-.03, .13]	.226
Anti-Personalization	.04	[-.05, .13]	.404
Conscientiousness → Trusting Beliefs			
Personalization	.04	[-.04, .12]	.336
Randomization	.05	[-.02, .12]	.187
Anti-Personalization	-.02	[-.10, .05]	.509
Extraversion → Trusting Beliefs			
Personalization	.04	[-.04, .12]	.281
Randomization	.01	[-.06, .09]	.727
Anti-Personalization	-.02	[-.09, .07]	.748
Openness → Trusting Beliefs			
Personalization	-.01	[-.10, .07]	.783
Randomization	.00	[-.08, .08]	.981
Anti-Personalization	-.11	[-.19, -.02]	.019

Constraint Multi-Group Analysis	*Group Differences [$\Delta\chi^2/df$]*	*p-value*	*Hypothesis supported*
5.1.1 N: Anti-Personalization vs. Randomization	1.40	.237	X
5.1.2 A: Personalization vs. Randomization	1.36	.244	X

Model Fit Statistics:

χ^2 = 12152.93, *df* = 6567, $p < .001$; CFI = .93; RMSEA = .02; SRMR = .07

Table 25.

Structural model test results for hypothesis 5.2.

Hypothesized Relationships	*Standardized Estimates*	*95 % CI [lower, upper]*	*p-value*
Neuroticism → Trusting Intentions			
Personalization	.04	[-.03, .10]	.257
Randomization	.00	[-.06, .06]	.963
Anti-Personalization	.00	[-.06, .06]	.996
Agreeableness → Trusting Intentions			
Personalization	.01	[-.05, .07]	.734
Randomization	.02	[-.04, .08]	.504
Anti-Personalization	.00	[-.06, .05]	.883
Conscientiousness → Trusting Intentions			
Personalization	-.01	[-.07, .05]	.703
Randomization	-.01	[-.06, .05]	.838
Anti-Personalization	-.02	[-.07, .03]	.459
Extraversion → Trusting Intentions			
Personalization	-.03	[-.09, .03]	.299
Randomization	-.05	[-.11, .01]	.086
Anti-Personalization	.00	[-.06, .05]	.851
Openness → Trusting Intentions			
Personalization	.05	[.00, .11]	.068
Randomization	.03	[-.02, .09]	.259
Anti-Personalization	.06	[.01, .11]	.015

Constraint Multi-Group Analysis	*Group Differences [$\Delta\chi^2/df$]*	*p-value*	*Hypothesis supported*
5.2.1 N: Anti-Personalization vs. Randomization	.01	.929	X
5.2.2 A: Personalization vs. Randomization	.06	.806	X

Model Fit Statistics:

χ^2 = 12152.93, *df* = 6567, $p < .001$; CFI = .93; RMSEA = .02; SRMR = .07

Table 26.

Structural model test results for hypothesis 5.3.

Hypothesized Relationships	*Standardized Estimates*	*95 % CI [lower, upper]*	*p-value*
Neuroticism → Trusting Behaviors			
Personalization	-.03	[-.12, .06]	.488
Randomization	-.03	[-.12, .06]	.536
Anti-Personalization	-.09	[-.18, .00]	.056
Agreeableness → Trusting Behaviors			
Personalization	-.04	[-.11, .06]	.494
Randomization	-.01	[-.10, .08]	.890
Anti-Personalization	-.04	[-.14, .05]	.324
Conscientiousness → Trusting Behaviors			
Personalization	-.04	[-.12, .04]	.352
Randomization	-.05	[-.13, .03]	.231
Anti-Personalization	-.11	[-.19, -.03]	.006
Extraversion → Trusting Behaviors			
Personalization	-.04	[-.13, .05]	.358
Randomization	-.06	[-.15, .02]	.186
Anti-Personalization	-.02	[-.11, .07]	.683
Openness → Trusting Behaviors			
Personalization	-.02	[-.11, .06]	.568
Randomization	.03	[-.05, .12]	.454
Anti-Personalization	.00	[-.09, .09]	.944

Constraint Multi-Group Analysis	*Group Differences [$\Delta\chi^2/df$]*	*p-value*	*Hypothesis supported*
5.3.1 N: Anti-Personalization vs. Randomization	.76	.384	X
5.3.2 A: Personalization vs. Randomization	.22	.639	X

Model Fit Statistics:

χ^2 = 12152.93, *df* = 6567, $p < .001$; CFI = .93; RMSEA = .02; SRMR = .07

Table 27 illustrates the exploratory results for the personality effects across all three signal-presentation conditions. Both agreeableness and (to a lesser extent) neuroticism exert a positive effect on trusting beliefs. Openness to experience exerts a positive effect on trusting intentions and conscientiousness negatively influences trust-related behavior.

Table 27.

Structural model test results for personality (independent of signal presentation).

Structural Relationships	*Standardized Estimates*	*95 % CI [lower, upper]*	*p-value*
Personality → Trusting Beliefs			
Neuroticism	.05	[.00, .10]	.040
Agreeableness	.08	[.03, .12]	.002
Conscientiousness	.02	[-.02, .06]	.401
Extraversion	.01	[-.03, .06]	.591
Openness to Experience	-.04	[-.09, .01]	.095
Personality → Trusting Intentions			
Neuroticism	.01	[-.02, .05]	.441
Agreeableness	.01	[-.03, .04]	.672
Conscientiousness	-.01	[-.04, .02]	.528
Extraversion	-.03	[-.06, .00]	.085
Openness to Experience	.05	[.02, .08]	.001
Personality → Trusting Behavior			
Neuroticism	-.05	[-.10, .01]	.090
Agreeableness	-.03	[-.08, .02]	.294
Conscientiousness	-.07	[-.11, -.02]	.003
Extraversion	-.04	[-.09, .01]	.113
Openness to Experience	.01	[-.04, .06]	.743
Model Fit Statistics:			
χ^2 = 9562.80, *df* = 2348, $p < .001$; CFI = .91; RMSEA = .04; SRMR = .07			

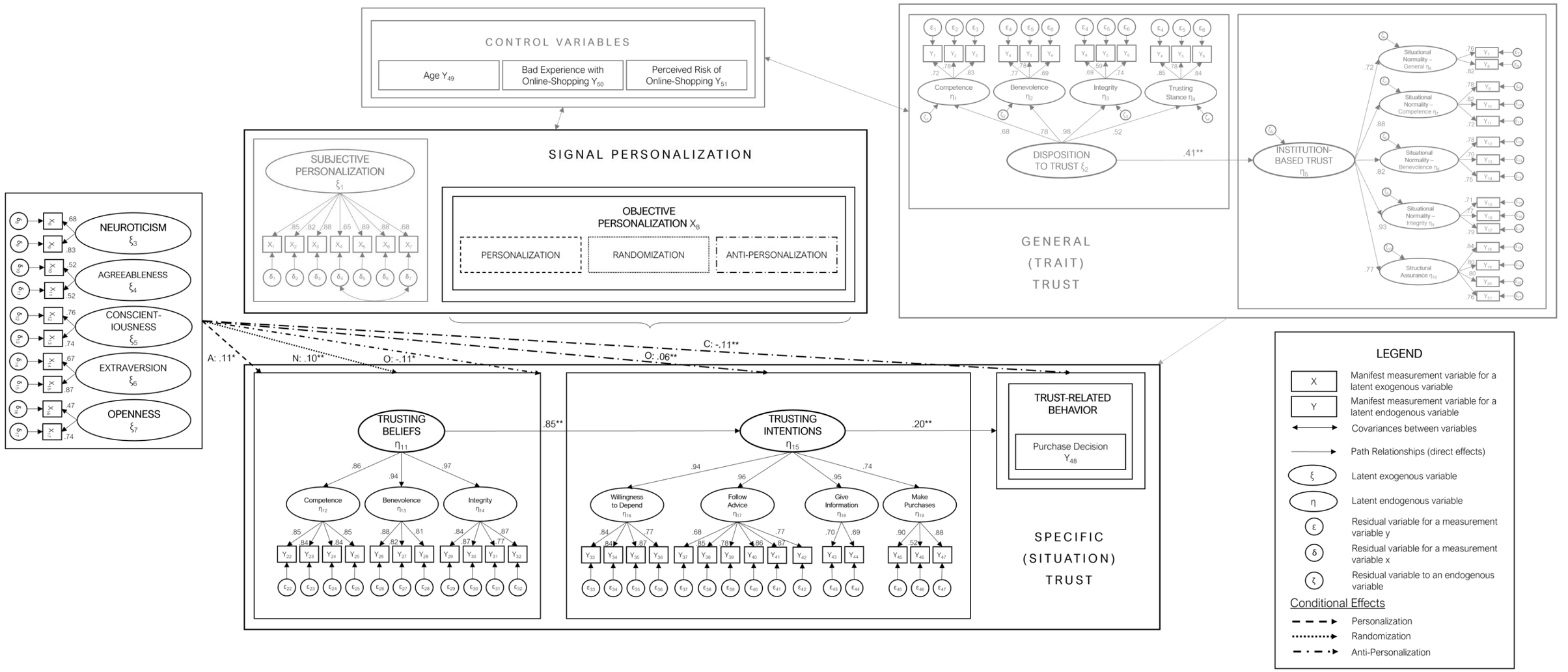


Figure 51. Results for the full structural model (H5).

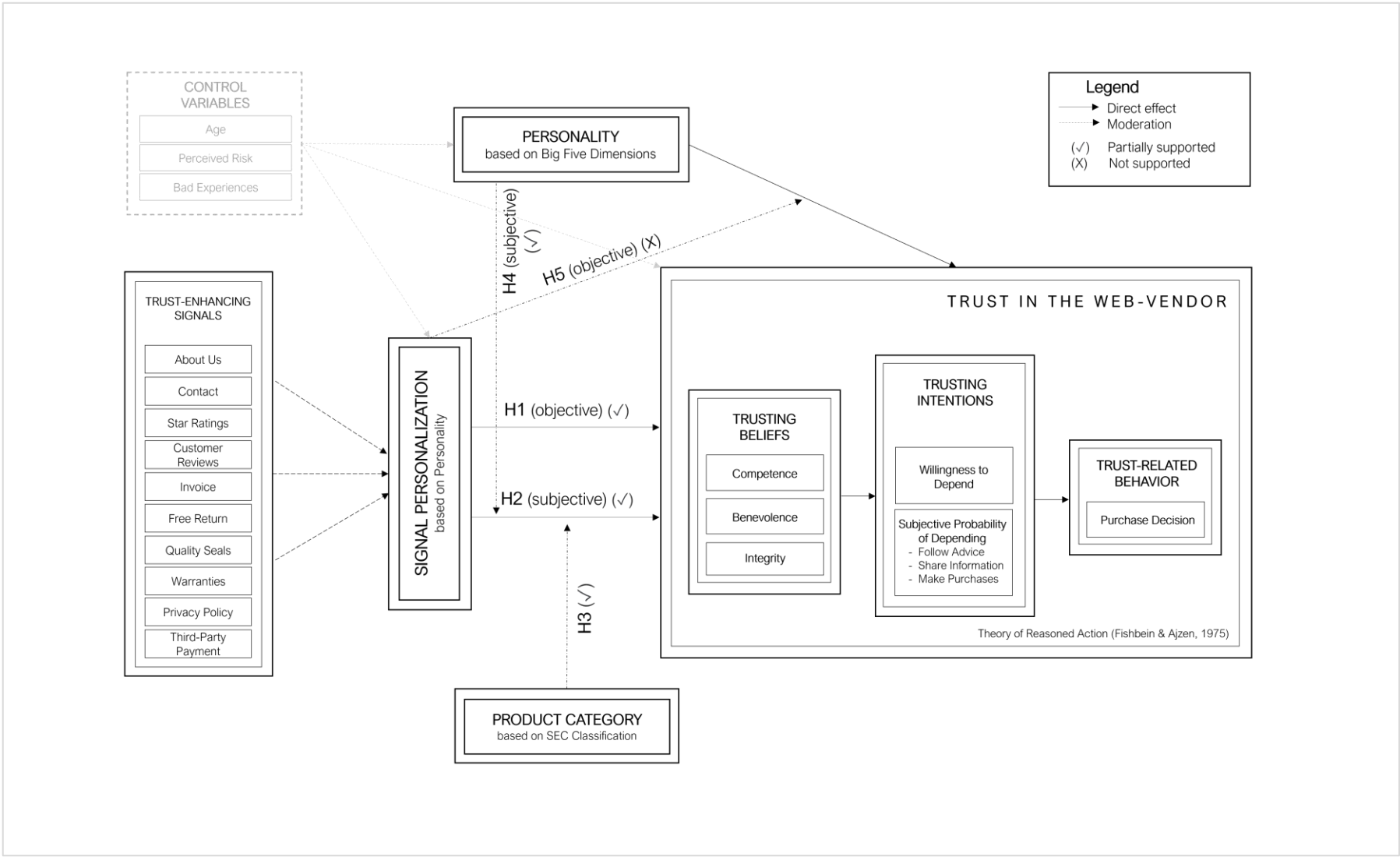


Figure 52. Summary of confirmatory results.

4.2.3 Explorative Analyses

With the goal of investigating interesting and novel relationships for which the limited literature base does not allow the formulation of stable hypotheses, the following analyses on the association of personality, information processing and trust in the specific context of B2C e-commerce were based on an exploratory approach without a priori formulated hypotheses.

Personality Effects on User Behavior

The first explorative (non-hypothesis-driven) analysis covered the effect of personality on different forms of user behavior (shopping cart value, shopping cart volume, visit time, page visits, trigger clicks and trigger hover movements), depending on the signal presentation condition (personalization vs. randomization vs. anti-personalization). Table 28 demonstrates the effects of personality on each form of user behavior. Due to the large number of paths involved, the table displays only the significant effects of personality on user behavior.

Results for *shopping cart value* showed a negative effect of neuroticism on shopping cart value under a randomized and an anti-personalized signal presentation, suggesting that individuals with higher neuroticism scores tend to have lower shopping cart values when exposed to randomized and anti-personalized signals. In addition, the analysis revealed a negative effect of agreeableness on shopping cart value under randomization. This implies that individuals with higher levels of agreeableness, when exposed to randomly presented trust-enhancing signals, tend to have lower shopping cart values. Furthermore, the results revealed a negative relationship between extraversion and shopping cart value under anti-personalization, suggesting that individuals with higher levels of extraversion tend to have lower shopping cart values, when presented with anti-personalized trust-enhancing signals.

For the *visit time* of the online shop under the three different signal presentation conditions, the results demonstrated a positive effect of neuroticism on visit time under

personalization, suggesting that individuals with higher levels of neuroticism tend to spend more time on the website when presented with personalized trust-enhancing signals.

For the number of *page visits*, the results revealed a negative effect of openness to experience on page visits under anti-personalization, indicating that individuals with higher levels of openness to experience tend to have fewer page visits when presented with anti-personalized trust-enhancing signals. Besides, the results showed a negative effect of extraversion on page visits under randomization. This implies that individuals with higher levels of extraversion tend to have fewer page visits when presented with randomly presented trust-enhancing signals.

Concerning *clicks* on trust-enhancing signals, the analysis revealed a negative effect of both extraversion and openness to experience on trigger clicks under anti-personalization. This suggests that individuals with higher levels of extraversion and openness to experience tend to engage in fewer trigger clicks when exposed to an anti-personalized signal presentation.

For *hover movements* over trust-enhancing signals, results revealed a positive effect of neuroticism on trigger hover movements under both personalization and randomization and a negative effect under anti-personalization. This suggests that individuals with higher levels of neuroticism tend to engage in more trigger hovering when presented with personalized and randomized signals and in less trigger hovering when confronted with an anti-personalized signal presentation. Furthermore, the results indicated a negative effect of extraversion, conscientiousness and openness to experience and a positive effect of agreeableness on hover movements under an anti-personalized signal presentation.

The analysis did not reveal any significant effects of personality traits on *shopping cart volume* across the three signal presentation methods (personalization, randomization, and anti-personalization). This suggests that the individuals' personality traits, including neuroticism, agreeableness, extraversion, conscientiousness, and openness to experience, did not have a noticeable impact on the volume of items added to the shopping cart, independent of the signal presentation.

Table 28.

Personality effects on user behavior.

Structural Relationships	*Standardized Estimates*	*95 % CI [lower, upper]*	*p-value*
Personality → Shopping Cart Value			
Neuroticism (Randomization)	-.09	[-.15, -.01]	.027
Neuroticism (Anti-Personalization)	-.08	[-.16, -.00]	.046
Agreeableness (Randomization)	-.12	[-.21, -.01]	.035
Extraversion (Anti-Personalization)	-.15	[-.24, -.06]	.001
Personality → Visit Time			
Neuroticism (Personalization)	.13	[.05, .22]	.004
Personality → Page Visits			
Openness (Anti-Personalization)	-.08	[-.17, -.00]	.038
Extraversion (Randomization)	-.11	[-.21, -.02]	.017
Personality → Trigger Clicks			
Extraversion (Anti-Personalization)	-.12	[-.20, -.03]	.002
Openness to Experience (Anti-Personalization)	-.29	[-.38, .20]	.001
Personality → Trigger Hover			
Neuroticism (Personalization)	.10	[.01, .19]	.025
Neuroticism (Randomization)	.11	[.01, .20]	.026
Neuroticism (Anti-Personalization)	-.09	[-.18, -.00]	.047
Extraversion (Anti-Personalization)	-.13	[-.20, -.06]	.001
Agreeableness (Anti-Personalization)	.11	[.04, .19]	.004
Conscientiousness (Anti-Personalization)	-.15	[-.23, -.07]	.001
Openness to Experience (Anti-Personalization)	-.35	[-.42, -.27]	.001

Model Fit Statistics:

Shopping Cart Value: χ^2 = 12230.73, *df* = 6567, $p < .001$; CFI = .92; RMSEA = .02; SRMR = .07

Visit Time: χ^2 = 12091.52, *df* = 6567, $p < .001$; CFI = .93; RMSEA = .02; SRMR = .07

Page Visits: χ^2 = 12085.68, *df* = 6567, $p < .001$; CFI = .92; RMSEA = .02; SRMR = .07

Trigger Clicks: χ^2 = 12034.63, *df* = 6567, $p < .001$; CFI = .93; RMSEA = .02; SRMR = .07

Trigger Hover: χ^2 = 12054.30, *df* = 6567, $p < .001$; CFI = .93; RMSEA = .02; SRMR = .07

Trust-Enhancing Signal Effects on Trust

In the context of the explorative (non-hypothesis-driven) analyses, the effects of individual signals on trusting beliefs and intentions were examined as a function of their presentation (signal present vs. signal absent). These analyses covered only the five personality-associated (non-baseline) trust-enhancing signals (contact, about us, invoice, free return, quality seals).

The results for trusting beliefs demonstrated that perceived *benevolence* was significantly higher when about us information was present (M = 4.23, SD = 1.02) compared to when it was absent (M = 3.89, SD = .97) [$t(1738)$= 7.02, p < .001, d = .35]. Further, benevolence was rated significantly higher when the option to purchase on invoice was present (M = 4.28, SD = .96) compared to when it was absent (M = 3.89, SD = 1) [$t(1738)$= 7.73, p < .001, d = .39]. Additionally, benevolence was higher in the presence of quality seals (M = 4.30, SD = .97) compared to their absence (M = 3.85, SD = .98) [$t(1738)$= 9.12, p < .001, d = .45].

Perceived *integrity* was significantly higher when direct contact channels were present (M = 4.38, SD = 1.01) compared to when they were absent (M = 4.19, SD = 1.03) [$t(1738)$= 3.54, p < .001, d = .18]. Furthermore, like benevolence, perceived integrity was evaluated to be significantly higher in the presence of about us information (M = 4.39, SD = 1.01) compared to their absence (M = 4.27, SD = 1.02) [$t(1738)$= 2.37, p = .016, d = .12]. Besides, the presence of the option to purchase on invoice (M = 4.42, SD = .95) yielded higher integrity ratings than their absence (M = 4.26, SD = 1.05) [$t(1738)$= 3.22, p < .001, d = .16]. Finally, perceived integrity was evaluated significantly higher when quality seals were present (M = 4.44, SD = .96) compared to when they were absent (M = 4.24, SD = 1.05) [$t(1738)$= 3.91, p < .001, d = .19]. *Competence* ratings were not significantly higher under the presence of trust-enhancing signals compared to their absence. However, in contrast to expectations, competence ratings were higher when a free return option was absent (M = 4.34, SD = 1.02) compared to their presence (M = 4.23, SD = 1.09) [$t(1738)$= -2.18, p = .029, d = -.11]. Figure 53 illustrates the results.

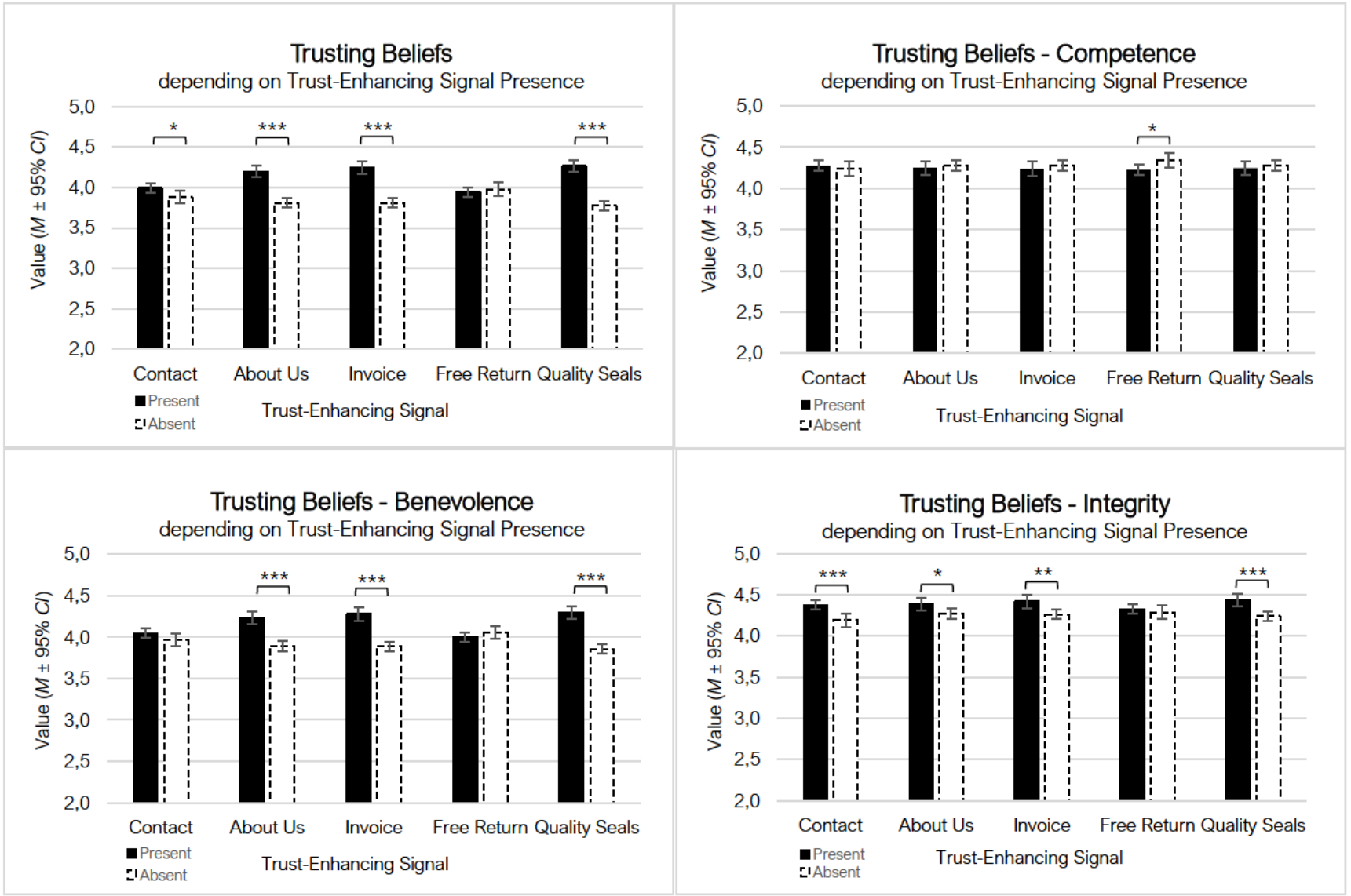


Figure 53. Trust-enhancing signal effects on trusting beliefs.

RESULTS

The results for trusting intentions demonstrated that the intention to *make purchases* was significantly higher when a direct contact channel was present (M = 4.11, SD = 1.52) compared to when it was absent (M = 3.89, SD = 1.48) [t(1738)= 2.87, p = .006, d = .15]. Further, intention to make purchases was rated significantly higher when quality seals were present (M = 4.13, SD = 1.46) compared to when they were absent (M = 3.98, SD = 1.53) [t(1738)= 2.04, p = .038, d = .10].

The *willingness to depend* was significantly higher in the presence of about us information (M = 4.29, SD = 1.15) compared to when it was absent (M = 4.06, SD = 1.17) [t(1738)= 3.93, p < .001, d = .19]. Besides, willingness to depend was evaluated to be significantly higher in the presence of the option to purchase on invoice (M = 4.33, SD = 1.13) compared to the absence (M = 4.06, SD = 1.18) [t(1738)= 4.59, p < .001, d = .23]. Finally, the presence of quality seals (M = 4.35, SD = 1.13) yielded higher ratings of willingness to depend than their absence (M = 4.03, SD = 1.18) [t(1738)= 5.63, p < .001, d = .28].

The Intention to *follow advice* was significantly higher when about us information was present (M = 4.47, SD = 1.18) compared to when it was absent (M = 4.34, SD = 1.24) [t(1738)= 2.26, p = .024, d = .11]. Besides, intention to follow advice was evaluated to be significantly higher in the presence of the option to purchase on invoice (M = 4.54, SD = 1.16) compared to its absence (M = 4.32, SD = 1.24) [t(1738)= 3.66, p < .001, d = .18]. A presence of quality seals (M = 4.55, SD = 1.16) further yielded higher follow advice ratings than their absence (M = 4.29, SD = 1.24) [t(1738)= 4.40, p < .001, d = .21].

The Intention to *give information* was significantly higher when about us information was present (M = 4.13, SD = 1.07) compared to when it was absent (M = 3.81, SD = 1.05) [t(1738)= 6.20, p < .001, d = .31]. Furthermore, the intention to give information was evaluated to be significantly higher in the presence of the option to purchase on invoice (M = 4.19, SD = 1.04) compared to the absence (M = 3.80, SD = 1.06) [t(1738)= 7.20, p < .001, d = .37]. Finally, the presence of quality seals (M = 4.21, SD = 1.04) yielded higher ratings of the intention to give information than their absence (M = 3.76, SD = 1.06) [t(1738)= 8.53, p < .001, d = .42]. Figure 54 illustrates the results.

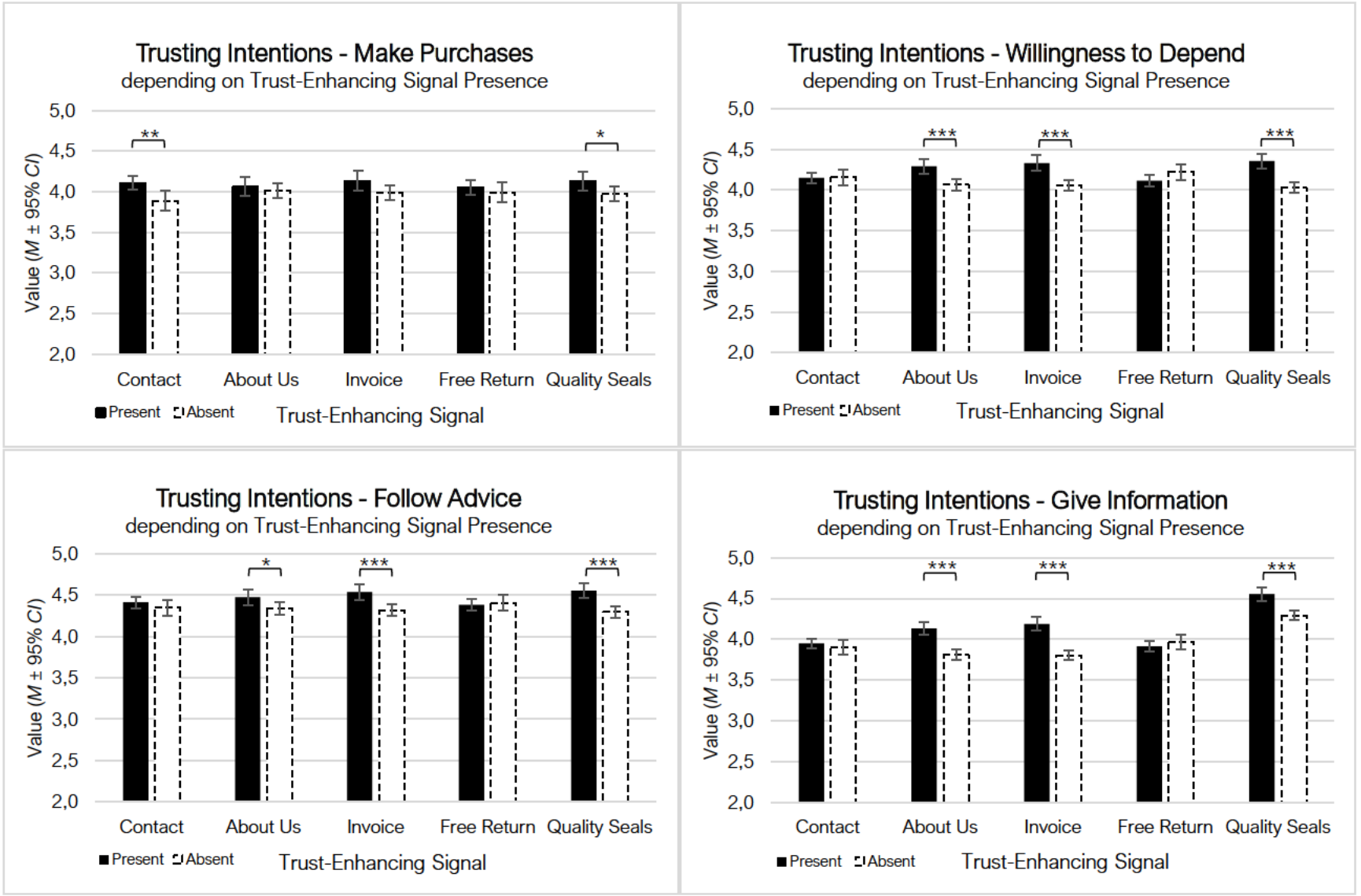


Figure 54. Trust-enhancing signal effects on trusting intentions.

Personality-Moderated Signal Effects on Trust

Aiming to investigate whether the association between the personality dimensions and the preference for trust-enhancing signals also finds a reflection in a differentially weighted signal effectiveness for the process of trust building, a moderation analysis using the PROCESS macro (Hayes, 2017) was run to determine whether the interaction between the perception of the trust-enhancing signal (*IVs*) and Big Five personality dimension (*MVs*) significantly predicts trusting beliefs and trusting intentions (*DVs*).

Results for trusting beliefs show that *extraversion* moderates the effect between the perception of *contact options* and trusting beliefs significantly, ΔR^2 = .33 %, F (1, 1736) = 7.46, p = .006, 95 % *CI* [.01, .05]. *Openness to experience* moderates the effect between the perception of *about us* information and trusting beliefs significantly, ΔR^2 = .53 %, F (1, 1736) = 11.27, p < .001, 95 % *CI* [.02, .06]. Further, *agreeableness* moderates the effect between the perception of *quality seals* and trusting beliefs, ΔR^2 = .20 %, F (1, 1736) = 4.51, p = .034, 95 % *CI* [.01, .04]. Finally, *conscientiousness* moderates the effect between the perception of the option to purchase on *invoice* and trusting beliefs, ΔR^2 = .23 %, F (1, 1736) = 4.44, p = .035, 95 % *CI* [.01, .04]. Contrary to expectations, *neuroticism* did not moderate the effect between the perception of *free return* options and trusting beliefs, ΔR^2 = .02 %, F (1, 1736) = .43, p = .512, 95 % *CI* [-.03, .01].

Results for trusting intentions showed that *openness* to experience moderates the effect between the perception of *about us* information and trusting intentions, ΔR^2 = .23 %, F (1, 1736) = 4.69, p = .030, 95 % *CI* [.01, .05]. However, other than openness, the other Big Five personality dimensions did not moderate the effect between the respective signal and trusting intentions (extraversion and contact options: ΔR^2 = .10 %, F (1, 1736) = 2.15, p = .143, 95 % *CI* [-.01, .04]; neuroticism and free return options: ΔR^2 = .15 %, F (1, 1736) = 3.06, p = .080, 95 % *CI* [-.05, .00]; agreeableness and quality seals: ΔR^2 = .13 %, F (1, 1736) = 2.84, p = .092, 95 % *CI* [-.01, .04]; conscientiousness and invoice: ΔR^2 = 0 %, F (1, 1736) = .06, p = .809, 95 % *CI* [-.02, .03]). Figure 55 displays the Johnson-Neyman plots for the conditional effects of the trust-enhancing signals on trusting beliefs, Figure 56 the effects on trusting intentions.

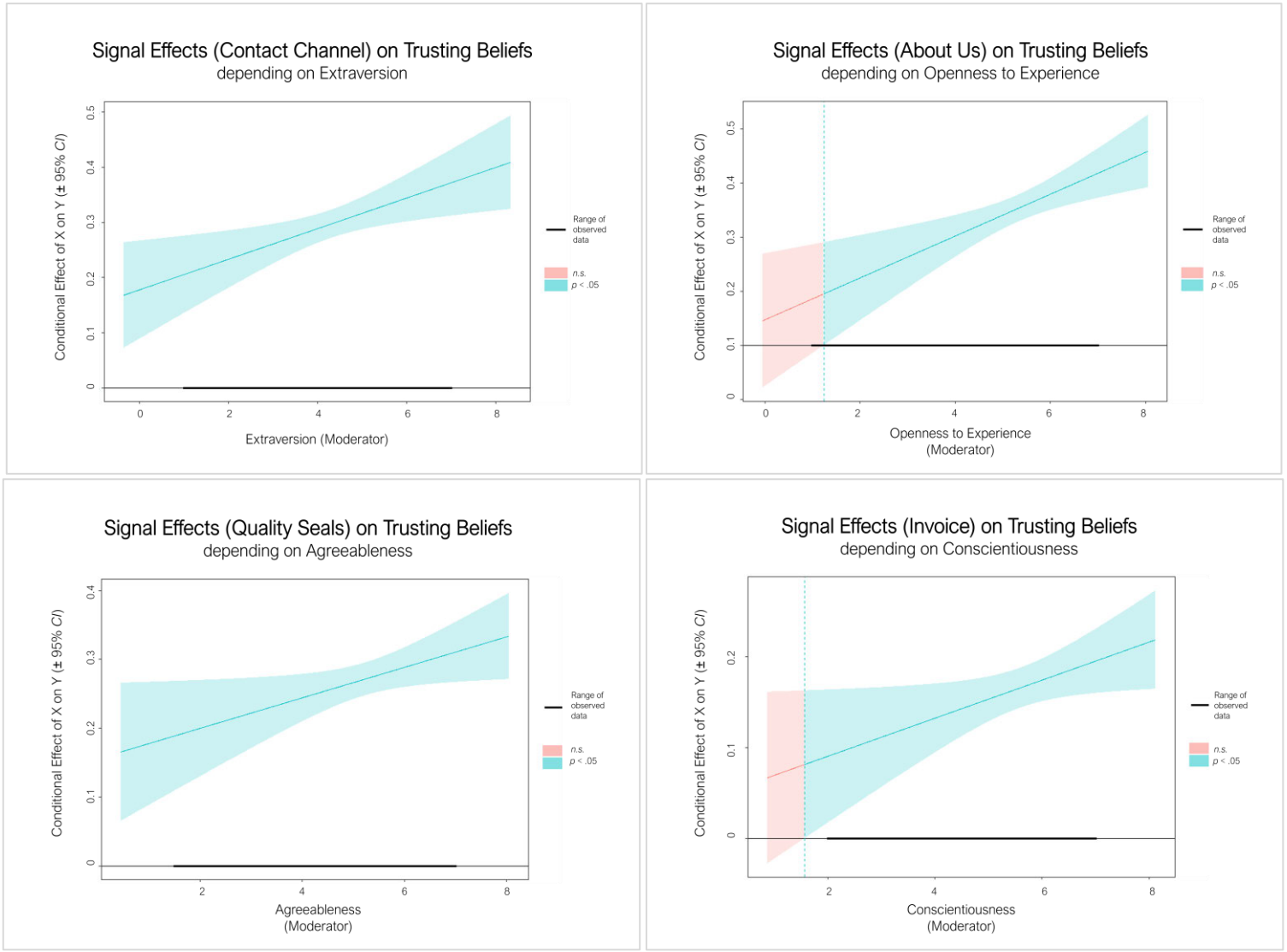


Figure 55. Conditional trust-enhancing signal effects on trusting beliefs.

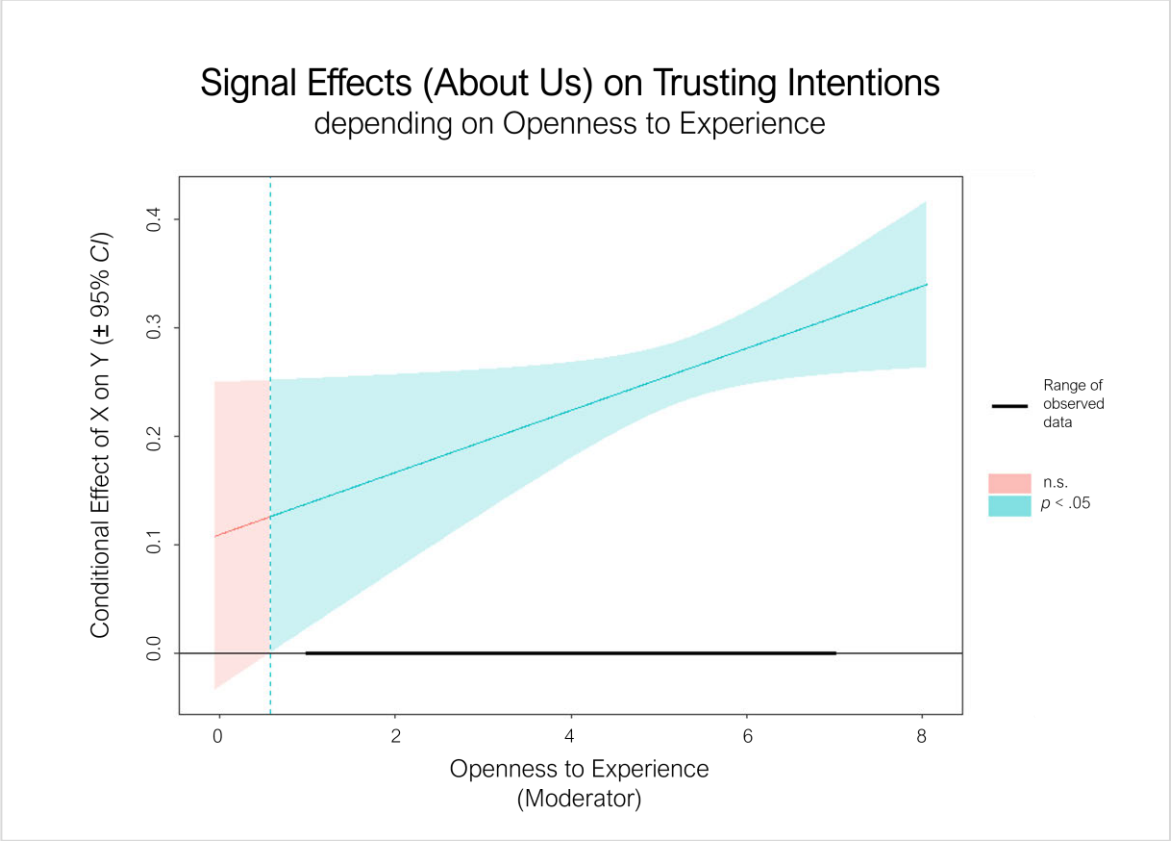


Figure 56. Conditional trust-enhancing signal effects on trusting intentions.

The Johnson-Neyman plots illustrate that with increasing expression on the respective personality dimension, the strength of the signal effect also increases. While the signal effect for agreeableness and extraversion is present along the entire value range, the signal effect for openness to experience begins at a value of 1.24 (.17 % of values below, 99.83 % above).

However, despite not reaching the threshold for statistical significance of moderation, the results for neuroticism demonstrated a particularly accentuated effect of free return signals on trusting intentions in the range of a low to medium expression of neuroticism [value 2: b = .30, t (1738) = 13.43, p < .001; value 3: b = .27, t (1738) = 16.35, p < .001, value 4.5: b = .24, t (1738) = 9.79, p < .001].

In the same way, results for agreeableness demonstrated a particularly emphasized effect of quality seals on trusting intentions in the range of a medium to high expression of agreeableness [value 4: b = .26, t(1738) = 12.93, p < .001; value 5.5: b = .29, t(1738) = 20.23, p < .001, value 6.5: b = .31, t(1738) = 14.94, p < .001].

Conditional Effects on Behavioral Measures

Given the ambiguous interpretation options of the differential behavioral measures, the main and interaction effects of *signal presentation* (personalization vs. randomization vs. anti-personalization) and *product category* (search vs. experience vs. credence goods) on the *behavioral measures* (shopping cart value, shopping cart volume, visit time, page visits, trigger clicks and trigger hover movements) were investigated within a two-factorial, multivariate analysis of variance (MANOVA).

Results showed a significant main effect of product category on shopping cart value (F (2, 1731) = 105.19, $p < .001$, $\eta^2 = .108$) and page visits (F (2, 1731) = 6.53, $p < .001$, $\eta^2 = .007$). Post-Hoc t-tests revealed significantly higher shopping cart values and lower page visits under search goods (cart value: $M = 366.06$, $SD = 735.19$; page visits: $M = 8.62$, $SD = 4.92$) than under experience goods (cart value: $M = 69.82$, $SD = 101.17$; page visits: $M = 9.73$, $SD = 5.93$) [cart value: $t(1158) = 9.61$, $p < .001$, $d = .57$; page visits: $t(1158) = -3.46$, $p < .001$, $d = -.20$] and in terms of cart value under credence goods ($M = 29.56$, $SD = 55.24$) [$t(1158) = 10.99$, $p < .001$, $d = .05$].

Further, results demonstrated a significant main effect of signal presentation on trigger clicks (F (2, 1731) = 12.28, $p < .001$, $\eta^2 = .014$) and trigger hover movements (F (2, 1731) = 52.62, $p < .001$, $\eta^2 = .057$). Post-Hoc t-tests revealed significantly more trigger clicks and trigger hover movements under personalization (clicks: $M = 2.79$, $SD = 3.24$; hover: $M = 20.28$, $SD = 19.09$) than under randomization (clicks: $M = 2.20$, $SD = 3.52$; hover: $M = 14.35$, $SD = 16.02$) [clicks: $t(1158) = 2.99$, $p = .003$, $d = .18$; hover: $t(1158) = 5.73$, $p < .001$, $d = .34$] and under anti-personalization (clicks: $M = 1.92$, $SD = 2.32$; hover: $M = 10.63$, $SD = 12.75$) [clicks: $t(1158) = 5.29$, $p < .001$, $d = .31$; hover: $t(1158) = 10.13$, $p < .001$, $d = .60$]. Figure 57 graphically illustrates the results.

Finally, results revealed an interaction effect of signal presentation and product category on shopping cart value (F (4, 1731) = 3.14, $p = .014$, $\eta^2 = .007$). Post-Hoc analyses showed that while the shopping cart value in experience and credence goods is rather uninfluenced by signal presentation, in search goods, it is significantly higher under randomization than under both personalization and anti-personalization.

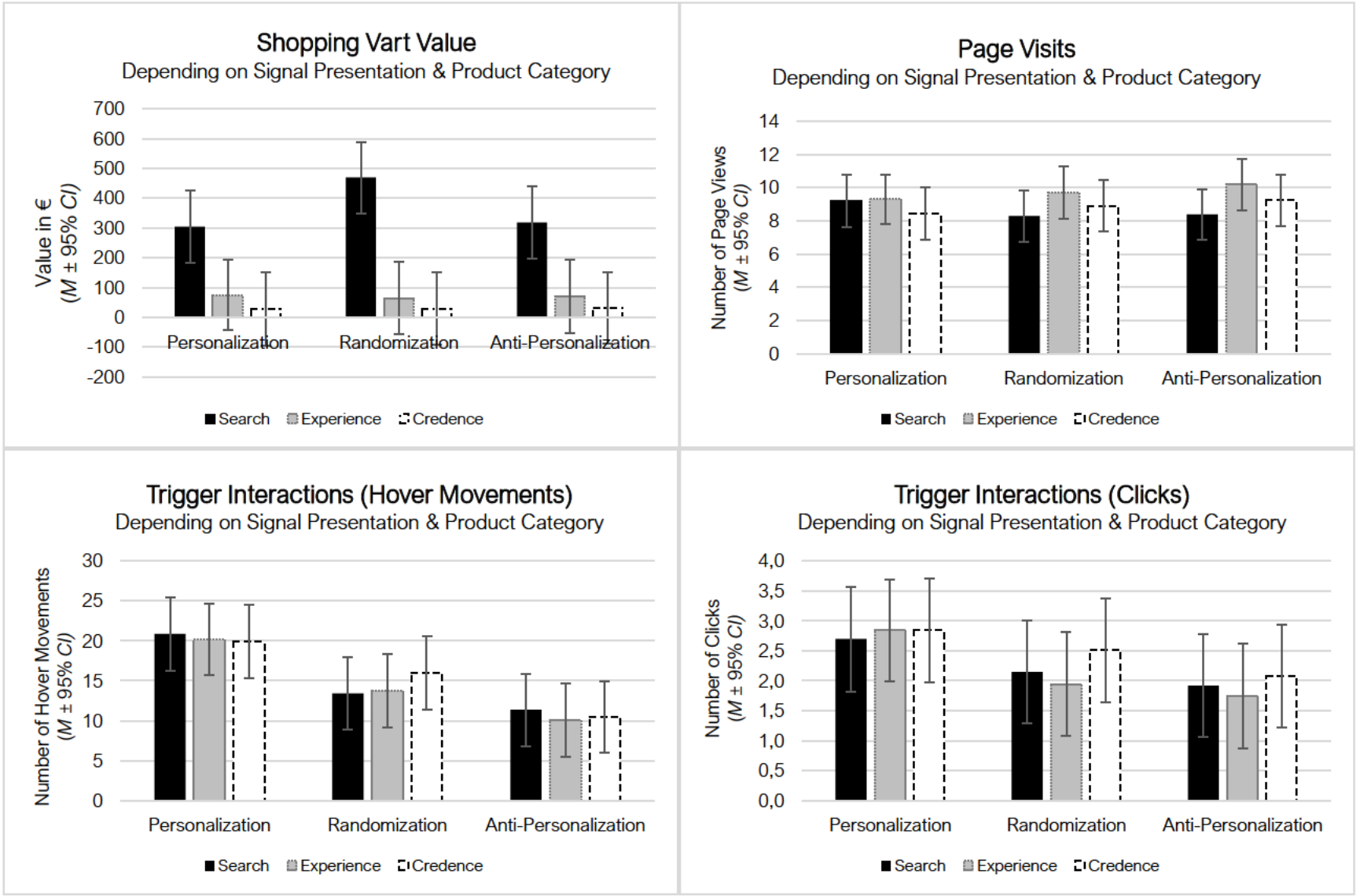


Figure 57. Behavioral measures by signal presentation and product category.

Predictive Power of Behavioral and Cognitive Trust Measures

A binomial logistic regression was performed to determine the predictive power of behavioral measures (shopping cart value, shopping cart volume, visit time, page visits, trigger clicks and trigger hover movements) for the likelihood of making a purchase decision. The binomial logistic regression model was statistically significant, χ^2 (6) = 364.54, $p < .001$; Nagelkerke's $R^2 = .266$. Overall percentage of accuracy in classification was 75.5 %, with a sensitivity of 82.9 % and a specificity of 55.8 %. Of the six behavioral measures entered into the regression model, two contributed significantly in predicting the purchase decision: shopping cart volume and page visits, while the other variables (shopping cart value, visit time, trigger clicks and trigger hover movements) showed no significant effect. Table 29 illustrates the results for the binomial logistic regression for the behavioral measures.

Table 29.

Results of the binomial logistic regression for behavioral measures.

	Regression Coefficient B	*95 % CI [lower, upper]*	*p-value*
Shopping Cart Value	.00	[.00, .00]	.053
Shopping Cart Volume	1.40	[.86, 1.95]	<.001
Visit Time	.00	[.00, .00]	.916
Page Visits	-.04	[-.07, -.01]	.006
Trigger Clicks	.01	[-.04, .05]	.752
Trigger Hover	.00	[-.02, .01]	.700

	Predicted Group Membership		
	No Purchase	*Purchase*	*Total*
Actual No Purchase	302	239	541
Actual Purchase	205	994	1199
Total	507	1233	1740

Note. Percentage correctly predicted = 75.5 %.

A second binomial logistic regression was performed to determine the predictive power of cognitive measures (trusting beliefs: competence, benevolence, integrity and trusting intentions: willingness to depend, follow advice, give information, make purchases) for the likelihood of making a purchase decision. The binomial logistic regression model was statistically significant, χ^2 (7) = 181.96, p < .001; Nagelkerke's R^2 = .140. Overall percentage of accuracy in classification was 69.2 %, with a sensitivity of 89.5 % and a specificity of 24.2 %. Of the six behavioral measures entered into the regression model, only the intention to make purchases contributed significantly in predicting the purchase decision, while the other six variables showed no significant effect. Table 30 illustrates the results for the binomial logistic regression for the cognitive measures. Table 31 illustrates the Pearson correlation coefficients for the cognitive and behavioral measures.

Table 30.

Results of the binomial logistic regression for cognitive measures.

	Regression Coefficient B	*95 % CI [lower, upper]*	*p-value*
Trusting Beliefs:			
Competence	-.02	[-.25, .20]	.856
Benevolence	.14	[-.28, .58]	.510
Integrity	-.39	[-.88, .06]	.104
Trusting Intentions:			
Willingness to Depend	.13	[-.18, .42]	.398
Follow Advice	-.02	[-.48, .42]	.922
Give Information	.07	[-.45, .58]	.789
Make Purchases	.50	[.37, .61]	<.001
	Predicted Group Membership		
	No Purchase	*Purchase*	*Total*
Actual No Purchase	131	410	541
Actual Purchase	126	1073	1199
Total	257	1483	1740

Note. Percentage correctly predicted = 69.2 %.

Table 31.

Correlation coefficients between cognitive and behavioral measures.

Construct	*M*	*SD*	*1.*	*2.*	*3.*	*4.*	*5.*	*6.*	*7.*
1. Trusting Beliefs	3.95	.96							
2. Trusting Intentions	3.93	1.08	.79*** [.77, .81]						
3. Shopping Cart Value	155.15	45.87	.06 [-.01, .12]	.08*** [.02, .17]					
4. Shopping Cart Volume	.86	1.29	.14*** [.08, .21]	.20*** [.14, .28]	.53*** [.39, .64]				
5. Visit Time	216.97	208.75	.00 [-.05, .06]	.01 [-.04, .06]	-.02 [.-.04, .01]	.05* [.01, .12]			
6. Page Visits	9.07	5.49	.06* [.00, .10]	.06** [.02, .11]	.03 [-.02, .08]	.16*** [.10, .23]	.54*** [.42, .67]		
7. Trigger Clicks	2.30	3.09	.05 [.00, .10]	.04 [-.00, .08]	.02 [-.02, .06]	.05 [.00, .09]	.37*** [.27, .47]	.41*** [.35, .48]	
8. Trigger Hover	15.09	16.63	.10*** [.04, .15]	.05 [-.01, .10]	.01 [-.03, .07]	.06** [.01, .12]	.40*** [.29, .52]	.45*** [.38, .51]	.53*** [.45, .61]

Note. Values in square brackets indicate the 95 % *CI* for each correlation; *N* = 1740; * p < .05; ** p < .01; *** p < .001.

5 Discussion

Trust has the potential to shift the focus from risks to opportunities in situations of incomplete information, which makes it an important resource for the functionality of individuals and societies. Beneath situation-specific factors (i.e., stimuli of the environment), cross-situationally stable interindividual differences (i.e., personality of the individual) are discussed factors involved in the emergence of trust.

As "intraindividually consistent and interindividually distinct propensities to behave in some identifiable way" (Tett & Guterman, 2000, p. 398), personality traits require trait-relevant situations for their expression. According to the concept of "situational strength" (Mischel, 1968, 1973), individual differences are most likely to manifest themselves in situations where the environment provides few clear cues to appropriate behavior. With its spatiotemporal separation between seller, buyer, and product, the online environment represents a prime example of markets with asymmetric information (Dimoka et al., 2012). Since it thus classifies itself as a "weak" situation, it is by definition well suited for exploring the interplay of personality and environmental cues in the emergence of trust.

Previous research primarily investigated online consumer trust in the light of signaling theory. As result of this research, numerous trust-enhancing signals have been identified, which serve as information substitutes on the website and promote the development of trust. Notwithstanding the promising research findings in the area of trust-enhancing signals, previous research nevertheless largely neglects interindividual differences in the perception, processing and reaction to these signals.

Against this background, this scientific work primarily pursued the conclusion of two research gaps: the investigation of (1) interindividual differences in the evaluation of trust-enhancing signals and (2) a personality-based personalization of trust-enhancing signals in its effect on cognition and behavior. Research Question (1) was investigated using an online based correlational research survey design and aimed to investigate the personality-associated preference of trust-enhancing signals. Based on the results from Research Study (1), Research Question (2) was examined using an online based randomized experimental study (simulation).

5.1 Summary and reflection of study results – Study 1

Study 1 aimed to analyze the relationship between interindividual differences (Big Five personality dimensions) and the preference for trust-enhancing signals. The results of the analysis revealed significant associations between the Big Five personality dimensions and the preference for specific trust-enhancing signals, suggesting that different personality traits are associated with specific signal preferences supporting the trust-building process.

In more detail, the results showed that individuals with higher *extraversion* attributed high importance to the presence of a direct contact option. This preference might suggest that extraverted individuals have a higher need for direct interaction and communication to build trust. Consistent with this result is the tendency of more extraverted individuals to exhibit interest in social interactions and contacts (Ashton et al., 2002; Eaves & Eysenck, 1975), to feel comfortable in social situations and draw energy from interacting with other people (Lucas & Diener, 2001). This possibly gives an explanation for the high importance attribution to build trust from social experiences. Compliant with this result, Huang & Yang (2010) found that extraversion is positively related to sociality motivation of online shopping, which is the tendency to share information and experiences with others in the context of online shopping.

On the other hand, individuals with higher *neuroticism* attributed a high importance to the free return shipping option. Neuroticism encompasses several sub-facets, including impulsivity (McCrae & Costa, 1992). Impulsive individuals tend to make quicker decisions without thoroughly reviewing all available information or considering possible decision outcomes (S. Kim & Lee, 2011). In accordance with these findings, several authors found an association of neuroticism with impulsive online shopping behavior (Gangai & Agrawal, 2016; Gohary & Hanzaee, 2014; Y. Wang et al., 2022). In terms of the associated preference for the free return option, this could mean that people with higher neuroticism may prefer more flexible options protecting against impulsive decision making in their online shopping behavior, such as the option of free returns. This option offers the security that in case of dissatisfaction with the product, it can be returned without any additional costs.

Individuals with higher *openness to experience* attributed a high importance to about us information. Openness to experience is a personality trait associated with curiosity, a keen interest in new ideas, and the pursuit of intellectual stimulation (McCrae & Costa, 1992). A specific aspect of openness to experience is (social) curiosity (Silvia & Christensen, 2020), which involves the desire to learn more about other people, their backgrounds, and their activities (McCrae, 1996). In terms of the preference for about us information, this could mean that people with higher openness to experience have a greater interest in understanding the social environment and values behind a website in order to build trust and make their decisions based on a more comprehensive (social) knowledge base.

Individuals with higher *agreeableness* preferred websites with quality seals, suggesting that they tend to place trust in established standards and external seals of approval to assess the reliability of a website. Individuals with higher agreeableness generally have a strong need for harmony, cooperation, and social approval (McCrae & Costa, 1992). They value positive interpersonal relationships and strive for consensus and agreement (Jensen-Campbell & Graziano, 2001). Quality seals can be interpreted as a form of external validation by independent institutions. This result is consistent with the findings of Alkış & Taşkaya-Temizel (2015), who found that agreeableness is especially susceptible to consensus strategies of persuasion (social proof).

Finally, a preference for the option of a payment by invoice was associated with higher *conscientiousness*. Conscientiousness is a personality trait associated with a tendency to be organized, self-controlled, goal-oriented, and to engage in thoughtful decision making under consideration of all available information (McCrae & Costa, 1992). Compliant with these features, Gohary & Hanzaee (2014) found a negative association between conscientiousness and impulsive buying motivation as well as a positive association to utilitarian online shopping motivation, which is the tendency to proceed in a task-oriented and rational manner in the online shopping context. Probably due to the opportunity to physically inspect the products before a final payment is made, payment by invoice potentially offers individuals with higher conscientiousness a certain level of security and traceability, gives a sense of control and reduces the risk of errors or fraud.

In general, the magnitude of the path coefficients between personality and trust-enhancing signals remains rather in the range of small effect sizes (ß = .11 - ß = .18), which may raise questions regarding their practical significance. However, it is important to consider the contextual relevance of these findings within the online shopping context.

Firstly, the online shopping environment is characterized by a multitude of factors that influence consumer behavior which can accumulate and have meaningful implications in the long run. While personality traits play a role in shaping individuals' trust perceptions, they are just one piece of the puzzle. Other factors beneath personality such as the situational context, prior contextual experiences and overall user experience also contribute to shaping perceptions in online transactions. Therefore, it is expected that the effect sizes attributed solely to personality traits may be relatively small, as they interact with various other influential factors.

Secondly, even small effects of trust-enhancing signals can be assumed to have practical significance because they contribute to shaping consumers' overall trust perceptions. Personality traits serve as important contributors to this process, albeit with modest effect sizes. Accordingly, small effect sizes should not be equated with negligible effects. They signify that personality traits have a certain degree of influence on the perception of trust-enhancing signals. Even subtle differences in trust perceptions can shape consumers' purchase decisions, brand loyalty, and overall satisfaction with the online shopping experience.

In conclusion, while the effect sizes in the connection between personality and trust-enhancing signals may be small, they should not be dismissed as inconsequential. In the online shopping context, where trust is crucial for consumers, it can be assumed that even modest effects have practical significance. Being the first of its kind, this study provides important insights into the differential evaluation of trust-enhancing signals depending on personality, which can serve as basis for a personality-adapted design of the information offered in the online context. Recognizing the influence of personality traits on trust formation enables to better understand customer perceptions, to ultimately enhance the overall online shopping experience and to foster customer satisfaction.

5.2 Summary and reflection of study results – Study 2

Building upon the findings of Study 1, which established associations between personality traits and signal preferences, Study 2 sought to examine how tailoring trust-enhancing signals to individuals' specific personality traits influences cognitive / intentional processes and subsequent behavior.

5.2.1 Hypothesis 1. The first hypothesis aimed at investigating the effect of an objective signal personalization on trusting beliefs (H 1.1), trusting intentions (H 1.2) and trust-related behavior (H 1.3). It was hypothesized that personalized information increases personal relevance of the information, which promotes deeper information processing, ultimately reduces information asymmetries and increases trust in the web vendor. Conversely, anti-personalized information was expected to reduce personal relevance of the information, which promotes more superficial information processing, increases information asymmetries, and reduces trust in the web vendor. Accordingly, trusting beliefs and trusting intentions were expected to be higher and trust-related behavior was expected to be more likely under a personalized compared to a randomized and an anti-personalized signal presentation.

In accordance with hypothesis 1.1, the results indicated significantly higher trusting beliefs under personalization compared to both randomization (H 1.1.1) and anti-personalization (H 1.1.2). An exploratory examination of the sub-facets showed that the trust-enhancing effect of personalization extends primarily to the *benevolence* facet of trusting beliefs. While benevolence clearly benefited from a personalized signal presentation, it did not decrease under an anti-personalized compared to a randomized signal presentation. Benevolence can be defined as trustor-sided impression of a trustee's goodwill and detachment from egocentric profit motives (Mayer et al., 1995). Accordingly, a presentation of trust-enhancing signals congruent with the individual personality contributed to the trustor's impression of a well-intentioned and good-minded trustee. Interestingly, the sub-facet of *integrity* was responsive to anti-personalization. Thus, it did not benefit from personalization like benevolence, but decreased under anti-personalization compared to randomization instead. Integrity can be defined as trustor-sided impression of a trustee adhering to a set of morally and ethically reasonable

principles (Mayer et al., 1995). Accordingly, the results suggest that a non-presentation of trust-enhancing signals congruent with the individual personality harms the trustor's impression of an integer trustee. Unlike benevolence and integrity, *competence* benefited from an anti-personalized compared to a randomized and a personalized signal presentation. Competence can be defined as trustor-sided impression of a skilled, proficient and professional trustee (Mayer et al., 1995).

One possible explanation for this unexpected pattern of findings for the sub-facet of competence could be that personalization may draw attention away from cues that provide information about the retailer's competence (such as sophisticated technology or visual design elements), which are perceived as less self-relevant compared to personalized information. Supporting this conclusion, Schlosser et al. (2006) found that signals indicative of web site investment are influential to trustor-sided impressions of competency, but not to benevolence and integrity impressions. On the other hand, they found that signals indicative of privacy and security are influential to impressions of benevolence and integrity, but not to competency impressions. Thus, by eliminating attention-binding personality-adapted signals, attentional resources would again be available for the perception and interpretation of competence-related signals under anti-personalization. This circumstance could in turn translate into a better trustor-sided impression of a trustee's competence. Personalization, in turn, potentially makes subjects more sensitive to the more "personal" components of trust, benevolence and integrity. While personalization addresses benevolence in a positive sense, anti-personalization addresses integrity in a negative sense.

Unlike trusting beliefs and contrary to hypotheses 1.2 and 1.3, objective personalization did not have an effect on trusting intentions or trust-related behavior. Accordingly, a difference in trusting intentions or trust-related behavior could neither be observed between personalization and randomization (H 1.2.1; H 1.3.1), between personalization and anti-personalization (H 1.2.2; H 1.3.2), nor between randomization and anti-personalization (H 1.2.3, 1.3.3). This result pattern corresponds to the information processing view behind the Theory of Reasoned Action (Fishbein & Ajzen, 1975), which proposes that stimuli from the external environment directly affect (trusting) beliefs and

only indirectly (trusting) intentions and (trust-related) behavior through (trusting) beliefs. Indeed, subsequent analyses suggested an effect of objective personalization on trusting intentions, fully mediated through trusting beliefs and an effect on trust-related behavior, serially mediated through trusting beliefs and trusting intentions. Nevertheless, these mediation effects were rather small in size, suggesting a rather subtle influence.

Despite the lack of a direct effect on trusting intentions and trust-related behavior, the results indicate that objective personalization does influence other forms of user behavior. Specifically, the exploratory findings reveal that personalization leads to significantly more trigger clicks and hover movements compared to both randomization and anti-personalization. This pattern of results suggests that personalization plays a role in capturing users' attention and engaging them with trust-enhancing signals. When trust signals are objectively personalized, individuals are more likely to interact with them by clicking on or hovering over them. The increased engagement may be attributed to the enhanced personal relevance of information. This is consistent with the information processing view behind personalization, proposing that personalized contexts enhance subjective relevance of information and foster personal involvement, which ultimately creates a sense of trust (Bang & Wojdynski, 2016; Kaspar et al., 2019; Köster et al., 2015; Noar et al., 2009). Overall, while objective personalization impacts trusting intentions and trust-related behavior only indirectly through trusting beliefs, its effect on user behavior is evident through increased trigger clicks and hover movements.

This interpretation is further supported by the positive association between trigger hover movements and trusting beliefs, but not trusting intentions and trust-related behavior (purchase decision), indicating that the more users interact with these signals by hovering over them, the more likely they are to develop (cognitive) trust. While trigger hover movements may serve as an indicator of users' engagement and interest in trust-related information, they might primarily influence the cognitive aspect of trust (i.e., beliefs) rather than the intentional (i.e., trusting intentions) and behavioral (i.e., purchase decision) aspects of trust. These findings emphasize the role of personalization in attracting user attention and fostering engagement with trust-enhancing signals, ultimately contributing to a more favorable experience.

5.2.2 Hypothesis 2. The second hypothesis aimed at investigating the effect of subjective personalization on trusting beliefs (H 2.1), trusting intentions (H 2.2) and trust-related behavior (H 2.3). Furthermore, hypothesis 2.4 aimed at comparing the effect of objective to the effect of subjective personalization. It was hypothesized that the subjective perception of personalized information positively influences trusting beliefs, trusting intentions and trust-related behavior. Additionally, this influence was assumed to be greater than that of objective personalization resulting from a (more or less generic) personalization process.

In accordance with hypotheses 2.1, 2.2 and 2.3, results indicated a significant positive influence of subjective personalization on trusting beliefs, trusting intentions and trust-related behavior. Accordingly, in contrast to objective personalization whose (subtle) influence extends only to the belief component of trust, subjective personalization also affects subsequent intentional and behavioral trust components, even though these effects are rather small in size. In accordance with hypothesis 2.4.1, the effect of subjective personalization on trusting beliefs was significantly larger than the effect of objective personalization on trusting beliefs. However, in contrast to hypotheses 2.4.2 and 2.4.3, the effects of subjective personalization on trusting intentions and trust-related behavior did not differ statistically in size from those of objective personalization.

On the one hand, these results (partly) replicate the findings from hypothesis 1, which suggest a relatively lower susceptibility of intentional and behavioral in contrast to belief components of trust to (both objective and subjective) personalization processes. On the other hand, these results underline the higher significance of the *subjective interpretation* compared to the *objective composition* of the stimulus environment for the development of trust.

The central notion of the stimulus-organism-response (S-O-R) model is that directly observable sensory stimuli of the environment unfold their effect on (e.g., behavioral) responses through a complex interaction of not directly observable (more or less stable) mental processes within the organism. Against this background, trust-related behavior can be explained as result of a complex interaction between situation-specific (e.g., trust-related cues) and person-specific (e.g., subjective interpretation of trust-related cues)

characteristics. This underlines the necessity to separate (even more or less unambiguous) signals from their interpretation by the perceiving subject, since not all consumers interpret signals in the same way (Prabhu & Stewart, 2001; Schlosser et al., 2006).

Considering that subjective personalization seems to be of higher importance for trusting beliefs than objective personalization, taking individuals (micro-level) rather than groups (macro-level) into the focus as *target* of personalization is possibly more effective in order to achieve trust-sensitive objectives. Although the form of personalization examined in this study adapts the information presented to the individual user's personality profile, the link between user input (personality) and website output (signals) underlying personalization is still based on data evaluated at the group level. Hence, this level of personalization may not have been granular enough to also be reflected in the personal sensation. Subjective personalization relates directly to individual needs, preferences, and tastes on a person-specific level. Adapting information offers to a person's specific characteristics can create greater relevance and pertinence for the individual. Compared to a rather coarse, group-based individualization, this possibly leads to a stronger feeling of appreciation and personal address, which in turn can strengthen trust and attachment to a brand, company, or platform. Accordingly, a person-specific matching (e.g., based on the person-specific individual preference) of signals might be more promising than a group-specific matching (e.g., based on the personality-associated group preference).

Nevertheless, the objective personalization of the trust-related signal environment also exerted a subtle effect on trust independent of subjective personalization, indirectly also affecting intentions and behavior. Given that an overly obvious personalization can also have trust-reducing effects (Awad & Krishnan, 2006; Cloarec, 2020), a personalization as subliminal as possible can also be desirable, especially in contexts involving high degrees of informational sensitivity. This may be the case, for example, in contexts where the disclosure of sensitive personal information assigns high importance to privacy and data protection. In such situations, it is important to keep personalization as subtle as possible to avoid perceptions of privacy invasion. This interpretation emphasizes the sensitive balance between personalization and trust. While personalization can foster trust, it is

important to be aware of its boundaries and to ensure that personalization is not perceived as excessive or intrusive.

Further exploratory analyses indicated that subjective personalization did not vary depending on objective personalization. This means that personalization was neither perceived to be higher under personalization compared to randomization nor compared to anti-personalization. An explanation for this pattern possibly lies in the judgmental basis of subjective personalization. In order not to unblind participants, items on subjective personalization referred in (deliberately) unspecific wording only to the "information presented". Against this background, the subjects' judgment of subjective personalization could also have referred to a different *object* (content) of personalization like presented products, product descriptions, etc.

In this context, a possible further explanation for the circumstance that objective personalization was not reflected in the subjective judgment could be the usage of a unimodal method (questionnaire) to capture the phenomenon of subjective personalization. This process can create variance components that result from the use of the survey methodology *(common method variance)*, which can lead to result distortions *(common method bias*, Weiber & Mühlhaus, 2014). In this sense, it is possible that the methods or instruments used to measure subjective perceptions of personalization were not sensitive enough to capture subtle perceptual differences in objective personalization. This could have resulted in participants not consciously perceiving or recognizing objective personalization as such. Although *Harman's single-factor test* (Podsakoff et al., 2003) demonstrated that that common method bias was not of major statistical concern for the *quantitative* analyses in this study, an influence of the applied method on the participants' *qualitative* judgments cannot be excluded. Therefore, in order to find out on which specific form of information the evaluation of the subjects is based, future studies should also include such qualitative open-ended elements targeting the individual judgmental basis (e.g., qualitative interviews) or the combination of multimodal (quantitative and qualitative) methods. In this way, it is possible to avoid missing important aspects of personalization that are not covered by the a priori, theory-based questionnaire constructs.

5.2.3 Hypothesis 3. The third hypothesis aimed at investigating the product-category dependent differential influence strength of subjective personalization on trusting beliefs (H 3.1), trusting intentions (H 3.2) and trust-related behavior (H 3.3). The SEC classification of goods and services attributes a varying degree of information asymmetry in descending order to credence, experience and search goods. Accordingly, it was hypothesized that subjective personalization has the greatest potential to reduce information asymmetries in credence goods (supplements), followed by experience (electronics) and finally search goods (clothing).

As hypothesized, the effect of subjective personalization on trusting beliefs, trusting intentions and trust-related behavior was strongest in credence goods and weakest in search goods (except for trusting intentions, where it was lowest in experience goods). In accordance with hypothesis 3.1.1, the effect of subjective personalization on trusting beliefs was significantly larger in credence goods than in search goods. Contrary to the other hypotheses, the effects did not differ statistically in size between the other product categories, neither for trusting beliefs, trusting intentions nor for trust-related behavior.

Interestingly, the effect of subjective personalization on trusting beliefs reached statistical significance in all three product categories, while its effect on trust-related behavior was only significant in credence goods. This supports the notion of higher responsivity of the trusting beliefs facet to (objective and subjective) personalization, which manifests in the reactivity of trusting beliefs regardless of product category. Other than trusting beliefs, especially trust-related behavior directly profits only under the product category with the strongest information asymmetry, credence goods.

A possible explanation for a difference in effect sizes of subjective personalization being found only between credence and search goods and exclusively on trusting beliefs can probably be found in the more or less vague SEC product category allocation. Of the three product categories, supplements can be most clearly assigned to the *credence goods* category. Here, unambiguous information about the product quality can be obtained neither before a purchase (a priori) nor after a purchase (a posteriori), since a potential salutogenic or pathogenic effect can never be exclusively attributed to supplements. Against this background, it can be assumed that the a priori existing information

asymmetry is greatest in this category, giving it the highest potential for personalization of the three categories.

Concerning *search* and *experience goods*, the product category assignment is less clear. In the case of clothing articles, the product description usually provides relatively clear information on material specifications, proportions and origin. Accordingly, it can be assumed that an (at least superficial) assessment of the product quality can be achieved before the purchase. This is different from electronic items, whose product quality is usually evident in their performance after the purchase. Clearly, the final classification of a specific product as search, experience or credence good is a subjective judgement which, among others, depends on interindividual differences (concerning prior product experience or knowledge), the focused product attribute and the situational context (Nakayama et al., 2010). In this sense, especially the classification of search vs. experience goods represents two extremes of product classifications, where most items fall somewhere in-between (Laband, 1991). Accordingly, the boundaries between search and experience goods are likely to be fluid, with the strongest contrast existing between credence and search goods.

A discussion initiated by Klein (1998) fundamentally questions the appropriateness of separating search and experience goods in the context of online shopping. In this sense, it is argued that the introduction of online shopping has transformed experience goods into search goods in three ways. First, by lowering the search costs of product attributes (e.g., through customer reviews or testimonials). Second, by changing the weight consumers attribute to different attributes (e.g., by providing comprehensive third-party product reviews that lead consumers to weight this information more heavily than other attributes). Third, by enabling (virtual) product experiences without having inspected the product beforehand (e.g., through test versions of software or indirect usage experience delivered via review videos). Accordingly, the undetectable difference in effect sizes between search and experience goods could also be attributable to the fact that the Internet blurs the boundaries between the two categories even more due to better availability and accessibility of product information.

5.2.4 Hypothesis 4. The fourth hypothesis aimed at investigating the involvement of interindividual differences (Big Five Personality dimensions) in moderating the effect of subjective personalization on trusting beliefs (H 4.1), trusting intentions (H 4.2) and trust-related behavior (H 4.3). Specifically, it was hypothesized that the two personality dimensions involving a special sensitivity to rewards (extraversion) and threats of the environment (neuroticism) take on a moderating role in the effect of subjective personalization on trusting beliefs, trusting intentions and trust-related behavior.

In line with hypothesis 4.3.2, extraversion moderated the effect of subjective personalization on trust-related behavior. This result suggests that extraversion plays a reinforcing role in the relationship between subjective personalization and trust-related behavior. In this sense, more extraverted individuals show an enhanced positive response to subjective personalization when it comes to their trust-related behavior (purchase decision). A core characteristic of extraversion is the propensity to approach and enjoy social interactions (*social attention;* Ashton et al., 2002) and to prefer social over solitary activities (*social interaction*; Lucas et al., 2000). This characteristic potentially renders extraverts particularly receptive to personalized approaches that take into account their individual needs and preferences. However, contrary to H 4.1.2 and 4.2.2, the moderating role of extraversion did not extend to the effect of subjective personalization on trusting beliefs and trusting intentions. This result suggests that the positive effect of subjective personalization on the attitudinal and intentional component of trust is largely independent of extraversion. While subjective personalization is able to directly influence attitudinal and intentional components of trust independently of interindividual differences, personality traits such as extraversion seem to become relevant only when it comes to translating these attitudes and intentions into actual behavior. In more detail, the evaluative basis for subjective personalization possibly did not extend to explicitly trait-relevant aspects reinforcing attitudinal/ intentional trust, but rather to implicitly trait-relevant aspects reinforcing behavioral trust, bypassing the attitudinal components. This finding emphasizes the complex interactions between subjective personalization, personality, and individuals' behavior, suggesting that both situational and individual factors should be considered to gain a comprehensive understanding of the trust process.

Furthermore, contrary to H 4.1.1, 4.2.1 and 4.3.1, the effect of subjective personalization on trusting beliefs, trusting intentions and trust-related behavior was not moderated through neuroticism. Exploratory results for the other three Big Five personality dimensions (conscientiousness, openness to experience, agreeableness) could not find any moderating influence of personality.

The trait activation theory (Tett & Gutermann, 2000) states that the relevance of situational contexts for the behavioral expression of personality traits can vary depending on the type of information to which individuals respond in expressing a trait (*situation trait relevance*). Accordingly, one possible explanation for the lack of involvement of the Big Five personality traits in moderating the effect of subjective personalization could be that its evaluative basis extended to aspects that did not trigger the (motivational) core concepts behind the investigated Big Five personality dimensions traits (E: excitement and social rewards; N: safety and security; O: creativity and intellectuality; A: communal goals and interpersonal harmony; C: efficiency and goal pursuit). Accordingly, the results suggest that subjective personalization primarily affects trust directly and largely independent of the Big Five personality traits. Thus, the absence of (motivational) core components in the judgmental basis for subjective personalization may have prevented personality traits from being activated.

Previous research suggests that neuroticism and extraversion are especially responsive to *social* rewards and threats in *sensitive* contexts (Ashton et al., 2002; Bansal et al., 2016). In this sense, enriching website personalization with elements conveying a sense of social presence such as *actual* interpersonal communication or direct person address (in contrast to only *theoretical* contact options) could potentially have an impact on activating relevant motivational core components of personality traits like extraversion. Gefen and Straub (2004) found that social presence on websites positively affects especially the interpersonal trust components like benevolence and integrity. In the same way, personality traits like neuroticism possibly profits more strongly in more sensitive situational contexts. Accordingly, future studies should specifically investigate the potential of website personalization triggering motivational core concepts of personality traits in improving user experience.

5.2.5 Hypothesis 5. The fifth hypothesis aimed at investigating the effects of personality on trusting beliefs (H 5.1), trusting intentions (H 5.2) and trust-related behavior (H 5.3), depending on objective personalization. Given the different degrees of information asymmetry varying with signal personalization (personalization vs. randomization vs. anti-personalization), it was hypothesized that the effect of personality on trust will depend on the degree of (objective) personalization. Specifically, it was assumed that the (negative) effect of neuroticism on trust should be larger in anti-personalization compared to randomization, and the (positive) effect of agreeableness was expected to be larger in personalization compared to randomization.

As expected, the effect of agreeableness on trusting beliefs was largest (and reaching statistical significance only) under personalization. Yet, contrary to hypothesis 5.1.2, this effect was not significantly greater than the effect under randomization. However, contrary to hypothesis 5.1.1, neuroticism displayed a positive (instead of an assumed negative) effect on trusting beliefs, which reached statistical significance only under randomization. Also, in contrast to hypotheses 5.2 and 5.3, neuroticism and agreeableness did not affect trusting intentions or trust-related behavior under any of the three conditions. Exploratory results revealed differential, condition-dependent effects of personality on trust, which are discussed in more detail below.

Extraversion

Extraversion showed no effects on trusting beliefs, trusting intentions or trust-related behavior, neither varying as a function of nor independent of signal presentation. One explanation for this result could be that the online environment generally lacks situational trait relevance for the expression of extraversion. The online marketing environment is generally characterized by a lack of social cues. Unlike face-to-face interactions, where individuals can rely on nonverbal cues such as facial expressions, body language, tone of voice, and eye contact to interpret and convey messages, online marketing primarily relies on written text, images, and occasionally audio or video content. Previous findings indicate that *social attention* (the tendency to engage and enjoy social attention) rather than *social interaction* (the tendency to prefer social over solitary activities) is the core motivational element of extraversion (Ashton et al., 2002; Lucas et al., 2000). Transferred to the

present study, the extraversion-associated trust-enhancing signal (direct contact option) *theoretically* offers the option to enter into direct contact, while it does not necessarily enable *actual* social interactions offering the incentive value of social attention.

The exploratory results demonstrate that under an anti-personalized signal condition, which is characterized by an absence of direct contact options, extraversion has a negative impact on user behavior (shopping cart value, number of page visits, number of trigger clicks and hover movements). Under the absence of direct contact options, extraverted individuals appear to engage less in these behavioral metrics compared to individuals who are lower in extraversion. The meaning of this personality-associated signal for extraversion in the trust-building process is further underlined by the exploratory result that this personality dimension moderates the effect of contact channels on trusting beliefs. Accordingly, while the mere presence or absence of a theoretical contact option does not trigger cognitive, intentional or behavioral trust components, its absence nevertheless seems to suppress approach behavior (in terms of website interactions) in individuals high in extraversion.

Neuroticism

For *neuroticism*, the results suggested a positive (rather than a previously hypothesized negative) influence on trust-related beliefs that reached statistical significance only under a randomized (as opposed to an anti-personalized) signal presentation. This suggests that individuals with higher levels of neuroticism may actually exhibit higher trust-related beliefs when exposed to randomized information, which is unexpected. Previous literature links neuroticism to a distinct sensitivity to threatening or negative emotional cues (Rusting & Larsen, 1998). The individual's attitude towards risky prospects, which is an important factor in determining trust behavior, is discussed to be influenced by anxiety- and fear-related traits such as neuroticism (Glöckner & Hilbig, 2012). Supporting this view, previous studies consistently show a negative relationship between neuroticism and the willingness to trust (Alarcon et al., 2018; Ben-Ner & Halldorsson, 2010; Evans & Revelle, 2008; Freitag & Bauer, 2016; Müller & Schwieren, 2019), which is potentially mediated by risk and loss aversion (Thielmann & Hilbig, 2015).

One explanation for both the (unexpected) positive effect of neuroticism on trusting beliefs under a randomized signal presentation and the lack of effects under a personalized and an anti-personalized signal presentation conditions might be found in the concept of *context sensitivity* (Bansal et al., 2016). Context sensitivity can be defined as the extent of sensitivity of the environment to personally identifiable information. Bansal et al. (2016) assumed that both the negative association between neuroticism and trust and the positive association between neuroticism and privacy concerns should be stronger under highly sensitive contexts. While objective personalization and anti-personalization referred (in a largely subliminal manner) to the Big Five personality profile, randomization was completely independent of any personal reference. Accordingly, it is conceivable that individuals high in neuroticism perceived especially the randomized signal presentation as more trustworthy or reliable, as it does not rely on any specific (personality-related) details. In this sense, the non-binding study setup potentially lacked situational trait relevance for neuroticism, as it failed to activate the link between neuroticism and risk aversion as important precursor of trust. While neuroticism is associated with lower trust and higher privacy concerns in the majority of research, the specific context in which these associations are examined can influence the strength and direction of these relationships.

A further explanation for the lacking effect of neuroticism on intentional and especially behavioral components of trust can be found in the concept of impulsivity. As a sub-facet of the personality dimension neuroticism, *impulsivity* describes the tendency to make quick decisions without thoroughly reviewing all available information or considering possible decision outcomes (S. Kim & Lee, 2011). Transferred to the online marketing context, previous research on interindividual differences in online buying behavior found a positive association between neuroticism and *buying impulsivity* (Gangai & Agrawal, 2016; Gohary & Hanzaee, 2014; Y. Wang et al., 2022). Impulse buying can be defined as an unplanned purchase characterized by (1) relatively rapid decision-making and (2) a subjective bias in favor of immediate possession (Rook & Gardner, 1993). In this sense, the negative effects of neuroticism on trust consistently demonstrated in the literature might be diluted by the positive effects of neuroticism on impulsive buying behavior. Yet, it should be kept in mind that the positive effects of neuroticism on impulsive buying will probably be weaker in the online marketing context than in stationary brick and mortar

business, because online shopping per se requires delayed gratification due to the spatiotemporal separation between buyer, seller and product.

Additionally, the exploratory behavioral results for neuroticism demonstrate some distinct effects on user behavior depending on the signal presentation. Under personalization, neuroticism has positive effects on visit time, implying that individuals high in neuroticism tend to spend more time on the website when the content is tailored to their preferences. Similarly, under both personalization and randomization, neuroticism positively influences trigger hover movements, indicating that individuals with higher neuroticism levels are more likely to engage with (both personalized and randomized) trust-enhancing signals by hovering over them. However, an interesting contrast emerges under an anti-personalized signal presentation, where neuroticism has a negative effect on trigger hover movements. This suggests that when trust-enhancing signals are not personalized, individuals high in neuroticism may be less inclined to interact with them by hovering over them. The positive effects of neuroticism on visit time and trigger hover movements under personalization and randomization suggest a potential preference for tailored or relevant content, whereas the negative effect on trigger hover under anti-personalization may reflect a reduced engagement with non-personalized signals.

Openness to Experience

Interestingly, under an anti-personalized signal presentation, *openness to experience* demonstrated contradictory effects on trusting beliefs (negative) and on trusting intentions (positive). The finding suggests that under an anti-personalized signal presentation, openness to experience may have differential effects on trust.

On the one hand, openness to experience leads to negative trust-related beliefs, suggesting that individuals with high openness become more skeptical or distrustful when confronted with non-personalized information. This interpretation is supported by the exploratory result that under anti-personalization, openness to experience has negative effects on page visits and to a special degree on trigger interactions (hover and clicks). This pattern of findings suggests that under an exposition to non-personalized information, individuals with high openness to experience show reduced (cognitive) trust and

behavioral website engagement. The personality-associated signal of openness to experience is about us information. The anti-personalized signal presentation deprives individuals high on openness to experience of the social context information, which potentially maintains the perceived social distance and ultimately hinders the cognitive component of trust (beliefs). The significance of this signal for individuals high in openness to experience in the process of trust formation is further underlined by the exploratory result that openness to experience moderates the positive effect of about us information on trusting beliefs and on trusting intentions.

On the other hand, openness to experience exerts positive effects on trust-related intentions under anti-personalization. This means that individuals high in openness to experience have a positive intention to trust others despite the lack of social contextualization. This could indicate that they are willing to give strangers the "leap of faith" and intent to trust despite the lack of social contextualization. This finding corresponds to the results of Freitag & Bauer (2016), who found that openness to experience is an important resource for trust towards strangers. Accordingly, despite the negative effect of openness to experience on cognitive-attitudinal components of trust (beliefs) under an anti-personalization, intentional components of trust nevertheless profit from the open-minded and curious nature of individuals high in openness to experience.

Agreeableness

The finding that the influence of agreeableness on trusting beliefs was particularly strong under a personalized signal condition suggests that individuals high on this personality dimension might particularly benefit from a signal environment tailored to their individual personalities. Individuals high in agreeableness are characterized by a stronger need for social harmony and to maintain good relationships with others (Jensen-Campbell & Graziano, 2001). If they receive information that is specifically tailored to their personality, this could fulfill their need for social fit and appreciation, which can have a positive effect on their trust. The trust-enhancing signal associated with agreeableness is the quality seal, which represents an external validation of the trustors' reliability by independent institutions. The meaning of this signal for highly agreeable individuals in the process of trust formation is also reflected in the exploratory result that agreeableness moderates the

positive effect of quality seals on trusting beliefs. This indicates that individuals who score higher on agreeableness may be more likely to develop trusting beliefs when they perceive quality seals. Interestingly, a further exploratory result suggested a positive effect of agreeableness on the interaction with trust-enhancing signals (hover movements) and a negative effect on the shopping cart value, both under anti-personalization. In this sense, by increasing their trust-trigger interaction, they may be seeking alternative cues to reduce uncertainty and establish trust in the online context. This behavior could be seen as an adaptive strategy employed by highly agreeable individuals to compensate for the lack of personality-relevant signals and find alternative ways to assess the trustworthiness of the website or the seller.

Conscientiousness

In particular, the finding that *conscientiousness* showed a negative influence on trust-related behavior under the anti-personalized signal presentation suggests that individuals high on this personality dimension might particularly take harm from an anti-personalized signal environment. Drawing on the trait activation theory (Tett & Gutermann, 2000), this result possibly indicates that the anti-personalized information environment serves as trait-relevant situation for the expression of the personality effects on trusting behavior. Previous research found a negative association between conscientiousness, trust towards strangers (Freitag & Bauer, 2016; Müller & Schwieren, 2019) and risk propensity (Highhouse et al., 2022) as well as a positive association to the need to retain control over a situation (Murphy et al., 2013).

The trust-enhancing signal associated with conscientiousness is payment by invoice, which is to a special degree associated with control and risk reduction, since it entails the opportunity to physically inspect the products before a final payment is made. A non-presentation of the payment by invoice option potentially triggers the decisive motivational core concept behind conscientiousness (“trust, but verify”), confronting them with the decision to trust a stranger without profound control mechanisms. Another note on the meaning of this signal for highly conscientious individuals is further undermined by the exploratory result that conscientiousness moderates the positive effect of payment on invoice on trusting beliefs. This result indicates that the positive effect of payment on

invoice on trusting beliefs is stronger for individuals who have higher levels of conscientiousness.

Further exploratory results demonstrate that highly conscientious individuals are less likely to engage with trust-enhancing signals through hover movements when the signals are presented in an anti-personalized environment. In the context of anti-personalization, where the signals lack personal relevance and customization, highly conscientious individuals may perceive these signals as less meaningful or pertinent to their decision-making process. As a result, they may refrain from an engagement with trust-enhancing signals, as indicated by fewer hover movements. Furthermore, this result fits to the tendency of individuals with high expressions on this personality dimension to make deliberate decisions under conscientious consideration of all available information. Thus, a high expression on this personality dimension possibly acts as a kind of burning glass for the trust-minimizing influence of anti-personalization, making the signal environment contradicting personality-associated information needs especially salient.

The differential effects of personality on trust depending on signal personalization clearly speak in favor of the interaction between situation-specific influences (i.e., stimuli of the environment) and cross-situationally stable interindividual differences (i.e., personality of the individual) in the emergence of trust. More specifically, the results suggest that the Big Five personality dimensions are of differential importance for cognitive, intentional and behavioral components of trust. In this sense, neuroticism, agreeableness and openness to experience seem to be influential to the *cognitive* component of trust (trusting beliefs). In more detail, while neuroticism gains trust from a randomized signal presentation, agreeableness profits from a personalized and openness to experience suffers from an anti-personalized signal presentation. The *intentional* component of trust (trusting intentions) seems to be positively influenced exclusively by openness to experience and the *behavioral* component of trust is negatively influenced by conscientiousness, both independent of signal presentation, but particularly strong under anti-personalization. Taken together, the results underline the importance of considering the complex interplay between interindividual differences and the situation (Tett & Guterman, 2000).

5.3 Theoretical Implications

For the underlying theory, these results have several implications extending to (1) the subjective perception [H1 & H2], (2) the contextual factors [H3 & H4] and (3) the interplay between personality and situational constraints in the emergence of trust [H5].

(1) Firstly, the study results highlight the need to consider both the objective composition and the subjective perception of personalized signals in understanding trust dynamics. Subjective perception was found to have a greater impact on trust than the objective composition of personalized signals. This suggests the importance of integrating a subjective-perceptional component into stimulus-organism-response models.

(2) Secondly, the study emphasizes the contextual factors and product characteristics that influence the effects of personalization on trust. Different product categories showed varying effects, with subjective personalization having the strongest impact on trust in credence goods. Additionally, extraversion was found to moderate the effect on trust-related behavior, indicating the reinforcing role of extraversion in the relationship between personalization and behavior.

(3) Lastly, the study highlights the complex interactions between personality traits and situational factors in the emergence of trust. The effects of personality traits can vary depending on specific features of the situational context, and future research should explore the nature of these interactions. Understanding the boundary conditions that modulate the influence of personality on decision-making and behavior is crucial for a comprehensive understanding of trust dynamics.

Overall, the findings contribute to a deeper understanding of the role of personalization in trust formation and provide insights for designing effective personalized experiences. By considering the subjective perception, contextual factors, and the interplay between personality and situational constraints, researchers and practitioners can better navigate the complexities of personalization and its impact on trust.

5.4 Practical Implications

The study results allow several conclusions to be drawn for practice. (1) First, they illustrate the greater importance of a subjective personalization compared to elaborate (but not consciously perceived) objective personalization for the development of trust. Transferred to practical considerations, taking individuals (micro-level) rather than groups (macro-level) into the focus as *target* of personalization is possibly more effective in order to achieve trust-sensitive objectives. However, objective personalization exerts a subtle trust-building effect that does not translate into a conscious impression. This effect is particularly important for the first customer-sided impression of the seller's benevolence. Accordingly, the implementation of trust-enhancing signal personalization can be effective in contexts, where the personal component of trust is especially important (and the trust-mitigating effects of an overly obvious personalization are to be circumvented).

(2) Second, the results illustrate that the belief component of trust is particularly susceptible to being influenced by measures of personalization. This applies to both objective and subjective personalization.

(3) Third, (subjective) personalization is most effective in (product-) environments, where the information asymmetry is by definition the greatest. Accordingly, both customers and sellers benefit most from personalization measures in such contexts where, on the one hand, the personal trust component is important and where, on the other hand, there are few opportunities to check the quality of the products sold in advance of the purchase.

(4) Fourth, the results show that (subjective) personalization exerts its effect independently of the consumer's personality profile. Yet, the effect of personality on trust is moderated through objective personalization. Accordingly, a consideration of interindividual differences makes sense depending on the context. In this sense, while individuals high on agreeableness profit to a special degree from a signal environment tailored to the individual personality profile, individuals high on conscientiousness are to a special degree harmed by a signal environment explicitly contradicting their personality. Thus, these findings offer important insights for the design of personalization interventions that aim to arrange trust-promoting signals in a way that is tailored to the personality.

5.5 Strengths and Limitations

5.5.1 Research Method. Compared to offline data collection (e.g., stationary face-to-face or telephone interviews), the online data collection has several advantages. Owing to the independence of time and space, respondents can be contacted simultaneously across large distances. The large population access increases the *representativeness* of the sample, which positively affects *external validity* of the results (Granello & Wheaton, 2004). Furthermore, due to the anonymous interaction format, interviewer effects are largely eliminated, which increases *implementation objectivity*. Additionally, in contrast to non-computerized survey methods, errors due to manual data entry are largely eliminated, which has a positive effect on the *evaluation objectivity*. Finally, the perceived anonymity of the Internet ensures a social decontextualization of the answers, which reduces social desirability bias and thus increases *internal validity (Baur & Blasius, 2019)*.

However, the online data collection also entails some disadvantages. First, the difficulty to control the study environment (in terms of surrounding stimuli like sound, color or timing) is detrimental to *internal validity* (Riva et al., 2003). Furthermore, the study participation depends on access to computer and Internet. This negatively affects the *representativeness* of the sample through the exclusion of certain groups from study participation (Baur & Blasius, 2019). Another disadvantage concerns the lower accountability of study participants through higher anonymity, potentially giving rise to problems of sloppy responding and measurement error, which is detrimental to *reliability* aspects (Gosling & Mason, 2015).

In the present study, the above mentioned sources of error should be circumvented as much as possible by applying various control measures. In this sense, subjects were specifically approached via various access channels (classified ads, social media, e-mail distribution lists) in order to keep the representativeness of the sample as high as possible. The (internal) validity was to be addressed by a randomized controlled study design with clear instructions. As the danger of sloppy responding could not be ruled out a priori, post-hoc methods of data cleaning were applied in order to ensure the highest possible data reliability. In summary, the quality of the data collected suggests that the sources of error have been minimized as much as possible.

5.5.2 Study Methodology. One strength of the study lies in the realistic study setup, with dynamic and interactive elements enabling a real-world consumer experience. The subjects were given the opportunity to navigate freely through three realistic online stores, with no specifications regarding visit time or page visits. Previous scientific studies investigating the emergence of (initial) trust towards (formerly unknown) brands in the field of e-commerce have almost exclusively dealt with stationary screenshots or websites comprising only a few pages, which hardly allow any conclusions to be drawn about realistic behavior due to their artificial and non-interactive nature. In addition, the present study was the first to operationalize trust-related behavior via the purchase decision, whereas previous studies approached it via questionnaire-based recording of trust-related intentions.

The external structure of the online stores was closely based on the structural design of familiar online stores. The model-like imitation of a real-world system corresponds to the method of (experimental) simulation, which is able to represent and understand complex real-world phenomena. By combining the method of simulation with standardized experimental procedures, the best possible tradeoff between external and internal validity of the results can be ensured.

Given the association of well-known brands with good reputation, trustworthiness and reliability, a deliberately fictitious nature of the websites was chosen to avoid possible bias due to brand effects on trust. Nevertheless, the fictitious nature of the study setup limits the possibility of drawing conclusions about (purchasing) behavior in real life. To achieve cognitive involvement with the task, subjects were instructed in a demand scenario to imagine having the serious intention of purchasing clothing, electronics and supplements. In past studies, such demand scenarios have been successful in cognitively involving participants with the purchase task. However, other studies demonstrate that (presumably depending on the effectiveness of such scenarios) the subject's goal (e.g., their specific intention to *search* or to only superficially *browse* a website) has a decisive influence on how information of the (website) environment is interpreted. The fictitious study setup involving no monetary consequences suggests rather a superficial browsing intention. Accordingly, the results have to be interpreted against this background.

5.5.3 Study Design. One of the fundamental challenges of combining experimental manipulations with personality research is to draw inferences about relationships among latent variables. In order to draw correct inferences, especially two hurdles have to be taken: first, a correct operationalization of the latent constructs (reliability), and second, the formation of a correct set of conditions (validity). Regarding the first hurdle, a detailed quality testing of the reflective measurement models was conducted to ensure correct operationalization of the latent variables. In the case of the Big Five personality dimensions, with the aim of using an instrument that is as economical as possible and can be used in practice, if necessary, a short version comprising 10 items was applied in the form of the TIPI-G. However, the benefit of practical applicability comes at the expense of accuracy and measurement precision. Compared to a detailed personality questionnaire comprising several hundred items (e.g., the NEO-PI-R), the measurement of the Big Five through only two items per personality dimension may thus be a limiting factor for the depth of conclusions that can be drawn about the relationship between personality and information processing. Yet, despite this limitation, the use of this questionnaire allows a rough impression of the individual personality profile due to the sufficient fulfillment of the test quality criteria.

Concerning the second hurdle, the experimental manipulation not only directly influences the observed outcome variable, but also interacts with (observed and latent) *trait* variables. In addition, there are *state* variables interacting with the experimental manipulation and trait variables that have an additional (direct and indirect) influence on the outcome variables. The noise introduced by a large number of not fully controllable state influences can potentially bias (suppress or inflate) the effect of personality and experimental manipulation on outcome variables. A way of controlling for large between-subjects variations in responses due to state variables (e.g., affect, time of day, sleep deprivation etc.) is to use each participant as their own control in a within-subjects design, where all levels of the experimental variable are presented to each subject (Robins et al., 2007). Against this background, both the experimental manipulation of primary interest (signal presentation: personalization, randomization, anti-personalization) and the manipulation of secondary interest (product category: clothing, electronics, supplements) were varied within-subjects.

6 Conclusion

Taken together, the present study makes an important contribution to understanding the effect of personality-adapted signaling environments on the emergence of trust and decision making in the specific context of B2C e-commerce. It is the first of its kind to link the Big Five personality trait framework to trust-enhancing signals. In times of increasingly popular and widespread long-distance shopping, the creation of a trustworthy and safe signal environment becomes ever more important. With personality taking decisive influence in the perception and interpretation of environmental information, the consideration of dispositional differences in the design of online shops offers several advantages concerning the improvement of cognitive (trust) and behavioral (purchases) measures. The insights emerging from this study can therefore contribute to improving both consumer experience from the customer's perspective and conversion rates from the seller's perspective.

References

Ahrholdt, D. C. (2011). Empirical Identification of Success-Enhancing Web Site Signals in E-Tailing: An Analysis Based on Known E-Tailers and the Theory of Reasoned Action. *Journal of Marketing Theory and Practice*, *19*(4), 441–458. https://doi.org/10.2753/MTP1069-6679190406

Ahrholdt, D. C., Greve, G., & Hopf, G. (2019). *Online-Marketing-Intelligence: Kennzahlen, Erfolgsfaktoren und Steuerungskonzepte im Online-Marketing.* Springer Gabler. https://doi.org/10.1007/978-3-658-26562-5

Aiken, K. D. (2006). Trustmarks, Objective-Source Ratings, and Implied Investments in Advertising: Investigating Online Trust and the Context-Specific Nature of Internet Signals. *Journal of the Academy of Marketing Science*, *34*(3), 308–323. https://doi.org/10.1177/0092070304271004

Alarcon, G. M., Lyons, J. B., Christensen, J. C., Bowers, M. A., Klosterman, S. L., & Capiola, A. (2018). The role of propensity to trust and the five factor model across the trust process. *Journal of Research in Personality, 75,* 69–82. https://doi.org/10.1016/j.jrp.2018.05.006

Aljukhadar, M., Senecal, S., & Daoust, C.-E. (2012). Using Recommendation Agents to Cope with Information Overload. *International Journal of Electronic Commerce*, *17*(2), 41–70. https://doi.org/10.2753/JEC1086-4415170202

Alkış, N., & Taşkaya-Temizel, T. (2015). The impact of individual differences on influence strategies. *Personality and Individual Differences*, *87*, 147–152. https://doi.org/10.1016/j.paid.2015.07.037

Allport, G. W., & Odbert, H. S. (1936). Trait-names: A psycho-lexical study. *Psychological Monographs*, *47*(1), 1-171. https://doi.org/10.1037/h0093360

Arora, S., & Sahney, S. (2017). Webrooming behaviour: A conceptual framework. *International Journal of Retail & Distribution Management*, *45*(7/8), 762–781. https://doi.org/10.1108/IJRDM-09-2016-0158

Ashton, M. C., Lee, K., & Paunonen, S. V. (2002). What is the central feature of extraversion? Social attention versus reward sensitivity. *Journal of Personality and Social Psychology*, *83*(1), 245–252. https://doi.org/10.1037/0022-3514.83.1.245

REFERENCES

Awad, N. F., & Krishnan, M.S. (2006). The Personalization Privacy Paradox: An Empirical Evaluation of Information Transparency and the Willingness to Be Profiled Online for Personalization. *MIS Quarterly, 30*(1), 13-28. https://doi.org/10.2307/25148715

Ba, S., & Pavlou, P. A. (2002). Evidence of the Effect of Trust Building Technology in Electronic Markets: Price Premiums and Buyer Behavior. *MIS Quarterly*, *26*(3), 243–268. https://doi.org/10.2307/4132332

Ba, S., Whinston, A. B., & Zhang, H. (2003). Building trust in online auction markets through an economic incentive mechanism. *Decision Support Systems*, *35*(3), 273–286. https://doi.org/10.1016/S0167-9236(02)00074-X

Bagozzi, R. P. (1981). Evaluating Structural Equation Models with Unobservable Variables and Measurement Error: A Comment. *Journal of Marketing Research*, *18*(3), 375–381. https://doi.org/10.1177/002224378101800312

Bagozzi, R. P., & Yi, Y. (1988). On the evaluation of structural equation models. *Journal of the Academy of Marketing Science*, *16*(1), 74–94. https://doi.org/10.1007/BF02723327

Bandura, A. (1986). *Social Foundations of Thought and Action: A Social Cognitive Theory*. Prentice-Hall.

Bang, H., Choi, D., Wojdynski, B. W., & Lee, Y.-I. (2019). How the level of personalization affects the effectiveness of personalized ad messages: the moderating role of narcissism. *International Journal of Advertising*, *38*(8), 1116–1138. https://doi.org/10.1080/02650487.2019.1590069

Bang, H., & Wojdynski, B. W. (2016). Tracking users' visual attention and responses to personalized advertising based on task cognitive demand. *Computers in Human Behavior*, *55*, 867–876. https://doi.org/10.1016/j.chb.2015.10.025

Bansal, G., Zahedi, F. M., & Gefen, D. (2016). Do context and personality matter? Trust and privacy concerns in disclosing private information online*. Information & Management*, *53*(1), 1–21. https://doi.org/10.1016/j.im.2015.08.001

Baumert, A., & Schmitt, M. (2012). Personality and Information Processing. *European Journal of Personality*, *26*(2), 87–89. https://doi.org/10.1002/per.1850

REFERENCES

Baur, N., & Blasius, J. (Eds.) (2019). *Handbuch Methoden der empirischen Sozialforschung* (2nd ed.). Springer VS. https://doi.org/10.1007/978-3-658-21308-4

Belanger, F., Hiller, J. S., & Smith, W. J. (2002). Trustworthiness in electronic commerce: the role of privacy, security, and site attributes. *The Journal of Strategic Information Systems*, *11*(3-4), 245–270. https://doi.org/10.1016/S0963-8687(02)00018-5

Ben-Ner, A., & Halldorsson, F. (2010). Trusting and trustworthiness: What are they, how to measure them, and what affects them. *Journal of Economic Psychology*, *31*(1), 64–79. https://doi.org/10.1016/j.joep.2009.10.001

Bentler, P. M., & Bonett, D. G. (1980). Significance tests and goodness of fit in the analysis of covariance structures. *Psychological Bulletin*, *88*(3), 588–606. https://doi.org/10.1037/0033-2909.88.3.588

Berg, J., Dickhaut, J., & McCabe, K. (1995). Trust, Reciprocity, and Social History. *Games and Economic Behavior*, *10*(1), 122–142. https://doi.org/10.1006/game.1995.1027

Bettman, J. R. (1979). Memory Factors in Consumer Choice: A Review. *Journal of Marketing*, *43*(2), 37–53. https://doi.org/10.1177/002224297904300205

Bhatnagar, A., Sinha, A. P., & Sen, A. (2019). Role of navigational ability in website visit duration. *European Journal of Marketing*, *53*(5), 972–988. https://doi.org/10.1108/EJM-10-2017-0719

Bock, A. H. (2012). *Kundenservice im Social Web: Handbuch für Dialog-Profis*. O'Reilly.

Bohnet, I., & Zeckhauser, R. (2004). Trust, risk and betrayal. *Journal of Economic Behavior & Organization*, *55*(4), 467–484. https://doi.org/10.1016/j.jebo.2003.11.004

Bonifield, C., Cole, C., & Schultz, R. L. (2010). Product returns on the Internet: A case of mixed signals? *Journal of Business Research*, *63*(9-10), 1058–1065. https://doi.org/10.1016/j.jbusres.2008.12.009

Boulding, W., & Kirmani, A. (1993). A Consumer-Side Experimental Examination of Signaling Theory: Do Consumers Perceive Warranties as Signals of Quality? *Journal of Consumer Research*, *20*(1), 111–123. https://doi.org/10.1086/209337

REFERENCES

Bowerman, B. L., & O'Connell, R. T. (1990). *Linear statistical models: An applied approach* (2nd ed.). Duxbury Press.

Breeze, R. (2015). *Corporate discourse.* Bloomsbury Academy.

Brown, T. A. (2015). *Confirmatory factor analysis for applied research* (2nd ed.). Guilford Publications.

Butler, J. K. (1991). Toward Understanding and Measuring Conditions of Trust: Evolution of a Conditions of Trust Inventory. *Journal of Management*, *17*(3), 643–663. https://doi.org/10.1177/014920639101700307

Cardoso, S., & Martinez, L. F. (2019). Online payments strategy: how third-party internet seals of approval and payment provider reputation influence the Millennials' online transactions. *Electronic Commerce Research*, *19*(1), 189–209. https://doi.org/10.1007/s10660-018-9295-x

Casañ-Pitarch, R. C. (2015). The genre 'about us': A case study of banks' corporate webpages. *International Journal of Language Studies*, *9*(2), 69–96.

Chen, Y.-C., Shang, R.-A., & Kao, C.-Y. (2009). The effects of information overload on consumers' subjective state towards buying decision in the internet shopping environment. *Electronic Commerce Research and Applications*, *8*(1), 48–58. https://doi.org/10.1016/j.elerap.2008.09.001

Chiles, T. H., & McMackin, J. F. (1996). Integrating Variable Risk Preferences, Trust, and Transaction Cost Economics. *Academy of Management Review*, *21*(1), 73-99. https://doi.org/10.2307/258630

Cialdini, R. B. (1993). *Influence: The Psychology of Persuasion*. Harper Business.

Cloarec, J. (2020). The personalization–privacy paradox in the attention economy. *Technological Forecasting and Social Change*, *161*. https://doi.org/10.1016/j.techfore.2020.120299

Collier, J. E. (2020). *Applied Structural Equation Modeling Using AMOS*. Routledge.

Cook, R. D. (1982). *Residuals and influence in regression. Monographs on statistics and applied probability.* Chapman and Hall.

Cooper, W. H., & Withey, M. J. (2009). The strong situation hypothesis. *Personality and Social Psychology Review*, *13*(1), 62–72. https://doi.org/10.1177/1088868308329378

REFERENCES

Costa, P. T., & McCrae, R. R. (1992). *Revised NEO Personality Inventory (NEO-PI-R) and NEO Five-Factor Inventory (NEO-FFI) professional manual.* Psychological Assessment Resources.

Costa, P. T., & McCrae, R. R. (2008). The Revised NEO Personality Inventory (NEO-PI-R). In G. J. Boyle, G. Matthews, & D. H. Saklofske (Eds.), *The SAGE Handbook of Personality Theory and Assessment, Vol. 2 Personality Measurement and Testing* (pp. 179–198). SAGE Publications.

Czajka, S., & Mohr, S. (2010). Einkäufe privater Haushalte über das Internet: E-Commerce im Jahr 2009. *WISTA - Wirtschaft Und Statistik*, *3*, 282–289.

Darby, M. R., & Karni, E. (1973). Free Competition and the Optimal Amount of Fraud. *Journal of Law and Economics*, *16*(1), 67–88. https://doi.org/10.1086/466756

Deges, F. (2020). *Grundlagen des E-Commerce: Strategien, Modelle, Instrumente*. Springer Gabler. https://doi.org/10.1007/978-3-658-26320-1

De Kwaadsteniet, E. W., van Dijk, E., Wit, A., & De Cremer, D. (2006). Social dilemmas as strong versus weak situations: Social value orientations and tacit coordination under resource size uncertainty. *Journal of Experimental Social Psychology*, *42*(4), 509–516. https://doi.org/10.1016/j.jesp.2005.06.004

Delgado-Ballester, E., & Hernández-Espallardo, M. (2008). Effect of Brand Associations on Consumer Reactions to Unknown On-Line Brands. *International Journal of Electronic Commerce*, *12*(3), 81–113. https://doi.org/10.2753/JEC1086-4415120305

Denissen, J. J. A., & Penke, L. (2008). Motivational individual reaction norms underlying the Five-Factor model of personality: First steps towards a theory-based conceptual framework. *Journal of Research in Personality*, *42*(5), 1285–1302. https://doi.org/10.1016/j.jrp.2008.04.002

Dimoka, A., Hong, Y., & Pavlou, P. A. (2012). On Product Uncertainty in Online Markets: Theory and Evidence. *MIS Quarterly*, *36*(2), 395-426. https://doi.org/10.2307/41703461

Dinev, T., & Hart, P. (2006). An Extended Privacy Calculus Model for E-Commerce Transactions. *Information Systems Research*, *17*(1), 61–80. https://doi.org/10.1287/isre.1060.0080

REFERENCES

Eaves, L., & Eysenck, H. (1975). The nature of extraversion: A genetical analysis. *Journal of Personality and Social Psychology, 32*(1), 102–112. https://doi.org/10.1037/h0076862

Evans, A. M., & Revelle, W. (2008). Survey and behavioral measurements of interpersonal trust. *Journal of Research in Personality*, *42*(6), 1585–1593. https://doi.org/10.1016/j.jrp.2008.07.011

Fan, H., & Poole, M. S. (2006). What Is Personalization? Perspectives on the Design and Implementation of Personalization in Information Systems. *Journal of Organizational Computing and Electronic Commerce*, *16*(3-4), 179–202. https://doi.org/10.1080/10919392.2006.9681199

Faul, F., Erdfelder, E., Bucher, A., & Lang, A.-G. (2009). Statistical power analyses using G*Power 3.1: Tests for correlation and regression analyses. *Behavior Research Methods*, *41*(4), 1149–1160. https://doi.org/10.3758/BRM.41.4.1149

Field, A. (2013). *Discovering Statistics Using IBM SPSS Statistics* (4th ed.). SAGE Publications.

Fishbein, M., & Ajzen, I. (1975). *Belief, attitude, intention and behavior: An introduction to theory and research.* Addison-Wesley.

Fiske, D. W. (1949). Consistency of the factorial structures of personality ratings from different sour sources. *Journal of Abnormal Psychology*, *44*(3), 329–344. https://doi.org/10.1037/h0057198

Fornell, C., & Larcker, D. F. (1981). Evaluating Structural Equation Models with Unobservable Variables and Measurement Error. *Journal of Marketing Research*, *18*(1), 39-50. https://doi.org/10.2307/3151312

Forsythe, S., Liu, C., Shannon, D., & Gardner, L. C. (2006). Development of a scale to measure the perceived benefits and risks of online shopping. *Journal of Interactive Marketing*, *20*(2), 55–75. https://doi.org/10.1002/dir.20061

Fournier, M. A., & Moskowitz, D. S. (2018). Cross-Situational Consistency, Variability and the Behavioral Signature. In V. Zeigler-Hill & T. K. Shackelford (Eds.), *The SAGE Handbook of Personality and Individual Differences, Vol. 2 Origins of Personality and Individual Differences* (pp. 218–240). SAGE Publications. https://doi.org/10.4135/9781526451200.n13

REFERENCES

Frane, J. W. (1998). A Method of Biased Coin Randomization, Its Implementation, and Its Validation. *Drug Information Journal*, *32*(2), 423–432. https://doi.org/10.1177/009286159803200213

Fréchette, G. R., Schotter, A., & Trevino, I. (2017). Personality, Information Acquisition, And Choice Under Uncertainty: An Experimental Study. *Economic Inquiry*, *55*(3), 1468–1488. https://doi.org/10.1111/ecin.12438

Frederiksen, M. (2014). Trust in the face of uncertainty: a qualitative study of intersubjective trust and risk. *International Review of Sociology*, *24*(1), 130–144. https://doi.org/10.1080/03906701.2014.894335

Freitag, M., & Bauer, P. C. (2016). Personality traits and the propensity to trust friends and strangers. *The Social Science Journal*, *53*(4), 467–476. https://doi.org/10.1016/j.soscij.2015.12.002

Galton, F. (1884). Measurement of Character. *Fortnightly Review*, *42*, 179–185.

Gangai, K. N., & Agrawal, R. (2019). The Influence of Personality Traits on Consumer Impulsive Buying Behaviour. *International Journal of Marketing and Business Communication, 5*(1), 35-42. https://doi.org/10.21863/ijmbc/2016.5.1.027

Garfinkel, H. (1963). A Conception of, and Experiments with, 'Trust as a Condition of Stable Concerted Actions.'. In O. J. Harvey (Ed.), *Motivation and Social Interaction: Cognitive Determinants* (pp. 187–265). Ronald Press.

Gefen, D., Karahanna, E., & Straub, D. W. (2003). Trust and TAM in Online Shopping: An Integrated Model. *MIS Quarterly*, *27*(1), 51-90. https://doi.org/10.2307/30036519

Gefen, D., & Straub, D. W. (2003). Managing User Trust in B2C e-Services. *E-Service Journal*, *2*(2), 7-24. https://doi.org/10.2979/esj.2003.2.2.7

Gefen, D., & Straub, D. W. (2004). Consumer trust in B2C e-Commerce and the importance of social presence: Experiments in e-Products and e-Services. *Omega*, *32*(6), 407–424. https://doi.org/10.1016/j.omega.2004.01.006

Glöckner, A., & Hilbig, B. E. (2012). Risk is relative: Risk aversion yields cooperation rather than defection in cooperation-friendly environments. *Psychonomic Bulletin & Review*, *19*(3), 546–553. https://doi.org/10.3758/s13423-012-0224-z

REFERENCES

Gohary, A., & Hanzaee, K. H. (2014). Personality Traits as Predictors of Shopping Motivations and Behaviors: A Canonical Correlation Analysis. *Arab Economic and Business Journal, 9*(2), 166-174.

Goldberg, L. R. (1990). An alternative "description of personality": The Big-Five factor structure. *Journal of Personality and Social Psychology*, *59*(6), 1216–1229. https://doi.org/10.1037//0022-3514.59.6.1216

Goodwin, K. A., & Goodwin, C. J. (2016). *Research in Psychology: Methods and Design* (8th ed.). Wiley.

Gosling, S. D., & Mason, W. (2015). Internet research in psychology. *Annual Review of Psychology*, *66*, 877–902. https://doi.org/10.1146/annurev-psych-010814-015321

Gosling, S. D., Rentfrow, P. J., & Swann, W. B. (2003). A very brief measure of the Big-Five personality domains. *Journal of Research in Personality*, *37*(6), 504–528. https://doi.org/10.1016/S0092-6566(03)00046-1

Granello, D. H., & Wheaton, J. E. (2004). Online Data Collection: Strategies for Research. *Journal of Counseling & Development*, *82*(4), 387–393. https://doi.org/10.1002/j.1556-6678.2004.tb00325.x

Gregg, D. G., & Scott, J. E. (2006). The Role of Reputation Systems in Reducing On-Line Auction Fraud. *International Journal of Electronic Commerce*, *10*(3), 95–120. https://doi.org/10.2753/JEC1086-4415100304

Grünberg, P. (2014). Vertrauen – Ein interdisziplinärer Zugang. In P. Grünberg (Ed.), *Vertrauen in das Gesundheitssystem* (pp. 45–172). Springer Fachmedien Wiesbaden. https://doi.org/10.1007/978-3-658-04350-6_3

Ha, H.-Y., & Perks, H. (2005). Effects of consumer perceptions of brand experience on the web: brand familiarity, satisfaction and brand trust. *Journal of Consumer Behaviour*, *4*(6), 438–452. https://doi.org/10.1002/cb.29

Hair, J. F., Black, W.C., Babin, B. J. & Anderson, R. E. (2014). *Multivariate data analysis* (7th ed.). Pearson Education.

Handelsverband Deutschland (2019). *Online Monitor 2019*. https://einzelhandel.de/online-monitor

Handelsverband Deutschland (2020). *Online Monitor 2020*. https://einzelhandel.de/online-monitor

REFERENCES

Handelsverband Deutschland (2022). *Online Monitor 2022*. https://einzelhandel.de/online-monitor

Hawes, J. M., & Lumpkin, J. R. (1986). Perceived Risk and the Selection of a Retail Patronage Mode. *Journal of the Academy of Marketing Science*, *14*(4), 37–42. https://doi.org/10.1177/009207038601400406

Hawthorn, G. (2000). Three Ironies in Trust. In D. Gambetta (Ed.), *Trust: Making and Breaking Cooperative Relations* (pp. 111-126). Department of Sociology, University of Oxford.

Hayes, A. F. (2017). *Introduction to Mediation, Moderation, and Conditional Process Analysis: A Regression-Based Approach* (2nd ed.). Guilford Publications.

Head, M., & Hassanein, K. (2002). Trust in e-Commerce: Evaluating the Impact of Third-Party Seals. *Quarterly Journal of Electronic Commerce*, *3*(3), 307–325.

Helsper, E. J., & Eynon, R. (2013). Distinct skill pathways to digital engagement. *European Journal of Communication*, *28*(6), 696–713. https://doi.org/10.1177/0267323113499113

Herzog, A. R., & Bachman, J. G. (1981). Effects of Questionnaire Length on Response Quality. *Public Opinion Quarterly*, *45*(4), 549-559. https://doi.org/10.1086/268687

Highhouse, S., Wang, Y., & Zhang, D. C. (2022). Is risk propensity unique from the big five factors of personality? A meta-analytic investigation. *Journal of Research in Personality*, *98*, 104206. https://doi.org/10.1016/j.jrp.2022.104206.

Hirsh, J. B., Kang, S. K., & Bodenhausen, G. V. (2012). Personalized persuasion: Tailoring persuasive appeals to recipients' personality traits. *Psychological Science*, *23*(6), 578–581. https://doi.org/10.1177/0956797611436349

Ho, S. Y., & Bodoff, D. (2014). The Effects of Web Personalization on User Attitude and Behavior: An Integration of the Elaboration Likelihood Model and Consumer Search Theory. *MIS Quarterly*, *38*(2), 497–520. https://doi.org/10.25300/MISQ/2014/38.2.08

Holm, S. (1979). A Simple Sequentially Rejective Multiple Test Procedure. *Scandinavian Journal of Statistics*, *6*(2), 65–70.

Holzwarth, M., Janiszewski, C., & Neumann, M. M. (2006). The Influence of Avatars on Online Consumer Shopping Behavior. *Journal of Marketing*, *70*(4), 19–36. https://doi.org/10.1509/jmkg.70.4.019

Hostler, R. E., Yoon, V. Y., & Guimaraes, T. (2005). Assessing the impact of internet agent on end users' performance. *Decision Support Systems*, *41*(1), 313–323. https://doi.org/10.1016/j.dss.2004.07.002

Hu, L., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling: A Multidisciplinary Journal*, *6*(1), 1–55. https://doi.org/10.1080/10705519909540118

Hu, X., Lin, Z., Whinston, A. B., & Zhang, H. (2004). Hope or Hype: On the Viability of Escrow Services as Trusted Third Parties in Online Auction Environments. *Information Systems Research*, *15*(3), 236–249. https://doi.org/10.1287/isre.1040.0027

Huang, J.-H., & Yang, Y.-C. (2010). The relationship between personality traits and online shopping motivations. *Social Behavior and Personality*, *38*(5), 673-680. https://doi.org/10.2224/sbp.2010.38.5.673

Huang, J., & Zhou, L. (2019). The dual roles of web personalization on consumer decision quality in online shopping. *Internet Research*, *29*(6), 1280–1300. https://doi.org/10.1108/INTR-11-2017-0421

Jacobsen, J., & Meyer, L. (2017). *Praxisbuch Usability und UX*. Rheinwerk Verlag GmbH.

Jacoby, J., Speller, D. E., & Kohn, C. A. (1974). Brand Choice Behavior as a Function of Information Load. *Journal of Marketing Research*, *11*(1), 63–69. https://doi.org/10.1177/002224377401100106

Jann, B., & Hevenstone, D. (2019). Simulation. In N. Baur & J. Blasius (Eds.), *Handbuch Methoden der empirischen Sozialforschung* (pp. 219–230). Springer Fachmedien Wiesbaden. https://doi.org/10.1007/978-3-658-21308-4_14

Jensen-Campbell, L. A. & Graziano, W. G. (2001). Agreeableness as a Moderator of Interpersonal Conflict. *Journal of Personality, 69*(2), 323-362. https://doi.org/10.1111/1467-6494.00148.

REFERENCES

Johnson, A., Mulder, B., Sijbinga, A., & Hulsebos, L. (2012). Action as a Window to Perception: Measuring Attention with Mouse Movements. *Applied Cognitive Psychology*, *26*(5), 802–809. https://doi.org/10.1002/acp.2862

Kaspar, K., & König, P. (2012). Emotions and personality traits as high-level factors in visual attention: A review. *Frontiers in Human Neuroscience*, *6*, 1-14. https://doi.org/10.3389/fnhum.2012.00321

Kaspar, K., Weber, S. L., & Wilbers, A.-K. (2019). Personally relevant online advertisements: Effects of demographic targeting on visual attention and brand evaluation. *PLoS One*, *14*(2), 1-18. https://doi.org/10.1371/journal.pone.0212419

Keller, K. L., & Staelin, R. (1987). Effects of Quality and Quantity of Information on Decision Effectiveness. *Journal of Consumer Research*, *14*(2), 200-213. https://doi.org/10.1086/209106

Kim, D., & Benbasat, I. (2006). The Effects of Trust-Assuring Arguments on Consumer Trust in Internet Stores: Application of Toulmin's Model of Argumentation. *Information Systems Research*, *17*(3), 286–300. https://doi.org/10.1287/isre.1060.0093

Kim, S., & Lee, D. (2011). Prefrontal cortex and impulsive decision making. *Biological Psychiatry, 69*(12), 1140–1146. https://doi.org/10.1016/j.biopsych.2010.07.005

Kim, Y., Dykema, J., Stevenson, J., Black, P., & Moberg, D. P. (2019). Straightlining: Overview of Measurement, Comparison of Indicators, and Effects in Mail–Web Mixed-Mode Surveys. *Social Science Computer Review*, *37*(2), 214–233. https://doi.org/10.1177/0894439317752406

Klein, L. R. (1998). Evaluating the Potential of Interactive Media through a New Lens: Search versus Experience Goods. *Journal of Business Research*, *41*(3), 195–203. https://doi.org/10.1016/S0148-2963(97)00062-3

Kline, R. B. (2016). *Principles and practice of structural equation modeling* (4th ed.). Guilford Publications.

Kollewe, T., & Keukert, M. (2016). *Praxiswissen E-Commerce: Das Handbuch für den erfolgreichen Onlineshop* (2nd ed.). O'Reillys basics.

REFERENCES

Komiak, S., & Benbasat, I. (2006). The Effects of Personalization and Familiarity on Trust and Adoption of Recommendation Agents. *MIS Quarterly*, *30*(4), 941. https://doi.org/10.2307/25148760

Köster, M., Rüth, M., Hamborg, K.-C., & Kaspar, K. (2015). Effects of Personalized Banner Ads on Visual Attention and Recognition Memory. *Applied Cognitive Psychology*, *29*(2), 181–192. https://doi.org/10.1002/acp.3080

Kreutzer, R. T. (2021). *Praxisorientiertes Online-Marketing* (4th ed.). Springer Fachmedien Wiesbaden. https://doi.org/10.1007/978-3-658-31990-8

Laband, D. (1991). An objective measure of search versus experience goods. *Economic Inquiry*, *29*(3), 497–509. https://doi.org/10.1111/j.1465-7295.1991.tb00842.x

Laurent, G., & Kapferer, J.-N. (1985). Measuring Consumer Involvement Profiles. *Journal of Marketing Research*, *22*(1), 41-53. https://doi.org/10.2307/3151549

Lee, B.-C., Ang, L., & Dubelaar, C. (2005). Lemons on the Web: A signalling approach to the problem of trust in Internet commerce. *Journal of Economic Psychology*, *26*(5), 607–623. https://doi.org/10.1016/j.joep.2005.01.001

Lee, B.-K., & Lee, W.-N. (2004). The effect of information overload on consumer choice quality in an on-line environment. *Psychology and Marketing*, *21*(3), 159–183. https://doi.org/10.1002/mar.20000

Leiner, D. J. (2019). Too Fast, too Straight, too Weird: Non-Reactive Indicators for Meaningless Data in Internet Surveys. *Survey Research Methods*, *13*(3), 229-248. https://doi.org/10.18148/srm/2019.v13i3.7403

Lemon, K. N., & Verhoef, P. C. (2016). Understanding Customer Experience Throughout the Customer Journey. *Journal of Marketing*, *80*(6), 69–96. https://doi.org/10.1509/jm.15.0420

Li, C. (2016). When does web-based personalization really work? The distinction between actual personalization and perceived personalization. *Computers in Human Behavior*, *54*, 25–33. https://doi.org/10.1016/j.chb.2015.07.049

Liang, T.-P., Lai, H.-J., & Ku, Y.-C. (2006). Personalized Content Recommendation and User Satisfaction: Theoretical Synthesis and Empirical Findings. *Journal of Management Information Systems*, *23*(3), 45–70. https://doi.org/10.2753/MIS0742-1222230303

Lu, B., Fan, W., & Zhou, M. (2016). Social presence, trust, and social commerce purchase intention: An empirical research. *Computers in Human Behavior*, *56*, 225–237. https://doi.org/10.1016/j.chb.2015.11.057

Lucas, R. E., Diener, E., Grob, A., Suh, E. M., & Shao, L. (2000). Cross-cultural evidence for the fundamental features of Extraversion. *Journal of Personality and Social Psychology, 79*, 452–468.

Lucas, R. E., & Diener, E. (2001). Understanding extraverts' enjoyment of social situations: The importance of pleasantness. *Journal of Personality and Social Psychology, 81*(2), 343–356. https://doi.org/10.1037/0022-3514.81.2.343

Luhmann, N. (1979). *Trust and Power.* Wiley.

MacCallum, R. C., Browne, M. W., & Sugawara, H. M. (1996). Power analysis and determination of sample size for covariance structure modeling. *Psychological Methods*, *1*(2), 130–149. https://doi.org/10.1037/1082-989x.1.2.130

Malhotra, N. K. (1982). Information Load and Consumer Decision Making. *Journal of Consumer Research*, *8*(4), 419-430. https://doi.org/10.1086/208882

Malhotra, N. K., Kim, S. S., & Agarwal, J. (2004). Internet Users' Information Privacy Concerns (IUIPC): The Construct, the Scale, and a Causal Model. *Information Systems Research*, *15*(4), 336–355. https://doi.org/10.1287/isre.1040.0032

Mathews, A. (2012). Personality and Information Processing: We Are What We Encode. *European Journal of Personality*, *26*(2), 158–163. https://doi.org/10.1002/per.1852

Matthews, G. (2008). Personality and Information Processing: A Cognitive-Adaptive Theory. In G. J. Boyle, G. Matthews, & D. H. Saklofske (Eds.), *The SAGE Handbook of Personality Theory and Assessment, Vol. 1 Personality Theories and Models* (pp. 56–79). London: SAGE Publications.

Mavlanova, T., Benbunan-Fich, R., & Koufaris, M. (2012). Signaling theory and information asymmetry in online commerce. *Information & Management*, *49*(5), 240–247. https://doi.org/10.1016/j.im.2012.05.004

Mayer, R. C., Davis, J. H., & Schoorman, F. D. (1995). An Integrative Model of Organizational Trust. *The Academy of Management Review*, *20*(3), 709-734. https://doi.org/10.2307/258792

REFERENCES

McCrae, R.R. (1996). Social Consequences of Experiential Openness. *Psychological Bulletin, 120*(3), 323-337. https://doi.org/10.1037/0033-2909.120.3.323

McCrae, R. R., & Costa, P. T. (1987). Validation of the five-factor model of personality across instruments and observers. *Journal of Personality and Social Psychology*, *52*(1), 81–90. https://doi.org/10.1037/0022-3514.52.1.81

McCrae, R. R., & Costa, P. T. (1992). Discriminant Validity of NEO-PIR Facet Scales. *Educational and Psychological Measurement*, *52*(1), 229–237. https://doi.org/10.1177/001316449205200128

McCrae, R. R., & Costa, P. T. (2003). *Personality in Adulthood: A Five-Factor Theory Perspective* (2nd ed.). Guilford Publications. https://doi.org/10.4324/9780203428412

McDowell, W. C., Wilson, R. C., & Kile, C. O. (2016). An examination of retail website design and conversion rate. *Journal of Business Research*, *69*(11), 4837–4842. https://doi.org/10.1016/j.jbusres.2016.04.040

McKnight, D. H., & Chervany, N. L. (2001). What Trust Means in E-Commerce Customer Relationships: An Interdisciplinary Conceptual Typology. *International Journal of Electronic Commerce*, *6*(2), 35–59. https://doi.org/10.1080/10864415.2001.11044235

McKnight, D. H., Choudhury, V., & Kacmar, C. (2002a). Developing and Validating Trust Measures for e-Commerce: An Integrative Typology. *Information Systems Research*, *13*(3), 227-359. https://doi.org/10.1287/isre.13.3.334.81

McKnight, D. H., Choudhury, V., & Kacmar, C. (2002b). The impact of initial consumer trust on intentions to transact with a web site: A trust building model. *The Journal of Strategic Information Systems*, *11*(3-4), 297–323. https://doi.org/10.1016/S0963-8687(02)00020-3

McKnight, D. H., Cummings, L., & Chervany, N. L. (1998). Initial Trust Formation in new organizational relationships. *The Academy of Management Review*, *23*(3), 473–490. https://doi.org/10.2307/259290

McKnight, D. H., Kacmar, C., & Choudhury, V. (2004). Shifting Factors and the Ineffectiveness of Third Party Assurance Seals: A Two-Stage Model of Initial Trust in

a Web Business. *Electronic Markets*, *14*(3), 252–266. https://doi.org/10.1080/1019678042000245263

Mehrabian, A., & Russell, J. A. (1974). *An Approach to Environmental Psychology*. The MIT Press.

Mero, J. (2018). The effects of two-way communication and chat service usage on consumer attitudes in the e-commerce retailing sector. *Electronic Markets*, *28*(2), 205–217. https://doi.org/10.1007/s12525-017-0281-2

Mischel, W. (1968). *Personality and assessment*. Wiley. https://doi.org/10.4324/9780203763643

Mischel, W. (1973). Toward a cognitive social learning reconceptualization of personality. *Psychological Review*, *80*(4), 252–283. https://doi.org/10.1037/h0035002

Mishra, D. P., Heide, J. B., & Cort, S. G. (1998). Information Asymmetry and Levels of Agency Relationships. *Journal of Marketing Research*, *35*(3), 277–295. https://doi.org/10.1177/002224379803500301

Mitra, K., Reiss, M. C., & Capella, L. M. (1999). An examination of perceived risk, information search and behavioral intentions in search, experience and credence services. *Journal of Services Marketing*, *13*(3), 208–228. https://doi.org/10.1108/08876049910273763

Moe, W. W., & Fader, P. S. (2004). Dynamic Conversion Behavior at E-Commerce Sites. *Management Science*, *50*(3), 326–335. https://doi.org/10.1287/mnsc.1040.0153

Moorthy, S., & Srinivasan, K. (1995). Signaling Quality with a Money-Back Guarantee: The Role of Transaction Costs. *Marketing Science*, *14*(4), 442–466. https://doi.org/10.1287/mksc.14.4.442

Moosbrugger, H., & Kelava, A. (Eds.) (2020). *Testtheorie und Fragebogenkonstruktion* (3rd ed.). Springer Medizin. https://doi.org/10.1007/978-3-662-61532-4

Muck, P. M., Hell, B., & Gosling, S. D. (2007). Construct Validation of a Short Five-Factor Model Instrument: A self-peer study on the German adaptation of the Ten-Item Personality Inventory (TIPI-G). *European Journal of Psychological Assessment*, *23*(3), 166–175. https://doi.org/10.1027/1015-5759.23.3.166

Müller, J., & Schwieren, C. (2019). Big Five personality factors in the Trust Game. *Journal of Business Economics, 90*, 37-55. https://doi.org/10.1007/s11573-019-00928-3

Murphy, M. L. M., Miller, G. E., & Wrosch, C. (2013). Conscientiousness and stress exposure and reactivity: a prospective study of adolescent females. *Journal of Behavioral Medicine, 36,* 153–164. https://doi.org/10.1007/s10865-012-9408-2

Nakayama, M., Sutcliffe, N., & Wan, Y. (2010). Has the web transformed experience goods into search goods? *Electronic Markets*, *20*(3-4), 251–262. https://doi.org/10.1007/s12525-010-0041-z

Nelson, P. (1970). Information and Consumer Behavior. *Journal of Political Economy*, *78*(2), 311–329. https://doi.org/10.1086/259630

Noar, S. M., Harrington, N. G., & Aldrich, R. S. (2009). The Role of Message Tailoring in the Development of Persuasive Health Communication Messages. *Annals of the International Communication Association*, *33*(1), 73–133. https://doi.org/10.1080/23808985.2009.11679085

Noll, J., & Winkler, M. (2004). Gütesiegel und Vertrauen im E-Commerce. *Journal für Marketing*, *43*(1), 23–32. https://doi.org/10.1007/bf03032266

Norman, W. T. (1963). Toward an adequate taxonomy of personality attributes: Replicated factors structure in peer nomination personality ratings. *The Journal of Abnormal and Social Psychology*, *66*(6), 574–583. https://doi.org/10.1037/h0040291

Nunnally, J. C., & Bernstein, I. H. (1978). *Psychometric theory* (2nd ed.). McGraw-Hill.

Olbrich, R., Schultz, C. D., & Holsing, C. (2019). *Electronic Commerce und Online-Marketing: Ein einführendes Lehr- und Übungsbuch* (2nd ed.). Springer Gabler. https://doi.org/10.1007/978-3-662-58067-7

Özpolat, K., Gao, G., Jank, W., & Viswanathan, S. (2013). Research Note —The Value of Third-Party Assurance Seals in Online Retailing: An Empirical Investigation. *Information Systems Research*, *24*(4), 1100–1111. https://doi.org/10.1287/isre.2013.0489

Paelecke, M., Paelecke - Habermann, Y., & Borkenau, P. (2012). Temperament and Attentional Bias in Vocal Emotional Stroop Tasks. *European Journal of Personality*, *26*(2), 111–122. https://doi.org/10.1002/per.1848

Pavlou, P. A., & Gefen, D. (2004). Building Effective Online Marketplaces with Institution-Based Trust. *Information Systems Research*, *15*(1), 37–59. https://doi.org/10.1287/isre.1040.0015

Pavlou, P. A., Liang, H., & Xue, Y. (2007). Understanding and Mitigating Uncertainty in Online Exchange Relationships: A Principal-Agent Perspective. *MIS Quarterly*, *31*(1), 105-136. https://doi.org/10.2307/25148783

Petty, R. E., & Cacioppo, J. T. (1986). The Elaboration Likelihood Model of Persuasion. In R. E. Petty & J. T. Cacioppo (Eds.), *Communication and Persuasion* (pp. 1–24). Springer Nature. https://doi.org/10.1007/978-1-4612-4964-1_1

Podsakoff, P. M., MacKenzie, S. B., Lee, J.-Y., & Podsakoff, N. P. (2003). Common method biases in behavioral research: A critical review of the literature and recommended remedies. *Journal of Applied Psychology*, *88*(5), 879–903. https://doi.org/10.1037/0021-9010.88.5.879

Prabhu, J., & Stewart, D. W. (2001). Signaling Strategies in Competitive Interaction: Building Reputations and Hiding the Truth. *Journal of Marketing Research*, *38*(1), 62–72. https://doi.org/10.1509/jmkr.38.1.62.18826

Price, L. J., & Dawar, N. (2002). The joint effects of brands and warranties in signaling new product quality. *Journal of Economic Psychology*, *23*(2), 165–190. https://doi.org/10.1016/S0167-4870(02)00062-4

Resnick, P., Kuwabara, K., Zeckhauser, R., & Friedman, E. (2000). Reputation systems. *Communications of the ACM*, *43*(12), 45–48. https://doi.org/10.1145/355112.355122

Riva, G., Teruzzi, T., & Anolli, L. (2003). The use of the internet in psychological research: Comparison of online and offline questionnaires. *Cyberpsychology & Behavior*, *6*(1), 73–80. https://doi.org/10.1089/109493103321167983

Robins, R. W., Fraley, R. C., & Krueger, R. F. (Eds.) (2007). *Handbook of research methods in personality psychology*. Guilford Publications.

Rook, D.W. & Gardner, M.P. (1993). In the mood: Impulse buying's affective antecedents. *Research in Consumer Behavior*, *6*, 1–28.

Rotter, J. B. (1967). A new scale for the measurement of interpersonal trust. *Journal of Personality*, *35*(4), 651–665. https://doi.org/10.1111/j.1467-6494.1967.tb01454.x

Rotter, J. B. (1971). Generalized expectancies for interpersonal trust. *American Psychologist*, *26*(5), 443–452. https://doi.org/10.1037/h0031464

Rotter, J. B. (1980). Interpersonal trust, trustworthiness, and gullibility. *American Psychologist*, *35*(1), 1–7. https://doi.org/10.1037/0003-066X.35.1.1

Rousseau, D. M., Sitkin, S. B., Burt, R. S., & Camerer, C. (1998). Not So Different After All: A Cross-Discipline View Of Trust. *Academy of Management Review*, *23*(3), 393–404. https://doi.org/10.5465/amr.1998.926617

Rusting, C. L., & Larsen, R. J. (1998). Personality and Cognitive Processing of Affective Information. *Personality & Social Psychology Bulletin*, *24*(2), 200–213. https://doi.org/10.1177/0146167298242008

San-Martín, S., González-Benito, Ó., & Martos-Partal, M. (2017). To what extent does need for touch affect online perceived quality? *International Journal of Retail & Distribution Management*, *45*(9), 950–968. https://doi.org/10.1108/IJRDM-04-2016-0054

Schlosser, A. E., White, T. B., & Lloyd, S. M. (2006). Converting Web Site Visitors into Buyers: How Web Site Investment Increases Consumer Trusting Beliefs and Online Purchase Intentions. *Journal of Marketing*, *70*(2), 133–148. https://doi.org/10.1509/jmkg.70.2.133

Schmidt-Atzert, L., & Amelang, M. (2012). *Psychologische Diagnostik* (5th ed.). Springer Medizin. https://doi.org/10.1007/978-3-642-17001-0

Shapiro, S. P. (1987). The Social Control of Impersonal Trust. *American Journal of Sociology*, *93*(3), 623–658. https://doi.org/10.1086/228791

Silvia, P. J., & Christensen, A. P. (2020). Looking up at the curious personality: individual differences in curiosity and openness to experience. *Current Opinion in Behavioral Sciences, 35*, 1-6. https://doi.org/10.1016/j.cobeha.2020.05.013

Smith, J.H., Dinev, T., & Xu, H. (2011). Information Privacy Research: An Interdisciplinary Review. *MIS Quarterly*, *35*(4), 989-1015. https://doi.org/10.2307/41409970

Smith, E. R., & Mackie, D. M. (2007). *Social psychology* (3rd ed.). Psychology Press.

Steiger, J. H. (1990). Structural Model Evaluation and Modification: An Interval Estimation Approach. *Multivariate Behavioral Research*, *25*(2), 173–180. https://doi.org/10.1207/s15327906mbr2502_4

Stouthuysen, K., Teunis, I., Reusen, E., & Slabbinck, H. (2018). Initial trust and intentions to buy: The effect of vendor-specific guarantees, customer reviews and the role of online shopping experience. *Electronic Commerce Research and Applications*, *27*, 23–38. https://doi.org/10.1016/j.elerap.2017.11.002

Tam, K. Y. & Ho, S. Y. (2006). Understanding the Impact of Web Personalization on User Information Processing and Decision Outcomes. *MIS Quarterly*, *30*(4), 865-890. https://doi.org/10.2307/25148757

Tellegen, A. (1991). Personality Traits: Issues of Definition, Evidence, and Assessment. In D. Cicchetti & W. M. Grove (Eds.), *Thinking Clearly about Psychology V2: Personality and Psychopathology* (pp. 10–35). University of Minnesota Press.

Tett, R. P., & Guterman, H. A. (2000). Situation Trait Relevance, Trait Expression, and Cross-Situational Consistency: Testing a Principle of Trait Activation. *Journal of Research in Personality*, *34*(4), 397–423. https://doi.org/10.1006/jrpe.2000.2292

Thielmann, I., & Hilbig, B. E. (2014). Trust in me, trust in you: A social projection account of the link between personality, cooperativeness, and trustworthiness expectations. *Journal of Research in Personality*, *50*(1), 61–65. https://doi.org/10.1016/j.jrp.2014.03.006

Thielmann, I., & Hilbig, B. E. (2015). Trust: An Integrative Review from a Person–Situation Perspective. *Review of General Psychology*, *19*(3), 249–277. https://doi.org/10.1037/gpr0000046

Tupes, E. C., & Christal, R. E. (1992). Recurrent personality factors based on trait ratings. *Journal of Personality*, *60*(2), 225–251. https://doi.org/10.1111/j.1467-6494.1992.tb00973.x

Utz, S., Kerkhof, P., & van den Bos, J. (2012). Consumers rule: How consumer reviews influence perceived trustworthiness of online stores. *Electronic Commerce Research and Applications*, *11*(1), 49–58. https://doi.org/10.1016/j.elerap.2011.07.010

Verhoef, P. C., Neslin, S. A., & Vroomen, B. (2007). Multichannel customer management: Understanding the research-shopper phenomenon. *International Journal of Research in Marketing*, *24*(2), 129–148. https://doi.org/10.1016/j.ijresmar.2006.11.002

Vieth, M. (2009). *Geld-zurück-Garantien: Eine empirische Wirkungsanalyse aus Konsumentensicht.* Springer Gabler. https://doi.org/10.1007/978-3-8349-8035-9

Wan, Y., Nakayama, M., & Sutcliffe, N. (2012). The impact of age and shopping experiences on the classification of search, experience, and credence goods in online shopping. *Information Systems and E-Business Management*, *10*(1), 135–148. https://doi.org/10.1007/s10257-010-0156-y

Wang, S., Beatty, S. E., & Foxx, W. (2004). Signaling the trustworthiness of small online retailers. *Journal of Interactive Marketing*, *18*(1), 53–69. https://doi.org/10.1002/dir.10071

Wang, W., & Benbasat, I. (2016). Empirical Assessment of Alternative Designs for Enhancing Different Types of Trusting Beliefs in Online Recommendation Agents. *Journal of Management Information Systems*, *33*(3), 744–775. https://doi.org/10.1080/07421222.2016.1243949

Wang, Y., Pan, J., Xu, Y., Luo, J. & Wu, Y. (2022). The Determinants of Impulsive Buying Behavior in Electronic Commerce. *Sustainability*, *14*, 7500. https://doi.org/10.3390/su14127500

Weiber, R., & Mühlhaus, D. (2014). *Strukturgleichungsmodellierung: Eine anwendungsorientierte Einführung in die Kausalanalyse mit Hilfe von AMOS, SmartPLS und SPSS*. Springer Gabler. https://doi.org/10.1007/978-3-642-35012-2

Wells, J. D., Valacich, J. S., & Hess, T. J. (2011). What Signal Are You Sending? How Website Quality Influences Perceptions of Product Quality and Purchase Intentions. *MIS Quarterly*, *35*(2), 373-396. https://doi.org/10.2307/23044048

REFERENCES

White, H. (1980). A Heteroskedasticity-Consistent Covariance Matrix Estimator and a Direct Test for Heteroskedasticity. *Econometrica, 48*(4), 817–838. https://doi.org/10.2307/1912934

Wöhe, G., & Döring, U. (2013). *Einführung in die allgemeine Betriebswirtschaftslehre* (25th ed.). Vahlen.

Wolfinbarger, M., & Gilly, M. C. (2001). Shopping Online for Freedom, Control, and Fun. *California Management Review*, *43*(2), 34–55. https://doi.org/10.2307/41166074

Wood, S. L. (2001). Remote Purchase Environments: The Influence of Return Policy Leniency on Two-Stage Decision Processes. *Journal of Marketing Research*, *38*(2), 157–169. https://doi.org/10.1509/jmkr.38.2.157.18847

Xiao, B., & Benbasat, I. (2018). An empirical examination of the influence of biased personalized product recommendations on consumers' decision making outcomes. *Decision Support Systems*, *110*, 46–57. https://doi.org/10.1016/j.dss.2018.03.005

Zucker, L. G. (1986). Production of trust: Institutional sources of economic structure. *Research in Organizational Behavior*, *8*, 53–111.

Appendix

(1) Trust-Trigger Definitions – English Version

About Us: A section in which the company behind the online store presents its company portrait with company history, milestones, corporate philosophy, corporate strategy, corporate culture as well as customer references and corporate cooperations.
Contact Telephone: A contact telephone is a direct, individual human contact channel for visitors, interested parties and customers of an online store to contact customer service directly by telephone with inquiries, problems or complaints of many kinds. By using the contact telephone, concerns, problems or complaints can be clarified directly.
Product/service star ratings: Instrument for product or service evaluation within the online store by its customers, which results from the rough, subjective summary of several sub-criteria such as price-performance ratio, product design, packaging, reliability, customer service, delivery, etc. The customer's assessment of the product or service is based on the customer's opinion of the product or service. The simple way in which the rating is presented enables consumers to see the overall assessment of other customers at a glance. The quality of a star rating is coded by the number of stars awarded on average (over several customers).
Product/Service Reviews: Instrument for product/ or service evaluation within the online store, which is characterized by subjective selection and more detailed consideration of one or more specific sub-criteria such as price-performance ratio, product design, packaging, reliability, customer service, delivery, etc. Product/service reviews provide a detailed insight into an individual customer experience, but unlike star ratings, require more effort to read.
Payment by invoice: When paying by invoice, the ordered goods are sent to the customer without prepayment. The payment on the part of the consumer is due only after receipt of the goods. Thus, consumers have the opportunity to first check the goods for completeness and integrity before the invoice is to be paid.
Free returns: Pursuant to §357 Abs. 6 BGB, the buyer bears the direct costs of returning the goods, but the seller must inform the buyer of the financial burdens of a possible return shipment as part of a revocation before the contract is concluded. However, some online retail companies waive the costs of return shipping for their customers and offer the option of a free return.
Quality seal/ test mark: Quality seals or test marks from an independent third party certify that the online store meets precisely defined certification criteria such as product quality, reliability, customer service, transparency or security-relevant features. The company behind the online store usually has to license the cachet by paying an initial fee as well as monthly contributions for it. The best-known seals of approval include: "EHI Geprüfter Online-Shop" (publisher: EHI Retail Institute), "Trusted Shop Zertifikat" (publisher: Trusted Shops GmbH), "Safer Shopping" (publisher: TÜV SÜD Management Service).
Warranties: The online retailer may, in addition to the statutory liability for defects (warranty), offer a guarantee to refund the purchase price in case of dissatisfaction (money-back guarantee). The declaration of such a guarantee is a voluntary service of the online retailer.
Privacy policy: It serves to ensure data security and proper use of the data of the user and customer base of the online store collected in the course of business contact. According to Art. 13 DSGVO, the company is obliged to inform its customers about the nature, scope and purpose of the collection, storage and use of personal data. Publication and simultaneous non-compliance with the data protection declaration is associated with the risk of consequences under competition, data protection and civil law.
Third-Party Payments: The integration of the online payment system PayPal ensures buyer protection (refund of the purchase price in case of dissatisfaction or non-delivery) and data encryption (protection of personal or sensitive data).

(2) Trust-Trigger Definitions – German Version

Über-Uns: Eine Sektion, in der das Unternehmen hinter dem Online-Shop sein Firmenportrait mit firmengeschichtlicher Entwicklung, Meilensteinen, Unternehmensphilosophie, Unternehmensstrategie, Unternehmenskultur sowie Kundenreferenzen und Unternehmenskooperationen präsentiert.
Kontakttelefon: Ein Kontakttelefon stellt einen direkten, individuell-menschlichen Kontaktkanal für BesucherInnen, InteressentInnen und KundInnen eines Online-Shops dar, um sich mit Anfragen, Problemen oder Beschwerden vielerlei Art direkt per Telefonkontakt an den Kundenservice zu wenden. Durch Nutzung des Kontakttelefons können Anliegen, Probleme oder Beschwerden direkt geklärt werden.
Produkt-/ Service-Sternebewertungen: Instrument zur Produkt-/ oder Servicebewertung innerhalb des Online-Shops durch dessen Kunden, welches sich aus der groben, subjektiven Zusammenfassung mehrerer Subkriterien wie Preis-Leistungsverhältnis, Produktdesign, Verpackung, Zuverlässigkeit, Kundenservice, Lieferung etc. ergibt. VerbraucherInnen sind durch die simple Darstellungsweise dazu in der Lage, die Gesamteinschätzung anderer KundInnen auf einen Blick zu erfassen. Die Güte einer Sternebewertung ist über die Anzahl der im Schnitt (über mehrere KundInnen) vergebenen Sterne codiert.
Produkt-/ Service-Testberichte: Instrument zur Produkt-/ oder Servicebewertung innerhalb des Online-Shops, welches sich durch subjektive Auswahl und genaueres Eingehen auf eines oder mehrere spezifische Subkriterien wie Preis-Leistungsverhältnis, Produktdesign, Verpackung, Zuverlässigkeit, Kundenservice, Lieferung etc. auszeichnet. Produkt-/ Service-Testberichte ermöglichen einen detaillierten Einblick in eine individuelle Kundenerfahrung, erfordern jedoch im Gegensatz zu Sternebewertungen einen höheren Aufwand beim Lesen.
Zahlung per Rechnung: Bei der Bezahlung per Rechnung wird die bestellte Ware an den Kunden ohne Vorabzahlung versendet. Die Zahlung aufseiten der VerbraucherInnen wird erst nach Erhalt der Ware fällig. Somit haben VerbraucherInnen die Möglichkeit, die Ware zunächst auf Vollständigkeit und Unversehrtheit zu prüfen, bevor die Rechnung zu begleichen ist.
Kostenlose Retouren: Gemäß §357 Abs. 6 BGB trägt der Käufer die unmittelbaren Kosten der Rücksendung der Waren, der Verkäufer muss den Käufer jedoch vor Vertragsabschluss über die finanziellen Belastungen einer möglichen Retoursendung im Rahmen eines Widerrufs informieren. Manche Online-Handelsunternehmen erlassen ihren Kunden jedoch die Kosten der Rücksendung und bieten die Möglichkeit einer kostenlosen Retoure an.
Güte-/ Qualitätssiegel/ Prüfzeichen: Güte- oder Qualitätssiegel bzw. Prüfzeichen einer unabhängigen Drittpartei attestieren dem Online-Shop die Erfüllung genau definierter Zertifizierungskriterien wie Warenqualität, Seriosität, Kundenservice, Transparenz oder sicherheitsrelevante Eigenschaften. Das Unternehmen hinter dem Online-Shop muss das Gütesiegel üblicherweise lizensieren, indem es eine anfängliche Gebühr sowie monatliche Beiträge dafür zahlt. Zu den bekanntesten Gütesiegeln zählen: „EHI Geprüfter Online-Shop“ (Herausgeber: EHI Retail Institute), „Trusted Shop Zertifikat“ (Herausgeber: Trusted Shops GmbH), „Safer Shopping“ (Herausgeber: TÜV SÜD Management Service).
Garantien: Der Online-Händler kann zusätzlich zu der gesetzlichen Mängelhaftung (Gewährleistung) die Garantie anbieten, den Kaufpreis bei Unzufriedenheit zu erstatten (Geld-zurück-Garantie). Die Erklärung einer solchen Garantie ist eine freiwillige Leistung des Online-Einzelhandelsunternehmens.
Datenschutzerklärung: Sie dient zur Gewährleistung von Datensicherheit und ordnungsgemäßer Verwendung der im Verlauf des Geschäftskontaktes erhobenen Daten der Nutzer- und Kundschaft des Online-Shops. Das Unternehmen ist gemäß Art. 13 DSGVO zur Aufklärung seiner Kunden über Art, Umfang und Zweck der Erhebung, Speicherung und Verwendung personenbezogener Daten verpflichtet. Eine Veröffentlichung und gleichzeitige Nicht-Einhaltung der Datenschutzerklärung ist mit dem Risiko wettbewerbs-, datenschutz- und zivilrechtlicher Konsequenzen verbunden.
Zahlung per PayPal: Die Einbindung des Online-Bezahlsystems PayPal gewährleistet einen Käuferschutz (Rückzahlung des Kaufpreises im Falle von Unzufriedenheit oder Nicht-Lieferung) und Datenverschlüsselung (Schutz personenbezogener oder sensibler Daten).

(3) Participant Information / Informed Consent

Julius-Maximilians-
UNIVERSITÄT
WÜRZBURG

Lehrstuhl für Psychologie I
Arbeitsgruppe für Differentielle Psychologie, Persönlichkeitspsychologie und Psychologische Diagnostik

Liebe Versuchsteilnehmende,

wir danken Ihnen für das Interesse an unserer Studie! Vor Beginn der Studie möchten wir Ihnen zunächst wichtige Informationen zu den Hintergründen und Zielen der Untersuchung sowie zu (datenschutz-)rechtlichen Bestimmungen vermitteln. Bitte lesen Sie sich die Informationen gewissenhaft durch und treffen Sie am Ende die Entscheidung, ob Sie an der Studie teilnehmen möchten.

Hintergrund und Ziele der Studie
Die schnelle Technologie-Entwicklung sowie ein steigendes Konsumenteninteresse haben in den letzten 20 Jahren zu einem rasanten wirtschaftlichen Aufschwung des Internethandels (E-Commerce) beigetragen. Aus Konsumentenperspektive liegt einer der Hauptgründe dafür in der Bequemlichkeit des Online-Shoppings. Der Kunde entscheidet flexibel darüber, wann, wo, und was eingekauft wird. Trotz des großen Erfolges ist bislang nur wenig über die Faktoren bekannt, die dem Kunden bei der Bewertung eines Online-Shops wichtig sind. Mit dieser wissenschaftlichen Studie wird das Ziel verfolgt, solche Erfolgsfaktoren zu identifizieren und den Zusammenhang zwischen Persönlichkeit und der Wahrnehmung von Webseiten-Eigenschaften zu untersuchen.

Ablauf der Studie & Datenerhebung
In dieser Studie bitten wir Sie, kurze Fragen zu Ihrer Person sowie einige Fragebögen so ehrlich wie möglich zu beantworten.
Die Fragebögen beziehen sich auf:

1. Nutzungsverhalten im E-Commerce,
2. Soziale Einstellungen,
3. Einstellungen zum E-Commerce,
4. Facetten der Persönlichkeit,
5. Bewertung diverser Webseiten-Eigenschaften.

Sie werden außerdem gebeten, sich durch 3 verschiedene (fiktive) Online-Shops zu navigieren. Dabei werden Ihre Interaktionen mit dem Shop erfasst (Seitenaufrufe, Klicks, Element- und Produktinteraktionen, Warenkorbartikel, Hover-Bewegungen, Kaufentscheidungen). Bei dieser Studie handelt es sich nicht um einen Leistungstest. Wir sind nur an Ihrer persönlichen Meinung zu bestimmten Fragen interessiert. Es gibt also keine „richtigen“ oder „falschen“ Antworten. Insgesamt dauert die Untersuchung ca. 60 Minuten.
Wichtig: Keine der im (fiktiven) Online-Shop getroffenen Entscheidungen ist mit einer Kaufverpflichtung verbunden und es kommt kein Kaufvertrag zustande.

Freiwilligkeit der Teilnahme und Abbruchsrecht
Die Teilnahme an der Studie ist freiwillig. Sie können jederzeit und ohne Angabe von Gründen Ihre Einwilligung zur Teilnahme an dieser Studie widerrufen, ohne dass Ihnen daraus Nachteile entstehen.

Datenschutz & Verwendung der Primärdaten
Der Primärdatensatz wird in pseudonymisierter Form gespeichert. Ihnen wird zum Ende der Studie ein individualisierter Code zugewiesen. Im Primärdatensatz wird nur dieses Pseudonym, nicht aber Ihr Name oder Ihre E-Mail-Adresse gespeichert. Sämtliche im Rahmen dieser Studie erhobenen Daten werden vertraulich behandelt. Die Projektmitarbeiter, die durch direkten Kontakt mit Ihnen über personenbezogene Daten verfügen, unterliegen der Schweigepflicht.
Die in der Studie entstandenen Primärdaten werden an der Universität Würzburg ausschließlich zu wissenschaftlichen Zwecken erhoben, verarbeitet und nicht an Dritte weitergegeben. Die auf Basis der Primärdaten erzielten Ergebnisse werden in zusammengefasster Form als wissenschaftliche Publikation (Thesis oder Fachartikel) veröffentlicht. Die Primärdaten werden aus wissenschaftlichen Gründen ohne festgesetzten Termin zur Löschung lokal gespeichert.

Widerruf
Eine Löschung Ihrer Daten aus dem Primärdatensatz kann jederzeit, längstens jedoch bis zur Löschung der Zuordnungsdatei 1 Jahr nach Abschluss des Experiments durch eine Erklärung per E-Mail unter der Angabe Ihres Pseudonyms an Saskia Müller (saskia.mueller@uni-wuerzburg.de) beauftragt werden. Die Löschung erfolgt unverzüglich und kann nicht rückgängig gemacht werden.

Betroffenenrechte
Ihnen stehen sog. Betroffenenrechte zu. Dies sind Rechte, die Sie als im Einzelfall betroffene Person ausüben können. Diese Rechte können Sie gegenüber der Universität Würzburg geltend machen. Sie ergeben sich aus der DSGVO:

- *Recht auf Auskunft, Art. 15 DSGVO:*
  Sie haben das Recht auf Auskunft über die Sie betreffenden gespeicherten personenbezogenen Daten.
- *Recht auf Berichtigung, Art. 16 DSGVO:*
  Wenn Sie feststellen, dass unrichtige Daten zu Ihrer Person verarbeitet werden, können Sie Berichtigung verlangen. Unvollständige Daten müssen unter Berücksichtigung des Zwecks der Verarbeitung vervollständigt werden.
- *Recht auf Löschung, Art. 17 DSGVO:*
  Sie haben das Recht, die Löschung Ihrer Daten zu verlangen, wenn bestimmte Löschgründe vorliegen. Dies ist insbesondere der Fall, wenn diese zu dem Zweck, zu dem sie ursprünglich erhoben oder verarbeitet wurden, nicht mehr erforderlich sind oder Sie Ihre Einwilligung widerrufen.
- *Recht auf Einschränkung der Verarbeitung, Art. 18 DSGVO:*
  Sie haben das Recht auf Einschränkung der Verarbeitung Ihrer Daten. Dies bedeutet, dass Ihre Daten zwar nicht gelöscht, aber gekennzeichnet werden, um ihre weitere Verarbeitung oder Nutzung einzuschränken.
- *Recht auf Datenübertragbarkeit, Art. 20 DSGVO:*
  Sie haben das Recht, die Daten, die Sie uns zur Verfügung gestellt haben, in einem gängigen elektronischen Format von uns zu verlangen.
- *Recht auf Widerspruch gegen unzumutbare Datenverarbeitung, Art. 21 DSGVO:*
  Sie haben grundsätzlich ein allgemeines Widerspruchsrecht auch gegen rechtmäßige Datenverarbeitungen, die im öffentlichen Interesse liegen, in Ausübung öffentlicher Gewalt oder aufgrund des berechtigten Interesses einer Stelle erfolgen.
- *Recht auf Beschwerde bei einer Aufsichtsbehörde, Art. 77 DSGVO:*
  Sie haben das Recht auf Beschwerde bei einer Aufsichtsbehörde, wenn Sie der Ansicht sind, dass die Verarbeitung Ihrer Daten datenschutzrechtlich nicht zulässig ist. Die Beschwerde bei der Aufsichtsbehörde kann formlos erfolgen. Für die Universität Würzburg ist dies der Bayerische Landesbeauftragte für den Datenschutz, Postfach 22 12 19, 80502 München.

Fragen
Für Fragen zur Studie oder zu (datenschutz-)rechtlichen Belangen steht Ihnen die versuchsleitende Psychologin Saskia Müller (saskia.mueller@uni-wuerzburg.de) zur Verfügung.

Zur vollständigen Speicherung der Daten ist es wichtig, dass Sie den Fragebogen ohne zu pausieren in einem Stück bearbeiten und bis zum Ende durchklicken (Dauer: ca. 60 Minuten). Auf der letzten Seite wird Ihnen dann mitgeteilt, dass Sie die Seite schließen können und alle Daten gespeichert wurden.

Einverständniserklärung
Ich versichere, dass ich die oben beschriebenen Teilnehmerinformationen verstanden habe und mit den genannten Teilnahmebedingungen einverstanden bin, insbesondere:

- einer unbegrenzten Speicherung meiner pseudonymisierten Daten
- einer Nutzung meiner pseudonymisierten Daten für das aktuelle Forschungsprojekt und für weitere ausschließlich wissenschaftliche Zwecke

Bitte bestätigen Sie, obige Hinweise gelesen zu haben.

Ich habe die Teilnahmeinformationen, die Teilnahmebedingungen sowie die Informationen zur Speicherung und Verwertung meiner Daten gelesen und willige auf dieser Basis ein, an der Studie teilzunehmen.	☐
Ich bestätige, dass ich mindestens 18 Jahre alt bin.	☐

M.Sc. Saskia Müller, Lehrstuhl für Psychologie I, Julius-Maximilians-Universität Würzburg, saskia.mueller@uni-wuerzburg.de - 2021