Stacked effects: is more indeed more in online persuasion?

Effects of simultaneously combining multiple persuasion principles in a single persuasion attempt in

the context of online accommodation service websites

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Abstract

This study explores: What are the effects of combining multiple persuasion principles in a single persuasion attempt, on customer experience measures, compared to a single principle persuasion attempt?

Through an online experiment, 115 participants (93 females (72.2%)) aged between 26 and 71 (M=23.42, SD = 7.99) were studied. The within-subject design utilised a survey featuring visual vignette mock-ups, of accommodation booking offers. It is distinctive in its approximation of persuasion through the dependent variables of credibility, attitude towards the offer, product value and purchase intention. Its independent variable consisted of four persuasion conditions, featuring combinations of consensus, scarcity, and authority. Linear mixed models with planned contrasts were used to analyse the effects.

The study finds a positive tendency of employing multiple principles, with the triple combination significantly affecting attitude and purchase intention. Whilst cautious about the interpretation, the charm of three is replicated for attitude and purchase intention(Shu & Carlson, 2014; Wang et al., 2021). The non-significance of credibility and purchase value bought into question the suitability of these persuasion proxies. Therefore, nuancing the identified positive effect, field studies should be conducted to capture persuasion in business relevant metrics to determine the business impact of effects. Additional factors to consider in customer persuasion are identified across persuasion antecedents, elements, and measurement of persuasion.

Keywords: Online commerce; E-commerce; Behavioural Influence; Multiple Persuasive strategies; Cialdini; Consensus; Scarcity; Authority; Online survey; Vignettes

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To all who supported me: Thank you.

Now it is time to pause and enjoy the view, before planning out the next journey…
Adventure awaits!

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The increasing importance of electronic commerce (e-commerce) increases competitiveness for

businesses and heightens the need to persuade customers with more effective advertisements and

product pages (Li et al., 2017; Wells, 2014). Predictably, coupling the heightened persuasion need with

the popular intuition that 'more is better', online persuaders employ multiple persuasive tactics

simultaneously. Research revealed that simultaneous usage of multiple influence techniques is common

practise (Howard & Kerin, 2006) and that compliance practitioners believe in the effectiveness of this

practise (Howard et al., 2007). However, one might wonder if simultaneous use is truly more effective

than employing a single persuasion tactic.

To determine if simultaneous use of multiple persuasion tactics in a single persuasion attempt is

truly more effective than applying a single persuasion tactic a literature search was conducted.

Considering the extensive application, literature on this phenomenon is surprisingly scarce. Out of 4310

identified articles, a mere five covered multiple appeals in a single attempt (Adib & Orji, 2021; Barry &

Shapiro, 1992; Kaptein & Duplinsky, 2013; Roethke et al., 2020; Shu & Carlson, 2014). Calls to research

the simultaneous use of multiple influence strategies have been made (Howard et al., 2007; Shu &

Carlson, 2014). However, no further studies have been published by the researchers who uttered them.

One additional article was found citing Shu and Carlson (2014). Resulting in the identification of a

research gap.

To explore the effects of multiple persuasion tactics in a singular persuasion attempt, this study

employs a vignette study in the shape of an online survey in the e-commerce environment. More

specifically, in the context of online accommodation services. The research question is: *What are the*

effects of combining multiple persuasion principles in a single persuasion attempt on customer

experience compared to a single principle persuasion attempt?

Generated insights would fill the identified gap in the literature and answer the call for more

knowledge about multiple principle persuasion in a single persuasion attempt (Howard et al., 2007; Shu

& Carlson, 2014). The acquired knowledge can foster a better understanding of persuasive messaging

and inform discussions on the ethical side of persuasion. Moreover, it can provide a basis to enlighten

policy makers about how these persuasion effects affect the consumer, which can influence what is

deemed allowed by governments and regulators.

Starting from the limited existing research on persuasion in a multiple principle application, the

scope is subsequently narrowed to the application of three of the Cialdini persuasion principles. A short

section on the measurement of persuasion can be found in the method section.

Persuasion

Persuasion is a process in which a source attempts to influence a recipient to achieve attitudinal

or behavioural change. In a persuasion attempt, a source aims to influence a recipient by shaping,

reinforcing, or changing attitudes, behaviours, or both, without using coercion or deception (Fogg, 1998,

2003). Gass and Seiter (2014, p. 33) indicate that multiple sources can be engaged in the activity of

creating, reinforcing, modifying, or even extinguishing beliefs, attitudes, intentions, motivations, and/or

behaviours in each communication context. Well-established dual processing models are frequently

employed to explain how social influence strategies are effectively changing consumers' attitudes or

behaviour (Kahneman & Frederick, 2002; Sloman, 1996; Stanovich & West, 2000; Wason & Evans, 1974).

Commonly, the Elaboration Likelihood Model [ELM] is employed. This is a "*framework for organizing,*

categorizing, and understanding the basic processes underlying the effectiveness of persuasive

communications" (Petty & Cacioppo, 1986, p. 125). Based on this, persuasion dependent variables will be consumers' attitudinal and behavioural measures.

The wide array of persuasion or influence tactics is the outcome of varying counts of exhaustiveness, exclusivity, focus, and granularity (Kellermann & Cole, 1994). While some studies list over 100 ways of persuasion (Rhoads, 2007), Fogg (2003) identifies 40 tactics and Cialdini developed six principles to which a seventh was added later (Cialdini, 2004; Cialdini, 2009).This research focusses on combinations of three of the Cialdini principles.

The Number of Persuasion Attempts

The effects of individual persuasion tactics have been shown in their separate application and in combination with factors like personality or shopper type (e.g. Adaji et al., 2018; Josekutty Thomas, 2019; Orji et al., 2015; Orji et al., 2019). Seeing the earlier mentioned literature review and research calls (Howard et al., 2007; Shu & Carlson, 2014) for simultaneous use of multiple influence strategies, it is fair to say the literature on simultaneous usage is limited. Therefore, a close examination of the six available sources was conducted. A comparison across five quantitative studies is summarized in table 1.

Adib and Orji (2021) performed a systematic review of persuasive strategies existing in e-commerce applications to understand their effectiveness in ecommerce. Utilising the Persuasive System Design model, they identified 28 persuasive strategies that were divided into four categories. No significant correlation between the number of strategies present and the ratings of the applications was found. Adib and Orji (2021) raised questions about the selection of persuasive strategies in terms of their appropriateness and effectiveness.

Shu and Carlson (2014) examined the number of claims (e.g.*," Healthier, better tasting, crunchier, and with higher quality ingredients"*) to produce the most positive impression. They proposed that, when consumers have knowledge of the source's persuasion motive, the optimal number of

positive claims is three. Beyond that point, for message sources believed to have a persuasion motive, additional claims trigger coping and scepticism. Moderation is suggested from the message source (motive) and high cognitive load, which impedes activation of persuasion knowledge. They showed that up to three claims improved the persuasiveness(Shu & Carlson, 2014). Wang et al. (2021) replicated the findings on the charm of three and explored moderation of mental imagery. Their findings suggest that favourable effects can be increased beyond three claims if consumers engage in mental imagery. Thus, suggesting that more than three claims can be combined.

Barry and Shapiro (1992) conducted a laboratory study that tested if influence tactics are independent or additive, in the sense that tactics could be interactively predictive of outcomes. They explored dyadic compliance gaining though a scenario-based influence attempt which contrasted rational exchange tactics with soft tactics. They indicated that compliance can both be hindered and improved depending on the other tactics present in the attempt, as the combinations influence targets' perceptions.

Kaptein and Duplinsky (2013) investigated effects and implications of simultaneous use of multiple influence strategies in a single attempt. They employed three studies, combining implementations of consensus, scarcity, and authority. Their results indicate that single influence strategies were more effective than the combined usage of multiple influence strategies. They emphasised the importance of selecting and implementing the appropriate strategy, to prevent suboptimal performance due to unintended interactions. This suggests that combining multiple principles is worse which contradicts the earlier mentioned popular belief.

Conducting an online experiment and a randomised field experiment, Roethke et al. (2020) examined distinct and joint effects of consensus and two types of reciprocity (money and utility) on user onboarding behaviour. Their results indicated that individually all tactics have positive effect. However,

when applied in combination, consensus moderated reciprocity: consensus nullified the effect of monetary based reciprocity.

Comparing these studies, a large sample range is observed. Comparing the sample populations, most studies investigated the student population. Sample collections vary but the most attention-grabbing collection methods are employing Amazon's mechanical Turk or advertisements. A commonality is the employment of Likert (type) scales. The measurement of persuasion is an interesting point, as it varies greatly. Uniquely this study investigates persuasion in terms of the dependent consumer outcomes. This research does not include potential modifying factors like scepticism and persuasion intent. Contrastingly, it considers experience with the featured city and platform as well as two random effects to control for effects inherently tied to the experience of these components. The most featured analysis methods across studies are t-tests, ANOVAs, and regressions.

When trying to answer the question on if multiple persuasion tactics are more effective, an interesting picture arises. Shu and Carlson (2014) advocated three being the optimal number of positive claims, but Wang et al. (2021) demonstrate that mental imagery extends effectiveness beyond three. In contrast, others find the opposite to be true. Barry and Shapiro (1992) consider usage of various influence strategies and conclude that it depends on the wider combination of tactics. Whereas Kaptein and Duplinsky (2013) state that a single influence strategy can be more persuasive and that combining strategies may even result in detrimental effects. Based on Roethke et al. (2020), the effect may even depend on which version of the principle is applied simultaneously. Seeing the mixed outcomes, an exploration of effects is deemed the right strategy to approach the research question.

Table 1

Comparison overview of the identified relevant research

Study		Shu and Carlson (2014)	Wang et al. (2021)	Barry and Shapiro (1992)	Kaptein and Duplinsky (2013)	Roethke et al. (2020)
Introduction	RQ	How many positive claims should firms use to produce the most positive impression of a product or service?	moderating role of imagery on the Charm of Three effect and the mechanisms through transportation and scepticism	The effects of multiple influence tactics of four versions of a hypothetical influence attempt: (a) the use of soft tactics joined with an offered exchange, (b) the use of soft tactics without an offered exchange, (c) a direct request (hard tactics) that includes an offered exchange, and (d) **a** direct request without an offered exchange.in dyadic compliance-gaining situations	investigate the effects and implications of utilising multiple social influence strategies simultaneously to endorse a single product or call to action.	RQ1. What distinct effects do reciprocity and social proof have on user registration decisions during user onboarding? RQ2. How do monetary-based and utility-based reciprocity interact with social proof in affecting user registrations during user onboarding?
	Theoretical elements	Persuasive intent; Number of Claims and Message Persuasiveness; Three Claims as the Peak of Sufficiency	Set size of ad claims; charm of three" (CoT) effect; mental imagery; scepticism	Influence tactics (hard, soft rational)	Social influence strategies; dual processing models of persuasive appeals (elaboration); Using multiple influence strategies (cialdini).	User onboarding and social influence; Cialdini
Method	Number of experiments/studies	4	2	1	3	2
	Sample	521 student participants at a large West Coast university, 296 undergraduate students, 128 undergraduate students from a large West Coast university, 365 undergraduate students	A total of 302 U.S. Amazon Mechanical Turk (Mturk) workers (average age: 37 years; 44.4% female) and a total of 548 U.S. Mturkers (average age: 40; 53% female)	55 graduate business students (18 female, 27.3 years of age and 4.3 years of full-time work experience) who were during routine job interviews for full-time employment	25 undergraduate students ((56.8% females average age 23.8 (SD = 7.6). 48 undergraduate students west-coast university in the USA (28 females, mean age 21,3 (SD=2.19). 219.500 North American Google Search engine users between the ages of 18 and 55	249 and 475,495 participants
	Considered variables	Varying number of (positive) claims (1-6), impression, Persuasion source and target objects from different domains, attitude toward the object, scepticism, and cognitive load (persuasion knowledge), confidence, effects of additional claim and types of thoughts	number of ad claims; mental imagery: product evaluation; scepticism; transportation; elaboration	Tactics (hard, and soft)); measure of salience and locus of control (mastery), perception of attempt	the number of strategies used (*one* or *multiple (consensus, authority, and scarcity.)*); congruent (yes/no), compliance, confidence; equal strategies, compliance (click through) and attrition.	multi-method approach to Investigate efficacy for actual user onboarding decisions (i.e., user registrations of reciprocity variants (utility and monetary) in combination with social proof. Gender, Country; Education (BA in %), Age, Personal innovative-ness, Internet experience, Reciprocity, Social proof, User

						registration/*Confirmed registration.*
	Study type	Within and between subjects' factorial design	Between subjects full-factorial design (6 conditions); a between-subjects factorial design	Between subjects	Between subjects	2x2x2 between subjects, full-factorial experimental design.; 2 × 2 between-subjects, full-factorial experimental design.
	Data collection method	Paid research packages: featuring a Scenario or short descriptions of	Mechanical turk experimental conditions: Number of Ad Claims; Imagery, product evaluation and imagery, arousal using an elaboration using	laboratory study testing in a class experiment featuring a written stimulus incident message	online study featuring a fictious survival scenario (1&2); previous findings and implement the above strategies in a live market setting	online experiment based on a self-developed, fictitious e-commerce platform called Watch24 and a related randomized field experiment Partnering a leading global online marketplace for luxury watches (Chrono24)
	Measures	target objects are rated on seven-point (Likert)scales.	7-point scales; self-reported scale; response time.;	7-point Likert scales assessing the friendliness, expression of sympathy, and abruptness (reverse-scored) of the influence	Ranking of items; combined click-through rate; attrition clicks	7-point Likert-type scales
Results	Statistical analyses performed	ANOVA, a series of regressions and a planned contrast t-test	2 x 3 ANOVA and a few 3 x 3 ANOVAs, a moderated serial mediation	Two-way ANOVA, with likely compliance as the dependent variable and the tactics manipulations (plus an interaction term) as the independent variables; Hierarchical regression	one-way four level ANOVA with Bonferroni corrected pairwisecomparisons	two-stage hierarchical binary logistic regression
	Conclusion	Found that impressions conformed to the charm of three, in that consumers viewed four or more positive claims as less positive than three positive claims. The evidence supports this theory in that skepticism increased when the number of claims increased beyond three and mediated the effect on attitude. Support for the use of persuasion knowledge is also evident from the use of high cognitive load to moderate the effect.	Replicated the CoT effect. When mental imagery was encouraged a monotonically positive effect of number of claims on product evaluation. Findings suggests that mental imagery transports viewers and reduces scepticism, thus enhancing the persuasiveness of an ad with more than 3 claims. They rule out arousal, elaboration, and involvement as rival explanations.	Effects of tactics depends on what other influence gambits are present indicate that tactical combinations are important to an understanding of the dynamics of influence attempts and, hence, raise questions about the use of generalized measures that assess influence. Agents of (potential) influence also need to consider what the effect of any one tactic will be in the presence, or absence, **of** other tactics behaviour over time rather than within single influence episodes.	show that combinations of social influence strategies do *not* increase compliance – this is contrary to commonly held beliefs and practice. The paper outlines the importance of appropriately choosing and implementing social influence strategies to prevent unintended interactions between the strategies that lead to a suboptimal performance	Both social influence tactics and both reciprocity variants have positive effects on users' registration behavior if applied individually. the effect of reciprocity is moderated by social proof such that social proof nullifies the effect of monetary-based reciprocity whereas it amplifies the effect of utility-based reciprocity.

Note.   *ANOVA* analysis of variance

Cialdini Principles

Originally, Cialdini (Cialdini, 2009; Cialdini & Goldstein, 2002) identified six universal persuasion principles: liking, reciprocation, consensus, consistency, authority, and scarcity. The later added seventh principle, unity, relates to a shared identity between persuader and target (Cialdini, 2016). A brief overview of these principles can be found in appendix 2. Cialdini's persuasive strategies have been utilised across various domains including e-commerce, advertising, and marketing (Cialdini, 2009; Cialdini & Rhoads, 2001; Kaptein & Duplinsky, 2013; Kaptein & Parvinen, 2015). This research explores the influence of combining multiple persuasion principles in a singular persuasion attempt. It focusses on the combinations of the selected principles of consensus, scarcity, and authority. The principles were selected based on how frequent their presence is applied and the frequency with which these principles appear in combination on websites of online accommodation services. This aligns with the application of persuasion principles in television shopping, where the main techniques were found to be consensus, scarcity and authority (Lystig Fritchie & Johnson, 2003). In the next sections, the selected principles, and their suitability for the context of this study are discussed.

Consensus

Consensus is the tendency of individuals to believe that the crowd is typically right (Surowiecki, 2005). Phenomena like looking up in a crowd" and contagion effects of audience reactions (Cialdini, 2021), illustrate the central point of the principle: to determine correct behaviour, we look at the degree we see others performing that behaviour. With increasing numbers of individuals deeming any behaviour or idea correct, the more a person will perceive the idea to be correct themselves (Cialdini, 2021, p. 125). Consensus effects increase with levels of uncertainty as, seeking to reduce this uncertainty, individuals' attention to the behaviours of others is intensified (Dauten, 2004; Sechrist, 2007; Sharps, 2017; Wooten, 1998; Zitek, 2007). Consensus has been shown to influence attitudes, credibility, preferences and behavioural intentions such as purchase decisions (e.g. Cai et al., 2009; Danchin et al., 2018; Freling & Dacin, 2010; Ha, 2004; Ibrahim et al., 2013; Kaptein & Eckles, 2012; Nijjer, 2019; Salganik et al., 2006; van Herpen et al., 2009).

In the online travel context, reviews and word-of mouth [WOM] are an important factor influencing travel choices (Ibrahim et al., 2013). Reviews are deemed superior to information supplied by the advertised product or service, as review information is perceived as more up-to-date and credible (Gretzel & Yoo, 2008). Typical accommodation ratings indicate that many people have booked the accommodation and expressed positive opinions about it (e.g., "*Fabulous- 6.116 reviews –Accommodation 8.6 - Location 9.5*"). This popularity indication suggests suitability, a 'safe' choice, and thereby reduces the perceived risk and experimentation costs to decisionmakers. This consequentially induces others to follow suit (Griskevicius, 2009; Jeong & Kwon, 2012; Rao, 2001). Seeing how customers experience high uncertainty regarding the commodity value in online booking environments, and that reviews enable consumers to reduce uncertainty, consensus is argued to be particularly effective and suitable for online environments (Cialdini, 2001; Cialdini, 2009; Jun et al., 2007; Rao, 2001)

Scarcity

Scarcity is triggered by limits to availability. Its cues involve creating a sense of urgency triggered by both limited-amount and limited-time appeals (Cialdini, 2021, p. 231; Dai et al., 2008; Lynn, 1989; Worchel et al., 1975). Cialdini (2021, p. 246) reveals different dynamics showing that, besides constant scarcity, competition, and sudden changes in availability also influence scarcity perceptions. Whilst limited-time offers are used nearly three times as often, limited supply appeals are deemed more effective due to activating interpersonal competition (Aggrawal et al., 2011; Häubl & Popkowski Leszczyc, 2019; Howard & Kerin, 2006; Howard et al., 2007). An example of arousing scarcity perceptions in the accommodation booking context are messages like 'only three rooms left' to motivate booking behaviour, possibly even inducing impulse buying (Aguirre-Rodriguez, 2013; Heo et al., 2013; Inman et al., 1997; Lee et al., 2015; Lynn, 1992). Cialdini connects scarcity to loss aversion which is particularly strong in high risk/uncertainty contexts (De Dreu & McCusker, 1997; Kahneman et al., 1982; Walker et al., 2018; Weller et al., 2007).

Occasional combinations of consensus and scarcity have been documented. These kinds of combined appeals employ product popularity to indicate increased demand, resulting in heightened

competitiveness for the limited available products, steering customers towards acquiring popular

products. (Cialdini, 2009; van Herpen et al., 2009; Worchel et al., 1975).

Authority

Cialdini (2021) coins authority as 'follow the expert' and argues that our society essentially is

a multi-layered and widely accepted system of authority, in which obedience to proper authority is

right and disobedience is wrong. Authority's compliance enhancing effects can be triggered through

various ways, ranging from titles to appearances (Bickman, 1974; Bushman, 1988; Cialdini, 2021;

Duguid & Goncalo, 2012; Nelissen & Meijers, 2011; Oh et al., 2020; Smith et al., 2020; Sorokowski,

2010). Cialdini concludes that the forceful influence of authority works without our awareness.

Authority can be multiplied with the use of consensus, as advice of a set of experts is trusted and

followed more than that of a single expert (Mannes et al., 2014).

Aims and Objectives

This exploratory study employs combinations of consensus, scarcity, and authority to delve

into the effects of simultaneous use of multiple persuasion principles to investigate persuasion

effects in terms of effects on attitude, credibility, product value and purchase intention.

Method

Research context: Online Travel Agencies

In the realm of e-commerce, travel and accommodation were documented amongst the most sold goods and services online in 2019 (CBS, 2019). Another source documented that 43% of online consumers were interested in travel (ecommerceDB, 2021). Bargeman and van der Poel (2006) pointed out that the Dutch Travelers belong to the most active pleasure travellers, displaying relatively high holiday participation rates (NRIT, 2004 in Bargeman and van der Poel (2006)).

Directing the attention to online travel agencies, two big parties appeared: Booking.com and Airbnb are considered the leading online travel agencies worldwide and are the highest-ranking online travel providers in the Netherlands (Statista, 2021, 2022). Online travel agencies provide ample examples of stacked persuasion attempts on their websites. The application of persuasion principles in the travel industry has not gone unnoticed and even received negative attention (Buckley, 2019; Coffey, 2019).

This study spotlights the application of stacked persuasion principles by online providers of accommodations. By employing vignettes of mock-up Airbnb webpages, the effects of stacking persuasion principles are investigated. Vignettes are carefully constructed short scenarios or stories representing reality used to elicit beliefs, attitudes, or behaviours (Atzmüller, 2021; Finch, 1987; Schoenberg & Ravdal, 2000).

Sample

Before conducting the study, ethical consent was obtained from the BMS Ethics Board of the University of Twente. Participant recruitment was accomplished using the University of Twente's test subject pool called "SONA-system", the network of the researcher and convenience sampling in the form of passer-by recruitment via flyers. The selection method targeted mostly students and displays a degree of self-selection. As illustrated previously, this population is often employed for (exploratory) studies.

Initially, the intended sample size was 200 participants. Participants were required to be at least 18 years of age and understand English. They gave their consent twice (introduction and debriefing) for inclusion in the analysis. Participants who retracted their second consent were removed during the data cleaning.

The achieved number of participants in the online survey accumulated to 134. Of these responses, 17 did not give their second consent and one individual requested removal of their data at the second consent. The biggest drop out of 10 participants was observed amongst the fourth equally sized age group (26 to 71-year-olds).

The final sample consisted of a total of 115 responses (response rate: 86.67%). The average age of the sample was 23.42 (SD = 7.99). Overall, the sample displayed a tendency towards young women. Generally, the sample is not representative of the general population. Yet, the age segment is likely one that is quite relevant in the context of online accommodation booking. Details can be found in Table 2.

Table 2

Overview of the demographic characteristics of participants

Characteristic		Before removal	After removal
		N (%)	N (%)
Gender	Male	38 (28.8)	31(27.0)
	Female	93(70.5)	83(72.2)
	Non-Bin. / PNS	1(0.8)	1(0.9)
	Total	132	115
Age grouped	18-19	33	30 (26.1%)
	20-21	30	29 (25.2%)
	22-25	36	33 (28.7%)
	26-72	33	23 (20.0%)
	Total	132	115
		(Mean 24.33, SD 9.22, Range 53)	(Mean 23.47, SD 8.01, Range 53)

Note. Non-Bin. /PNS = nonbinary or prefer not to say.

Experimental Intervention Materials: Vignette Mock up Webpages.

Utilizing real-world examples of persuasive messages on websites of the online travel agencies, realistic mock-up vignettes were created (Appendix 3 and 4). Each mock-up consisted of a property visual, a brief textual description and the display of selected principle(s). In this, visual descriptions remained constant and only the displayed principles varied.

Combining the four persuasion conditions with and eight different accommodations leads to 32 vignettes (4 principles combinations*8 accommodations). Appendix 5 details vignette construction and appendix 6 presents an example vignette. The vignettes were randomly assigned into 200 vignette sets, considering that each set must include all eight accommodation visualisations once and each persuasion manipulation twice.

Measurement instrument and Measurements: The Survey

The measurement instrument was an online survey, built and administered in Qualtrics. Participants used their own device and environment to take part in the study, representative of the normal circumstances in which they would encounter webpages. Following consent, the study started off with a few demographic questions. After individually viewing a vignette, participants were asked to rate eight vignettes on four scales consisting of multiple items.

Much discussion exists about measuring persuasion, as measuring actual persuasiveness is quite complex. Approximations like perceived persuasiveness, defined as the estimation of the message/system to motivate change, are often used as an approximation. (Byrne et al., 2015; Orji et al., 2019; Pechmann et al., 2003; Webb & Eves, 2007). O'Keefe (2018) critiques perceived persuasiveness, and suggests running general copy-testing measures instead, like brand preference and purchase intention. This study employs the following measures to approximate persuasion: credibility, attitude towards the offer, product value and purchase intention.

For each individual construct several items were rated on a seven-point Likert type scales and later combined, to measure each construct. All measures were deemed internally consistent. Examples of items and Cronbach's alphas can be found in table 3.

Procedure

Random Assignment Implementation and Concealment

Condition assignment was double blind, due to randomised assignment of participants to a unique vignette set by the Qualtrics software. To control for order effects, to ensure two measurements of each persuasion principle and to measure as much of the variance as possible, these sets were randomly taken from the vignette universe considering the maximisation of insights within an expected sample of 200 participants. The researcher and participants had no insights into the viewed vignette set, resulting in total concealment of the sequences during the experiment.

Participant Flow Procedure

Figure 1 displays a flow model of participants through the research. Using their own computer participants accessed the online study via a link. The first survey page presented an introduction that included a short explanation of the study's nature, an indication of the duration as well as an informed consent form (appendix 7). The introductory text asserted that participation was voluntary and could be terminated at any time and for any reason. After some demographic questions, a short scenario description set the stage. Then, participants were randomly distributed to one of the 200 unique vignette sets. After individually viewing a vignette, the questionnaire followed. This process was repeated for each vignette. After completing the vignette set a debriefing and second consent took place (appendix 8).
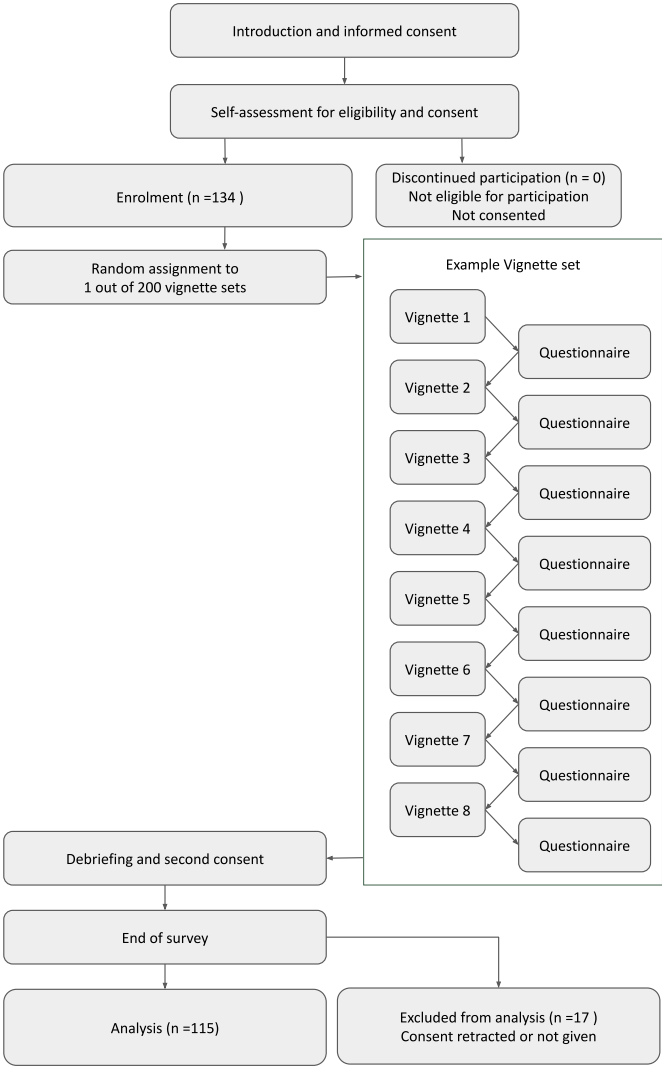
Figure 1

Overview of the participant flow through the study

Data Collection

Pilot Testing

Before implementation, the stimuli and the questionnaire were tested. Three preliminary

participants received an email with a link to the survey and were asked to complete the survey as if

they were planning to book a holiday. All respondents (1 Man, 2 Women, ages ranging from 21-60

years) were asked to go through a research setup of four conditions. Hence, each participant

answered demographic questions and judged four mock-ups. In the pilot test participants were asked

to comment on anything ranging from unclarity, difficulty answering and time investment. Time to

complete the survey was tracked to give an indication of the duration. Heatmaps were used to

determine the strength of the manipulation, as the subtle differences might be overlooked. The pilot

test resulted in the adjustment of textual issues (Grammar/Typo).

Experiment Design

The research model employed the number of principles present (1, 2a, 2b or 3 principles). as

independent and credibility, attitude towards the offer, product value and purchase intention as

dependent variables (figure 2). To control for possible combination effects for the two combinations

of two principles are employed and to account for interpersonal perception differences, the design

took a within-subjects approach. The within-subjects experimental design utilised an online survey

with a sequential monadic structure. The model considered participants' experience as a factor, for

both the destination and previous experience, as the previous experience of individuals might

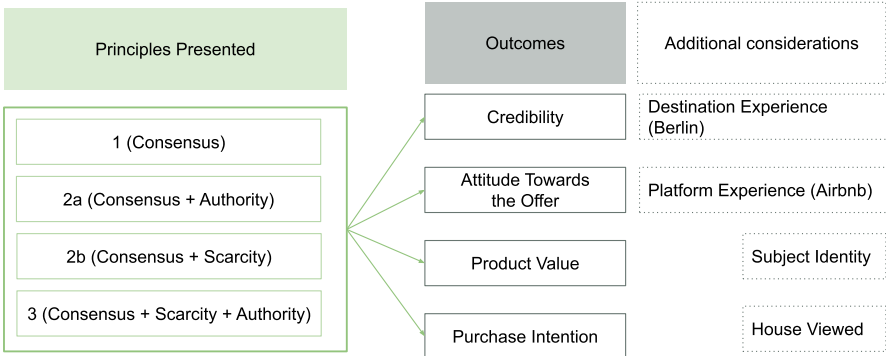influence the persuasion attempt.

Figure 2
Research model.

Main Study

Data was collected between the 6th of September 2022 and the 30th of November (85 days). First the collected dataset was cleaned by removing participants that retracted their consent as well as those with missing data. As a result, 17 responses were removed (response rate of 87%). A flow chart of the study can be found in figure 3.

The validity and reliability of the survey measurements was assessed utilising Cronbach's Alpha and were rated to above .90 'excellent' (Blanz, 2015). The inter-item correlations can be found in appendix 10. Table 1 presents a concise overview of each scale; a more extensive overview is featured in appendix 8. The construct means are displayed in table 3 till 7, the correlations between the measured constructs are featured in table 8.

For each of the dependent variables linear mixed modelling [LMM] with planned contrasts were run. The models included planned contrasts for number of persuasion principles (1 vs. 2 and 1, 2a, and 2b vs 3) as well as respondents experience with Airbnb and Berlin as fixed factors. Two random factors, the subject as well as the displayed accommodation, were included in the models as they might have an impact but were not the main interest of this study. Figure 3 visualises the planned contrasts.

The assumptions of the LMM were checked to determine suitability of the data for the model. Assessment of the residuals showed that they were of equal variance (homoscedastic) and linear. Normality checks revealed that the residuals of credibility and attitude towards the offer displayed a non-normal distribution, violating the normality assumption. The statistical significance level, alpha, was set to .05 for all statistical tests.

Table 3

Overview of construction and the justification for their inclusion.

Scale	Origin	Number of items and example	Measurement	Current α
Credibility	(Josekutty Thomas, 2019)	Four statement items e.g., this offer is trustworthy	Seven-point Likert scale	.90
Attitude towards offer	Shao et al. (2015) and Spears and Singh (2004)	Six statement items e.g., "My impression of the offer is favorable"	Seven-point Likert type scale.	.95
Product value	Dodds et al. (1991) and Kaptein and Eckles (2012)	Three statement items e.g., "This accommodation offers good value for money"	Seven-point Likert type scale	.95
Purchase intention	Dodds et al. (1991) , Kaptein and Eckles (2012) and Spears and Singh (2004)	Three statement items e.g., "How likely would you be to book this accommodation?"	Seven-point Likert type scale	.98
		Additional factors		
Experience	(Orús et al., 2021)	One item for Berlin and 1 item for Airbnb		

Table 4

Descriptive statistics: means for credibility.

Credibility	Mean (SD)	SE	Variance
Overall	5.35(1.17)	.04	1.37
1	5.33(1.09)	.07	1.19
2a (CA)	5.29(1.26)	.08	1.59
2b (CS)	5.29(1.22)	.16	1.48
3 (CSA)	5.41(1.11)	.07	1.24

Table 5

Descriptive statistics: means for attitude towards the object.

Attitude t. Object	Mean (SD)	SE	Variance
Overall	5.44(1.13)	.04	1.27
1	5.43(1.09)	.07	1.19
2a (CA)	5.39(1.13)	.07	1.27
2b (CS)	5.44(1.16)	.07	1.35
3 (CSA)	5.53(1.13)	.07	1.27

Table 6

Descriptive statistics: means for product value.

Product value	Mean (SD)	SE	Variance
Overall	4.83(1.35)	.04	1.81
1	4.82(1.29)	.08	1.65
2a (CA)	4.82(1.40)	.09	1.95
2b (CS)	4.82 (1.33)	.09	1.78
3 (CSA)	4.88(1.37)	.09	1.88

Table 7

Descriptive statistics: means for purchase intention.

Purchase Intention	Mean (SD)	SE	Variance
Overall	4.46(1.64)	.05	2.68
1	4.37(1.64)	.11	2.69
2a (CA)	4.44(1.68)	.11	2.83
2b (CS)	4.46(1.64)	.11	2.70
3 (CSA)	4.57(1.59)	.10	2.52

Table 8

Descriptive statistics: Construct Correlations

	Construct	1	2	3	4	5
1	Experience with Berlin					
2	Experience with Airbnb	.13**				
3	Credibility scale	.16**	.04			
4	Attitude towards offer scale	.20**	.02	.63**		
5	Product value scale	.13**	-.07*	.51**	.78**	
6	Purchase intention scale	.12**	-.04	.43**	.71**	.82**

Note. **<0.001

LMM with planned contrasts:
Variance in consumer outcomes explained by variation in four persuasion principle conditions

Contrast 1:
One (1C) vs. Two (2a (CA) and 2b(CS))

Contrast 2:
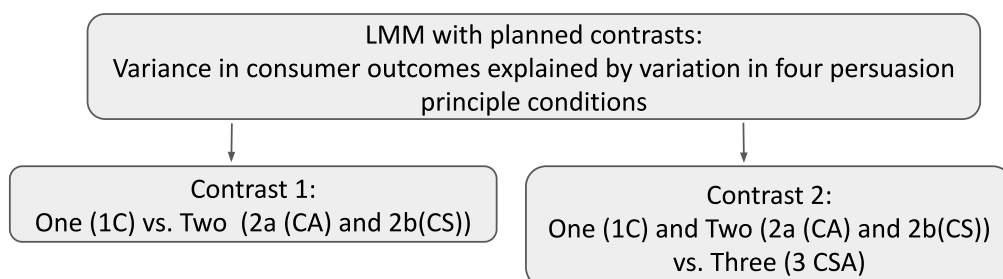One (1C) and Two (2a (CA) and 2b(CS)) vs. Three (3 CSA)

Figure 3

Visualisation of the conducted contrast analysis.

Results

The four LMMs with planned contrasts all included two control variables and two random factors. The control variables on experience showed that experience with Airbnb had a small positive effect on credibility but had a small negative impact on attitude, product value and purchase intention. Whereas Berlin experience showed a positive relationship with all the dependent variables. Regarding the two random factors in each model, quite a large portion of the variance could be attributed to the subject whereas the impact of the viewed accommodation could be deemed negligible.

The LMM with planned contrasts for credibility (table 5), displayed a small effect for both contrasts with a positive direction. For both contrasts, the 95%confidence intervals (CI) spanned zero. The effect of three principles is larger than that of two, but not big enough to be considered significant. Thus, neither two nor three principle combinations are more effective than one.

Inspection of the contrasts for attitude towards the object (table 6), showed a small effect with a general positive direction for the first contrast (1 vs. 2). The 95% CI spans zero, signalling no significant difference between the manipulations. For the second contrast (1, 2a & 2b vs. 3) the effect (.14) showed a positive direction. The 95% CI indicated that the effect can be deemed significant. Thus, both contrasts indicate a positive direction but the effect of three principles is significantly bigger. Overall, the estimation seems to be sufficient with a smaller standard error and a relatively small confidence interval.

The LLM with planned contrasts for product value (table 7) showed small effects with a positive direction. For both contrasts the 95% CI spans zero. The precision of estimation can be deemed sufficient. Based on these inputs there seems to be a slight positive direction but no statistically significant difference between the manipulations for product value.

The planned contrasts for purchase intention (table 8), showed a positive direction with a small effect (.12) for the first contrasts (1 vs. 2). No significant differences were found as the 95% CI spanned zero. The second contrasts (1, 2a & 2b vs. 3) displayed a positive beta (.19) signalling a positive direction. The 95% CI did not include 0. Thus, two principles merely indicate a positive

direction, but three principles have a significant positive effect on purchase intention. The estimate

precision that is deemed sufficient.

Table 9

Summary of the LMM with planned contrasts by ML with Condition as predicted and credibility as dependent variable, with two random factors (Subject and Accommodation).

Model equation Credibility~ Condition + Airbnb + Berlin + (1 | Accommodation) + (1 | Subject)

	Fixed Effects				
Attribute	Parameter	β	SE	95% CI	
				Lower	Upper
	(Intercept)	4.78	.28	4.23	5.34
Contrast 1 Less than 2	1 (Consensus) vs. 2 (2a Consensus + Scarcity & 2b Consensus + Authority)	.004	.06	-.12	.13
Contrast 2 Less than 3	1 and 2 (1 Consensus, 2a Consensus + Scarcity & 2b Consensus + Authority) vs. 3 (Consensus + Scarcity + Authority)	.08	.06	-.04	.30
Airbnb		.03	.17	-.30,	.35
Berlin		.18	.008	.01	.34
	Random effects				
	Parameter	Variance	Std.Dev.		
Subject	(Intercept)	.69	.83		
Accommodation	(Intercept)	.01	.08		
Residual		.63	.80		

Note.   SE standard error; CI confidence interval

Table 10

Summary of the LMM with planned contrasts by ML with Condition as predicted and attitude towards the object as dependent variable, with two random factors (Subject and Accommodation).

Model equation	Attitude towards the object~ Condition + Airbnb + Berlin + (1 | Accommodation) + (1 | Subject)				
	Fixed Effects				
Attribute	Parameter	β	SE	95% CI	
				Lower	Upper
	(Intercept)	4.77	.26	4.26	5.28
Contrast 1 Less than 2	1 (Consensus) vs. 2 (2a Consensus + Scarcity & 2b Consensus + Authority)	.02	.07	-0.11	0.15
Contrast 2 Less than 3	1 and 2 (1 Consensus, 2a Consensus + Scarcity & 2b Consensus + Authority) vs. 3 (Consensus + Scarcity + Authority)	.14	.06	.02	.26
Airbnb		-0.03	.14	-0.31,	0.25
Berlin		0.22	.07	0.08,	0.36
	Random effects				
	Parameter	Variance	Std.Dev.		
Subject	(Intercept)	.49	.70		
Accommodation	(Intercept)	.07	.26		
Residual		.66	.81		

Note.   SE standard error; CI confidence interval

Table 11

Summary of the LMM with planned contrasts by ML with Condition as predicted and product value as dependent variable, with two random factors (Subject and Accommodation).

Model equation	Product value~ Condition + Airbnb + Berlin + (1 | Accommodation) + (1 | Subject)				
	Fixed Effects				
Attribute	Parameter	β	SE	95% CI	
				Lower	Upper
	(Intercept)	4.40	.31	3.80	5.01
Contrast 1 Less than 2	1 (Consensus) vs. 2 (2a Consensus + Scarcity & 2b Consensus + Authority)	.02	.08	-.14,	.18
Contrast 2 Less than 3	1 and 2 (1 Consensus, 2a Consensus + Scarcity & 2b Consensus + Authority) vs. 3 (Consensus + Scarcity + Authority)	.11	.08	-.04	.26
Airbnb		-.26	.17	-.58	.07
Berlin		.18	.08	.02	.34
	Random effects				
	Parameter	Variance	Std.Dev.		
Subject	(Intercept)	.64	.80		
Accommodation	(Intercept)	.13	.36		
Residual		1.01	1.00		

Note.   SE standard error; CI confidence interval

Table 12

Summary of the LMM with planned contrasts by ML with Condition as predicted and purchase intention as dependent variable, with two random factors (Subject and Accommodation).

Model equation Purchase intention~ Condition + Airbnb + Berlin + (1 | Accommodation) + (1 | Subject)

Attribute	Parameter	β	SE	95% CI	
Fixed Effects					
				Lower	Upper
	(Intercept)	3.88	.38	3.14	4.62
Contrast 1 Less than 2	1 (Consensus) vs. 2 (2a Consensus + Scarcity & 2b Consensus + Authority)	.12	.10	-.08	.31
Contrast 2 Less than 3	1 and 2 (1 Consensus, 2a Consensus + Scarcity & 2b Consensus + Authority) vs. 3 (Consensus + Scarcity + Authority)	.19	.09	.01	.37
Airbnb		-.20	.20	-.60	.20
Berlin		.22	.10	.02	.42
Random effects					
	Parameter	Variance	SD		
Subject	(Intercept)	.97	.98		
Accommodation	(Intercept)	.18	.43		
Residual		1.50	1.23		

Note. SE standard error; CI confidence interval

Discussion

Key Findings: Support of Original Hypothesis

The findings indicate a positive tendency of the influence of the manipulation, increasing the number of persuasion principles. Though, the results demonstrate that the effect on credibility and product value – if it exists – is likely to be of negligible practical or theoretical significance. The first contrast (1 vs 2) for the variables of attitude and purchase intention also shows this negligible effect. However, the experimental manipulation showed a positive significant effect for the second contrast (1, 2a & 2b vs. 3) of attitude and purchase intention. Thus, for these variables the three-principle combination can be deemed significantly more effective than the single application based on the current study. Additionally, the factors of subject and destination were deemed important factors.

Overall, a positive tendency of more principles was demonstrated with two statistically significant effects on attitude and purchase intention. Yet, the size indicates a relatively small role. Therefore, it is questionable if it can be considered meaningful in a real-world context. The variance explained by the individual respondent seems to play a bigger explanatory role in the large picture.

Generalisability

Considering the sample characteristics, the normality violation of the residuals of credibility and attitude towards the object as well as the nature of the analysis, the study can be deemed underpowered, which consequently impacts the generalisability of the study. Thus, findings need to be carefully evaluated in this light.

Overall, the tendency for multiple principle appeals is positive. However, significance was only established for two variables in the three-principle contrasts. Generally, the findings are in line with the work of others that find positive effects of multiple principle application. Seeing that most findings fall short of meeting the significance threshold, it remains debatable how much this difference relays a meaningful difference in terms of real-world effects.

Contextualisation in Literature

In the earlier literature comparison, it became evident that this study is one of the first to apply a within-subjects design to study the effects of stacking up to three principles in an experimental setting that employs realistic visual vignettes. The study limited its scope to a singular domain of application (online accommodation booking) and to Cialdini persuasion principles. Several sources document Cialdini principles applicability in the online environment, but their effectiveness is not uncontested (Degeratu et al., 2000; Jeong & Kwon, 2012; Slattery et al., 2013). Scholars even beg into question if true separation between the principles exist, as some messages use popularity to indicate demands that exceeds availability (van Herpen et al., 2009).

Current studies in this field mostly employ students as a sample population, this study is no exception. Kaptein and Duplinsky (2013) and Roethke et al. (2020) employ inventive ways to expand into more realistic settings to achieve more generalisable samples. The research design shows similarities to the factorial-design and fictitious e-commerce platform of Roethke et al. (2020) as well as to the advertisement setting of Kaptein and Duplinsky (2013). As the creation of realism was considered an important feature, the manipulations in this study received special attention to be as realistic and as consistent as possible. Perchance, this may have given rise to subtlety concerns about the manipulation. However, the exaggeration of persuasion elements beyond that of the realistic situation would taint the effect achieved by real webpages. Luckily an unlikely advocate for the subtle manipulation was found, as it was discovered that some respondents had taken note of the elements that remained the same across visualisations (e.g., price and star-ratings). Interestingly, even though these kinds of elements seem like a small detail they do not seem to go unnoticed, advocating for the subtle manipulations.

The measurements of persuasions usually are approximations for persuasion, which provide a ground for discussion and further research. Interestingly, when examining the three-principle contrasts, attitude and purchase intention show significant differences. Whereas the proxies of credibility and product value do not. Possible explanations include environment (source and message) stability and not triggering scepticism (enough), due to the maximum application of three

principles. These possible explanations have a similar root: credibility and product value were possibly not triggered enough or less relevant to consumer persuasion in this setting. Combining these insights leads to the notion that the setting determines the usefulness of proxies to identify persuasion. This leads to a need to identify the right measurements for persuasion in different settings. Another criticism is that neither the potence of the principles, nor the degree to which the persuasion attempt was perceived as such, were assessed. For example, whilst this research considered Airbnb an authority on apartment assessment, it is unclear whether the exposed participant perceived them to be an authority as well (e.g., whether the persuasion agent's authority was perceived as a valid authority). This begs the question if the non-significance is due to a failure of passing the persuasion threshold or if there is another alternative explanation.

The results indicate a small positive effect to presenting multiple persuasive principles in a singular persuasion attempt. The current findings contradict Barry and Shapiro (1992) and Kaptein and Duplinsky (2013). Their findings indicate argument confusion and incongruency may result in detrimental effects and therefore caution against employing multiple principles. No detrimental effects were found with regards to the increase in persuasion principles applied in this study, which may be due to the congruency in the application in this study. The current findings match the intuition that multiple persuasive attempts strengthen a persuasive appeal (Howard & Kerin, 2006; Howard et al., 2007). Small positive effects can be seen for the two-principle contrast. Perhaps interactions between the principles triggered a nullifying effect as documented by Roethke et al. (2020). The effects of three principle combination closely match findings of Shu and Carlson (2014) and Wang et al. (2021).

Exploring a root cause for of the three-principle effectiveness, one comes across the elevated status of three. Triads appear in stories, conceptualisations and in design rules (Doumont, 2002; Shu & Carlson, 2014). Doumont (2002) encapsulates three as the simplest complexity that enables structuring and storing of knowledge. Shu and Carlson (2014, p. 129) argue that our ability to draw inferences and detect patterns is based on triangulation of a concept. Employing the Latin proverb "*omne trium est perfectum- every set of three is complete*", they connect the charm of three to

perceived completion. Groups of three seem to be our brain's information processing sweet spot, with three striking the balance in informativeness and being considered a set and a chunk. Extending claims beyond three decreases informativeness and increases the chance of being seen as a persuasion attempt, creating an inverted U shape (Shu & Carlson, 2014) but through imagery this effect might be mitigated to some extend (Wang et al., 2021).

Based on the findings, it may be argued that the subject plays a big factor in persuasion as it explains much of the variance within the models. The intricate persuasion interplay seems to overlap with components of change management: capacity, motivation, and the environment. Two out of three components stem from the individual, indicating a large role in the overall picture. Starting from pre-existing individual characteristics to formation of their perception, which includes information processing capacity and motivation, which are subsequently employed to evaluate, create intentions, and eventually result in a behavioural output. The individual was merely considered a random factor is this model, but the current results point towards the importance of the individual as a model factor. This matches Kaptein and Duplinsky (2013), who point towards optimising the persuasion principles towards the individual. Seeing the limited research on multiple principles it is only natural that this factor is underexplored, but inferences may be drawn from the more extensive literature on individual factors in single principle persuasion.

Rounding of this contextualisation, the findings are mostly in line with previous findings like the charm of three effect. Simultaneous use of three principles was indicated to outperform the one and two principle combinations in terms of attitude and purchase intention. Resulting from the findings and the contextualisation, a few interesting and interconnected topics reveal themselves further exploration. Therefore, basing on the change model aspects for the discussion, future research will be discussed under the topics of persuasion antecedents (e.g., individual characteristics), persuasion elements (e.g., message aspects like the impact of the triple combination), the measurement of persuasion and the ethical component attached to influencing individuals.

Theoretical contributions

Persuasion is considered major cross disciplinary research field (e.g., Han et al., 2019). Yet, a research gap and calls for more research into single attempt multiple principle persuasion were identified (Howard et al., 2007; Shu & Carlson, 2014). This study adds to the limited available research to reduce the gap. Contributing to insights on this phenomenon, it uniquely utilizes a within-subject design with realistic vignettes. The existing body of knowledge revealed mixed conclusions, these findings suggest a general positive increase associated with multiple principles especially associated to triad combinations. The study provides a solid basis for future exploration and indicates ample opportunities in the direction of persuasion antecedents, persuasion elements and persuasion measurement.

Managerial contributions

An important implication for practice can be extracted: the results of this study indicate that the intuition that application that employing multiple persuasion tactics is better hoy hold, but that a better performance is not necessarily guaranteed. Whilst a positive tendency is identifiable, credibility and product value are not performing much better. The positive tendency of attitude towards the offer and purchase intention indicates a better performance. However, this might be attributable to underlying factors like the selected principle types or underlying interactions. Particularly, more research is needed to determine if results persist across other persuasion principle combinations and translate to observable effects across real settings.

Future research

The individual: Persuasion antecedent and bounce board

The results presented in this paper indicate a large role of individual factors which aligns with Kaptein and Duplinsky (2013). It is not surprising that individual characteristics influence the impact of persuasion effectiveness (Abdullahi et al., 2018; Adaji et al., 2018; Kaptein et al., 2012). Processing of the stimulus information comes down to individual factors like capacity, motivation, pre-existing attitudes, persuasion knowledge and more, indicating the importance of the individual in the process and providing abundant opportunities to discover effective combinations. Some participants

indicated an awareness of visualisation aspects (e.g., price and star-rating), that were kept consistent across the manipulations, and reporting feelings of scepticism which connects to work by Shu and Carlson (2014) and Wang et al. (2021). This is indicative of the reactionary, bounce board like effect of stimulus inputs that can be considered in future research.

This awakens the suggestion that an optimalisation of persuasion, a "maximalisation of the influence effects", is possible. Following this argumentation there is a 'right' persuasion principle (set) appeal to target individual level consumers responses. Bringing the conversation to targeted persuasion and persuasion profiles, which enable persuaders to match aspects of a proposal (content, source, or setting) to select the most effective strategy for their target (Teeny, 2021). Whilst comprising a robust and growing literature, targeted persuasion also raises ethical concerns (Kaptein, 2011; Kaptein & Eckles, 2010). Whilst it might arguably be conducted in the individuals' interest, targeted persuasion can also be employed to less desired types of persuasion raising ethical concerns.

Persuasion elements

The contextual dimension plausibly impacts the persuasion process: what convinces you to book a holiday may not be what convinces you to donate to a charity. Thus, contextual factors that can be considered are the environment as well as product type, -attributes, and -features (e.g., hedonic vs. utilitarian, use vs. experience).

The environment encapsules the message aspects, I earlier mentioned the degree to which the message is considered a persuasion attempt, as well as the potence of persuasion components. Knowledge of the intricate interplay is especially relevant for practise and the broad availability and variations of persuasion principles leave abundant variations are left to explore. Unanswered questions on the effects of different combinations of principles and their interactions remain. Naturally, increasing the number of persuasion tactics in a single persuasion attempt is a possibility, especially taking meaningful chunking into account. Possible leads here are experimenting with principle combinations that have similar or contrasting roots, effectiveness of different variations of the same principles (similar to Roethke et al., 2020) or investigating different message aspects

(congruence, salience, arousal, aesthetics or perspective) and the argumentation schemes (e.g.,

ethos, pathos, and logos). Message persuasion extremity (subtle vs obvious) would be especially

interesting in combination with individual effects like persuasion knowledge, scepticism, and

reactance.

Additionally, the timing of the persuasion attempt can be considered. It is plausible that

persuasion "hits different" at different contact points in the customer journey. Consider the possible

difference between the first contact with the website or after the shopping cart abandonment.

Insights into the relevance of different principles along the customer journey may help maximise

effectiveness of the persuasion attempt. Furthermore, serial exposure could be investigated in terms

of the order in which principle (s) (combinations) are presented, or which variation of the principle is

presented (in combination).

Measuring persuasion

Due to the nature of persuasion its assessment is deemed complex. As persuasiveness is not

directly accessible, asking about persuasion creates awareness and the gap between intentions and

behaviour exists, the need for the identification of proxies arises. Customer metrics were employed

to circumvent the difficult assessment of persuasiveness, but the self-reporting is intrinsically

subjective creating the need for within-subjects-measurements. Additionally, this does not tackle the

intention-behaviour gap. Next to that, most scenarios do not have impact on the lives of participants

which does impact the decision-making process. The findings also indicate that there is a degree of

suitability of the approximation to the researched context (credibility might not have mattered due

to source and message aspects) which brings into question which measures should then be

considered valuable for the generation of insights. Conclusively, persuasion effects are hard to

capture in these simulated circumstances and therefore I argue that the effects of persuasion are

perhaps best measured in terms of measurements for business success as it also places the effects

into the realistic impact on the company's metrics. Seeing the small effects science might deem the

change not significant whereas a 1% increase in sales is possibly already considered relevant in the

business context. Therefore, I advocate collaborations with companies to achieve large scale realistic

studies that can employ A/B testing or advertisement manipulation across the board on a broad sample population. A high-tech assistance could be found in Artificial intelligence and machine learning to extract levers and combinations from the individual browsing behaviours.

This gracefully lands us on some ethical concerns, that were mentioned throughout this paper. Heuristics reveal a vulnerability of reflexive responses: consumers can be fooled by partial, fake, or forfeit evidence like bought or fake customer ratings and reviews. Next to that, targeted persuasion raises ethical concerns (Kaptein, 2011; Kaptein & Eckles, 2010). As persuasion is not merely employed for good causes, optimal persuasion leaves consumers vulnerable to the intentions of the "evil-minded" persuader. Next to validating the aspired effects, research should bear in mind the identification of unintended persuasion effects as well. A research framework for responsible and ethical working with persuasion may well be the addition to the literature that shapes responsible persuasion futures.

Conclusion

This exploration indicates that the multiple persuasion principles seem to have a positive influence tendency on credibility, attitude towards the object, product value and purchase intention. The two-principle contrast showed a positive tendency but no significance. The three-persuasion principle contrast for credibility and product value was not significant but a significant influence was demonstrated on attitude and purchase intention. Therefore, aligning with prior research on the charm of three. The effect of triple principle persuasion has a significant positive effect on attitude and purchase intention. However, the non-significance of credibility and purchase values bought into question the suitability of persuasion proxies. Therefore, nuancing the identified positive effect, future research should employ field studies in real-world contexts attempting to capture persuasion in business relevant metrics to discover the actual business impact of effects.

Starting from an unexplored path, this study's adventurous strides form a mere beginning to a road of insights gained from studying the everyday combinations of multiple persuasion principles in single persuasion attempts. An interesting voyage lies ahead for those adventurous enough to travel the paths of persuasion.

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Appendix

Appendix 1 Literature Review

A descriptive or mapping review was undertaken to identify patterns and gaps in literature to build upon representative works on this topic (e.g., pre-existing propositions, theories, or methodologies). The table display All the results from the search queriers that were performed on the 15th and the 27th of February were combined. Subsequently duplicates were removed, additionally conferences and proceedings that included multiple articles were excluded. This led to 4310 unique articles about persuasion. Articles relevance was determined by title selection, 647 articles were deemed relevant. The next stage was inclusion based on abstract, whereby only 5 articles were deemed relevant on the application of multiple persuasions principles in a singular appeal. This result is meagre to say the least. Calls for research were found and investigated as well, the authors nor the literature that cites the source investigates the application of multiple (Cialdini) persuasion principles in a singular appeal.

Table

Overview of literature searches performed on the 15th and 27th of February 2022

Search date	Search Query	Number of results
15.02.22	(TITLE-ABS-KEY (persuasion OR "persuasion principle*" OR "influence strategy" OR influen* OR nudg* OR prompt* OR "influence tactic*") AND TITLE-ABS-KEY (interaction* OR moderat* OR "effect moderation") AND TITLE-ABS-KEY (sequential OR heterogen* OR stack* OR ampli* OR multi* OR "number off") AND TITLE-ABS-KEY ("Behavioral Economics"))	34
15.02.22	(TITLE-ABS-KEY (persuasion OR "persuasion principle*" OR persuad* OR "influence strategy" OR influ* OR nudg* OR prompt*) AND TITLE-ABS-KEY (multi* OR "number of") AND TITLE-ABS-KEY (interaction* OR moderat* OR "effect moderation") AND TITLE-ABS-KEY ("e-commerce" OR ecommerce OR "electronic commerce" OR "cyber commerce" OR marketing OR "online advertising"))	1,557
15.02.22	(TITLE-ABS-KEY (persuasion OR "persuasion principle*" OR persuad* OR "influence strategy" OR influen* OR nudg* OR prompt*) AND TITLE-ABS-KEY (interaction* OR moderat* OR "effect moderation") AND TITLE-ABS-KEY (e-commerce OR ecommerce OR "electronic commerce" OR "cyber commerce" OR marketing OR "online advertising") AND TITLE-ABS-KEY (sequential OR heterogen* OR stack* OR ampli* OR multi* OR "number of"))	1,679
27.02.22	TITLE-ABS ((multiple OR combin* OR several OR addi* OR "more than") PRE/5 (persua* OR "persuasion principle*" OR "influence strateg*" OR	40

	"influence tactic*" OR nudg* OR prompt* OR cialdini)) AND TITLE-ABS (effect* OR interaction* OR moderat* OR success* OR impact*) AND TITLE-ABS-KEY (e-commerce OR ecommerce OR "electronic commerce" OR "cyber commerce" OR marketing OR "laboratory experiment")	
27.02.22	TITLE (persua* OR "persuasion principle*" OR "influence strateg*" OR "influence tactic*" OR nudg* OR prompt* OR cialdini) AND TITLE-ABS-KEY (effect* OR interaction* OR moderat* OR success* OR impact*) AND TITLE-ABS-KEY ((e-commerce OR ecommerce OR "electronic commerce" OR "cyber commerce" OR marketing OR "laboratory experiment"))	437
27.02.22	TITLE (persua* OR "persuasion principle*" OR "influence strateg*" OR "influence tactic*" OR nudg* OR prompt* OR cialdini) AND TITLE-ABS-KEY (effect* OR interaction* OR moderat* OR success* OR impact*) AND TITLE-ABS-KEY (("laboratory experiment") AND NOT (e-commerce OR ecommerce OR "electronic commerce" OR "cyber commerce" OR marketing))	55
27.02.22	TITLE-ABS-KEY (cialdini)	146

Appendix 2 Brief overview of Cialdini Principles

Cialdini Principles and Their Description

Principle	Description
Liking	Individuals say yes to those that they like. Typical factors that influence liking: similarity, complements and cooperation towards a mutual goal
Reciprocity	Returning the favour to others, that have given first, be it in performing behaviour, gift, or service
Consensus (Social Proof)	Individuals heed actions and behaviours of others, especially when they are uncertain. Point out favourable actions' others perform
Consistency	People like to be consistent thus build upon voluntary, active, and public commitments and ideally record it somewhere.
Authority	Individuals follow the lead of credible knowledgeable experts. Send out signals about what makes you an authority.
Scarcity	Individuals desire more of what they can have less of. Emphasize the uniqueness and what is lost if the person fails to consider the proposal
Unity	Bases on the need to belong. It focusses on the identity that the influencer shares with the target.

Appendix 3 Example Persuasion Principle Snippets

3A Example Airbnb Consensus (Social proof)

★ 4.85 · 995 reviews   Superhost

Thomas is a Superhost
Superhosts are experienced, highly rated hosts who are committed to providing great stays for their guests.

Great location
100% of recent guests gave the location a 5-star rating.

Great check-in experience
95% of recent guests gave the check-in process a 5-star rating.

Highly rated host
Jeff has received 5-star ratings from 95% of recent guests.

This home is on people's minds.
It's been viewed 500+ times in the past week.

"Airbnb's most wish-listed listing in South Africa."
— Gabriel, your host

3B Example Airbnb Scarcity

Only 5% of listings are left for these dates. We recommend booking a place soon.   **Rare find**

10% off for Aug 31 - Sep 11
Book within the next 13 days to get this special offer.

Only 28 listings left for these dates.
We recommend booking a place soon.

This is a rare find. Paul's place on Airbnb is usually fully booked.

3C Example Airbnb Authority
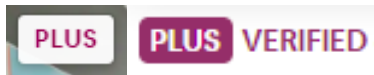
Every Airbnb Plus place is inspected in person for quality

Always fully equipped
Count on verified amenities like fast wifi and kitchens ready for cooking.

One-of-a-kind details
Each space is beautifully designed and full of character for a memorable stay.

Exceptional hospitality
Expect easy check-ins, quick responses from your host, and more.

Appendix 4 Pictures of the Eight Featured Accommodations

A stylish apartment in the center of true Berlin
Berlin, Germany · ★ 4.50 · 216 reviews

Charmantes Berliner Altbau Apartment in Weissensee
Berlin, Germany · ★ 4.50 · 216 reviews

Apartment precious Design
Berlin, Germany · ★ 4.50 · 216 reviews

Nena Apartments Metropolpark "Studio"
Berlin, Germany · ★ 4.50 · 216 reviews

Citynah, modern, cozy
Berlin, Germany · ★ 4.50 · 216 reviews

Design Studio Apartment "Bei Otto"
Berlin, Germany · ★ 4.50 · 216 reviews

Family-friendly apartment in the center of Berlin
Berlin, Germany · ★ 4.50 · 216 reviews

Rooftop Apartment with perfect View over Berlin
Berlin, Germany · ★ 4.50 · 216 reviews

Appendix 5 Construction of the vignettes

As an indication for the selection of accommodations for this study, spending and popular

locations of the population were considered (CBS, 2021; NBTC-NIPO, 2020). Berlin was selected as a

location, as capital cities are commonly selected for city trips and thus are assumed to be easily

relatable for participants. Due to the occasion and population choice, eight accommodations with a

price of around 200 euros per night were selected.
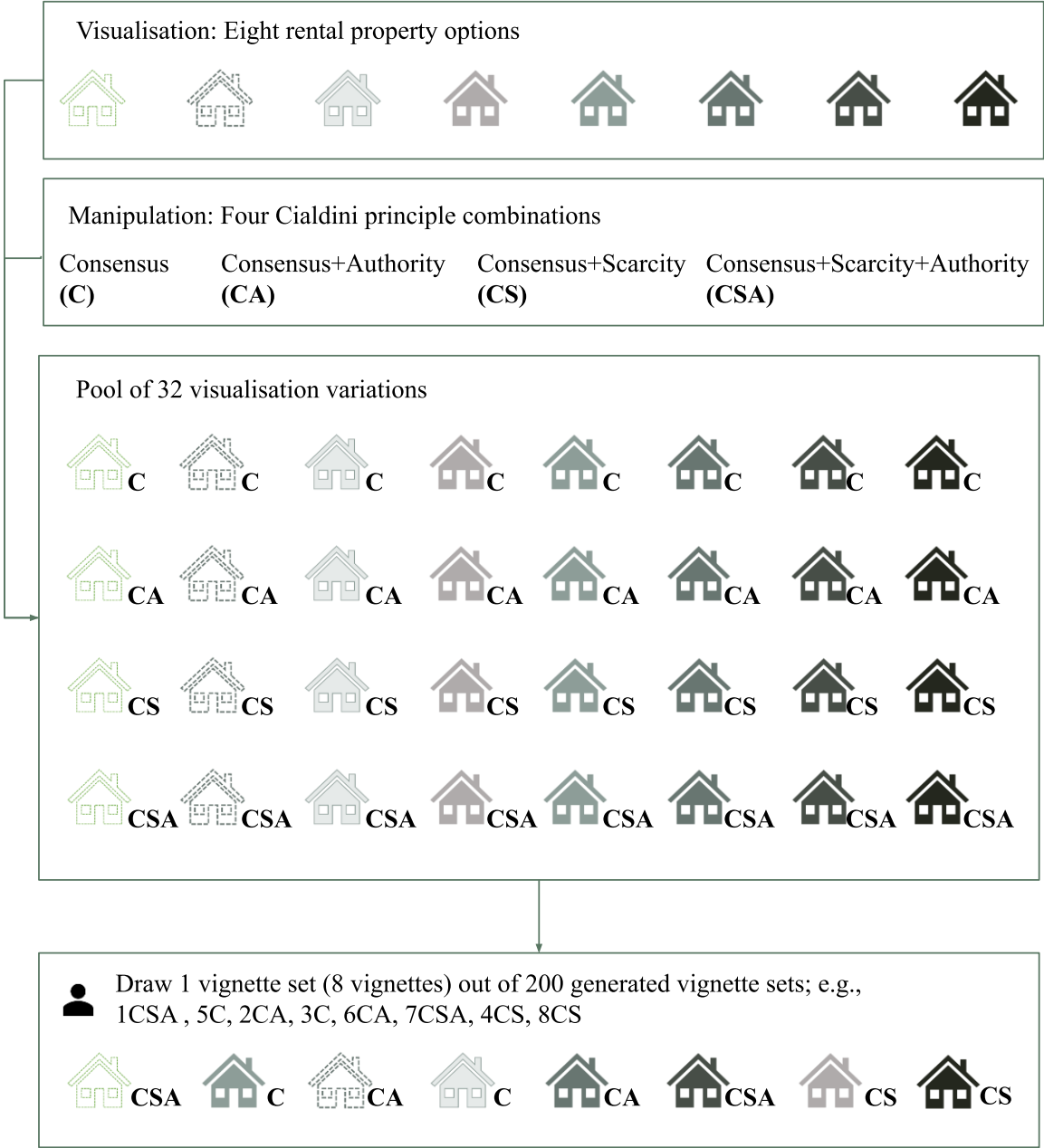
Appendix 6 The Three Cialdini Principle Mock-up Webpage

Appendix 7 Informed Consent

Thank You for participating in this Master Thesis Study!

We are interested in better understanding how people perceive web pages. You will be presented with eight web pages for booking an accommodation and asked to answer some questions about each of them. There are no correct or incorrect answers. Follow your gut feeling. Please be assured that your responses will be kept completely confidential.

The estimated time allocation for this study is around 20-30 minutes. Your participation in this research is voluntary. You have the right to withdraw at any point during the study, for any reason, and without any prejudice. If you would like to contact the Principal Investigator in the study to discuss this research, please e-mail: Manoux Klaassen under *m.n.klaassen@student.utwente.nl*

By clicking the button below, you acknowledge that your participation in the study is voluntary, you are at **least 18 years of age and understand English**, and that you are aware that you may choose to terminate your participation in the study at any time and for any reason.

Please note that this survey is best displayed on a laptop or desktop computer. Some features may be less compatible for use on a mobile device.

○ I consent, begin the study
○ I do not consent, I do not wish to participate

Appendix 8 Debriefing

Study title: Stacked effects: is more indeed more in online persuasion?

Effects of combining multiple persuasion principles in a single persuasion attempt in the context of online accommodation service websites

Thank you for participating in this study!

In the original brief the precise aim of the study was veiled.

In the websites you have just evaluated, either a single or multiple persuasion principles employed to the end of discovering what the effects of combining multiple principles are. This often is done on websites but the effects on consumers are not well known, therefore insights into the effects are needed.

As the exact purpose was veiled you are now given an opportunity to withdraw your consent.

For any follow-up questions you can contact: M. Klaassen, m.n.klaassen@student.utwente.nl

My thesis will be uploaded, if you want to read the thesis it can be found in the Thesis repository of the university of Twente: https://essay.utwente.nl/

Use the advanced search option. In the author field enter: KLAASSEN, M.N.

Your contribution to my thesis study is highly appreciated.

Best, Manoux

○ I still consent
○ I retract my consent, please remove my data

Appendix 9 Overview of Constructs, measurement items and sources.

To gain insight into the effectiveness of stacking persuasion principles the table below details the constructs their definition and the items with which

they are measured as well as the source they were selected from.

Construct	Item(s)	Source
Credibility	This offer is. Truthful (Very untruthful - Very truthful) Not Deceptive to Deceptive (Very Honest - Very Deceptive) Trustworthy (Very untrustworthy - Very trustworthy) Believable (Very unbelievable - Very believable)	Josekutty Thomas (2019)
Attitude toward Offer	My impression of the accommodation is. Good/bad Favorable/unfavourable Unpleasant/pleasant Likable/dislikeable Awful/nice Not attractive/attractive	Shao et al. (2015) and Spears and Singh (2004)
Product value	This accommodation offers good value for money (Very good value for money- Very poor value for money) The price shown is acceptable (Very acceptable - Very unacceptable) How much would you enjoy staying at this location accommodation? (Would not enjoy at all– Would enjoy very much) How would you judge the quality of this accommodation? (Very poor quality–Very good quality)	Dodds et al. (1991) and Kaptein and Eckles (2012)

Purchase intention	How likely would you be to book this accommodation? (Very unlikely–Very likely)	Dodds et al. (1991) , Kaptein and Eckles (2012)
	I would consider booking this accommodation (Never–Definitely)	and Spears and Singh (2004)
	My willingness to book this property is (Very high- Very low)	

	Other factors	
Experience with Berlin	Please tell us about your experience with Berlin	Orús et al. (2021)
	(I have not been there, and I have not thought about going; I have not been there, but I would like to go; I have been there, and I would not go back; I have been there, and I would not mind going back)	
Experience with Airbnb Accommodation	Experience was defined as prior Airbnb use experience: Yes/No	
	This factor was considered a random factor: 8 visualisations	

Appendix 10 Inter-Item Correlations

Inter-item Correlation Matrix of Credibility

	1	2	3	4
Item 1	1 ,000	.957	.545	.691
Item 2	.957	1 ,000	.569	.699
Item 3	.545	.569	1 ,000	.702
Item 4	.691	.699	.702	1 ,000

Inter-item Correlation Matrix of Attitude Towards Offer

	1	2	3	4	5	6
Item 1	1 ,000	.766	.931	.772	.711	.844
Item 2	.766	1 ,000	.720	.909	.85	.685
Item 3	.931	.72	1 ,000	.742	.637	851
Item 4	.772	.909	.742	1 ,000	.875	.703
Item 5	.711	.850	,537	.875	1 ,000	.61 o
Item 6	.844	.685	.851	.703	.10	1 ,000

Inter-item Correlation Matrix of Product Value

	1	2	3	4
Item 1	1 ,000	.936	.81 0	.807
Item 2	.936	1,000	.749	.732
Item 3	.810	.749	1 ,000	.891
Item 4	.807	.732	.891	1 ,000

Inter-item Correlation Matrix of Purchase Intention

	1	2	3
Item 1	1 ,000	.932	.945
Item 2	.932	1 ,000	.923
Item 3	.945	.923	1 ,000

Appendix 11 Correlations of Fixed Effects

	Correlation of Fixed Effects Credibility	Intercept	1	2	3
1	Contrast 1 (1 vs 2ab)	.00			
2	Contrast 2 (1 and 2ab vs 3)	.00	.002		
3	Experience Airbnb	-.22	.00	.00	
4	Experience Berlin	-.89	.00	.00	-.12

	Correlation of Fixed Effects Attitude towards the Object	Intercept	1	2	3
1	Contrast 1 (1 vs 2ab)	.00			
2	Contrast 2 (1 and 2ab vs 3)	.00	.003		
3	Experience Airbnb	-.20	.00	.00	
4	Experience Berlin	-.84	.00	.00	-.12

	Correlation of Fixed Effects Product Value	Intercept	1	2	3
1	Contrast 1 (1 vs 2ab)	.00			
2	Contrast 2 (1 and 2ab vs 3)	.00	.003		
3	Experience Airbnb	-.20	.00	.00	
4	Experience Berlin	-.82	.00	.00	-.12

	Correlation of Fixed Effects Purchase Intention	Intercept	1	2	3
1	Contrast 1 (1 vs 2ab)	.00			
2	Contrast 2 (1 and 2ab vs 3)	.00	.003		
3	Experience Airbnb	-.20	.00	.00	
4	Experience Berlin	-.82	.00	.00	-.12