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„Effects of Spatial Distance on Color-Visualization and its Consequences for Donation Behavior: A Construal-Level Perspective“

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Abstract

Drawing on construal-level theory, this study investigates if the color saturation level of our mental representations decreases as spatial distance to the visualized scenario increases. Moreover, based on the construal level match hypothesis, this study investigates if a match between the spatial distance to a target event and the color saturation level of a message leads to enhanced donation behavior. This has valuable implications for advertisement design, e.g. in the fundraiser domain. Using a between-subjects design, 154 participants were randomly assigned to conditions and asked to visualize a series of spatially close (vs. distant) scenarios in front of their inner eye and were shown a flyer for a fundraiser in color (vs. black-and-white) for a spatially close (vs. distant) event. After being provided with six images of each scenario varying only in color saturation level, participants had to choose which one best approximated their mental representation. Also, participants intention to contribute to the fundraiser was assessed. Contradictory to prior research, results from the image matching method showed that color saturation level did not differ between spatially close vs. distant scenarios. Hence, spatial distance had no effect on color saturation level. Although donation behavior for distant (vs. close) events did not increase when the flyer was in black-and-white (vs. in color) as compared to in color (vs. black-and-white), these results do not contradict the construal level match hypothesis. Implications for existing research on construal-level theory, limitations and ideas for future research are discussed.

Keywords: Construal-level theory, construal-level match, mental representation, spatial distance, color saturation level, donation behavior, environmental domain

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List of Abbreviations

BW	Black and White
CLT	Construal Level Theory
IAT	Implicit Association Test
ITC	Intention to Contribute
PD	Psychological Distance
WTP	Willingness to Pay
NPO	Nonprofit Organization

Visualize yourself sitting in a café just around the corner of your house. Now think of a town far away from you. Coincidentally, a café almost identical to the one around your corner exists in that town, too. Try to visualize yourself sitting in that café as well. Does what you see in front of your inner eye change? Or more specifically, do you visualize the café far away to be less colorful then the café just around your corner? Trying to answer this question, this study investigates if the color saturation level of the images that we create in front of our inner eye changes depending on the spatial distance to the visualized event.

This question is of high importance, as research on consumer behavior suggests that a match between a persuasive message and what the message receiver sees in front of his inner eye can increase the persuasive potential of the marketing operation and lead to greater attitude changes (Fujita, Eyal, Chaiken, Trope, & Liberman, 2008; Lee, Fujita, Deng, & Unnava, 2017; Septianto, Kemper, & Paramita, 2019). Considering that 31% of donors worldwide give to charities outside of their country of residence (Nonprofit Tech, 2018), answering this question has valuable implications for advertisement design in the donation domain (e.g., a fundraising flyer). Charities could use this knowledge to design their advertising materials as a function of the recipients' distance to the target area and consequently as a function of the color saturation level of their mental representations.

Apart from these practical implications, this study is also relevant on a theoretical level, as no research so far has investigated whether peoples' mental representations of spatially close vs. distant events differ in color saturation level. Based on construal level theory (CLT; Trope & Liberman, 2010) and prior research by Lee et al. (2017) which found that people visualize future events increasingly less colorful, this study proposes a novel hypothesis assuming that as spatial distance to an event increases (vs. decreases), peoples' mental representations of this event will become increasingly less colorful (i.e., more black and white [BW]). Additionally, building on the construal level match hypothesis, this study investigates whether people's intention to contribute to a fundraiser increases if the color saturation level of a fundraiser advertisement matches that of their mental representation.

Theoretical Background

Fundamentals of Construal Level Theory

To understand why research on CLT suggests that people's mental representations of spatially close vs. distant events differ in color saturation level, it is important to first learn about the basic principles of CLT.

Central to CLT is the distinction between high- and low-level construals. High-level construals are relatively abstract mental representations, while low-level construals rather

focus on the concrete. Our level of construal of an event and thus how abstract we think about it increases the farther said event is taken away from our direct experience. For example, when planning a camping trip one year in advance, we think about it abstractly, like how much fun it is going to be or the feeling of being in nature (high-level construal), while when this very same camping trip is only a few days ahead, we think about it more concretely, like which tools to bring or which hiking trails to choose (low-level construal; Trope & Liberman, 2010).

This gap between our direct experience and the event is called psychological distance. Psychological distance is self-centered, meaning that its point of reference is the self at the present time and location and exists in reality. Research on CLT identified four different alternatives which cause a deviation from that reference point. These alternatives represent the four dimensions of psychological distance, namely: temporal distance – how far in the past or future does the target event lie (then vs. now); spatial distance – how remote the perceiver is from the target event (there vs. here); social distance – how close the perceiver and the target are (them vs. us); and hypotheticality – the likelihood of the target event or how close the perceiver thinks it is to reality (uncertain vs. certain; (Bar-Anan, Liberman, & Trope, 2006; Trope & Liberman, 2010).

The construal-level altering effect of psychological distance has been documented for all four of the dimensions (e.g., Liberman & Trope, 1998; Liviatan, Trope, & Liberman, 2008; Trope, Liberman, & Wakslak, 2007). For example, studies regarding spatial distance showed that if actions are described as taking place at distant, as opposed to near locations, participants characterized these actions as ends rather than as means and that they used more abstract language when referring to these events (Fujita, Eng, Trope, Henderson, & Liberman, 2006).

Stillman et al. (2017) provided neurological evidence for the effect of psychological distance (i.e., temporal distance) on construal level using functional magnetic resonance imaging (fMRI). Results showed that both temporal distance and high-level construal and temporal proximity and low-level construal activated the same brain regions, respectively.

Interchangeability

Interchangeability of psychological distance dimensions is an important precondition for this study because solely the effects of temporal distance on the color saturation level of our mental representations have been documented so far (Lee et al., 2017). If psychological distance dimensions are interchangeable, then the same effects should occur when manipulating other psychological distance dimensions (e.g., spatial distance). Indeed, results

from an Implicit Association Test (IAT; Bar-Anan et al., 2006) and a picture word version of the Stroop Task (Bar-Anan, Liberman, Trope, & Algom, 2007) indicated that temporal-, spatial-, social distance and hypotheticality are cognitively associated and that they are interrelated and have one underlying dimension in common, namely psychological distance (Trope & Liberman, 2010). Neurological evidence supported these results as well. Parkinson, Liu and Wheatley (2014) found that the same areas of the brain were activated when engaging in high level construal, regardless of psychological distance dimension.

This intercorrelation between dimensions of psychological distance can even be observed in our everyday lives. One example is the linguistic phenomenon of using spatial metaphors when talking about time, like the expressions "in the weeks ahead of us" or "the worst is behind us" (Radden, 2003) or the social phenomenon of keeping a physical distance to someone to display social distancing (Macrae, Bodenhausen, Milne, & Jetten, 1994).

One study by Stephan, Liberman and Trope (2010) investigated the effects of politeness, which is an indicator for social distance (Brown & Levinson, 1992), on temporal and spatial distance. Results showed that using normative and polite rather than colloquial and everyday language (e.g., "My brother is taking our family car, so the rest of us will stay at home" vs. "…will be stuck at home") led participants to think that the conversation was temporally and spatially more distant and vice versa. Another study by Wakslak (2012) found that manipulating hypotheticality had similar effects on the perception of other distances. E.g. people believed that unlikely events, as opposed to likely events, happened in temporally, spatially, and socially more distant situations. For example, participants thought that cats with a rare blood type were more likely to be found in distant rather than near locations, while for cats with a common blood type the reverse was the case.

Overall, these results demonstrate that manipulating psychological distance on one dimension also has an effect on the perceived distance of objects or events on other dimensions, meaning that the four dimensions of psychological distance are not only intercorrelated but also influence each other (Stephan et al., 2010).

Because of this intercorrelation and interchangeability, numerous studies yielded comparable results when participants made decisions, evaluations and predictions, despite manipulating different psychological distance dimensions (Amit, Algom, & Trope, 2009; Eyal, Liberman, & Trope, 2008; S. Y. Rim, Uleman, & Trope, 2009). For example, one study by Stephan et al. (2010) manipulated either the temporal or the spatial distance of an addressee and measured the level of politeness being used by the participants in the letters. Findings showed that the effect of the two psychological distance dimensions on politeness

were comparable. To conclude, these results suggests that the four dimensions of psychological distance are to a certain degree interchangeable (Maglio, Trope, & Liberman, 2013; Trope & Liberman, 2010).

Effects of Psychological Distance on Visual Perception

Effects of psychological distance on construal level have also shown to be relevant for people's perception and mental representations. In the following I will discuss those implications in more detail, especially regarding BW vs. color imagery, as this study investigates the effect of construal level on the color saturation level of peoples' mental representation.

Effects of Psychological Distance on Local vs. Global Processing

When looking at a painting, we can either focus on its overall impression (its gestalt) or examine each brushstroke separately (its separate components). One factor which might determine whether we make use of the former or the latter is our psychological distance to the stimulus (Liberman & Förster, 2009).

To test this, Liberman and Förster (2009) primed participants with temporally,- spatially- and socially distant stimuli and then had them complete Navon's task (Navon, 1977). In this task, participants are shown big, global letters which are composed of smaller, local letters (e.g. a large L made of plenty small Es). Then, a target letter which either matches the local or global letter does or does not appear on the screen. Participants who were being primed with psychologically distant stimuli were faster to detect global letters (the gestalt) and slower to detect local letters (the separate components), relative to a control group. Priming with psychologically proximal stimuli had the opposite effect. These results suggest that the form or gestalt of an object is perceived as a high-level feature and its separate components as a low-level feature. Later research on visual perception supports this assumption (Lee, Deng, Unnava, & Fujita, 2014). When identifying and grasping the meaning and functionality of an object, people rather rely on its global shape or gestalt than its separate components. Presumably this is, because the gestalt, compared to its separate components, is more effective in conveying the key characteristics of objects (Arnheim, 1974).

Another series of studies focused on the Gestalt Completion Task (Street, 1931). The goal of the task is to detect the gestalt or global feature of the depicted image. Attending to details or local features hinders performance. Participants believed that they were doing a test run to train for the actual task. Results showed that participants performed better when they expected the real task to take place further in the future (Förster, Friedman, & Liberman, 2004) and when they were told that the probability of the real task was low (Wakslak et al.,

2006). This suggests that a high construal mindset promotes global processing, while a low construal mindset promotes local processing. Most importantly to this study, these results demonstrate that psychological distance does not only affect construal on a conceptual, but also on a perceptual level.

Effects of BW vs. Color Imagery on Local vs. Global Processing

One integral part of our perception is our ability to see color. Thus, psychological distance could also be interlinked with color perception. Lee, Deng, Unnava and Fujita (2014) investigated whether the promoting effects of high (vs. low) level construal on global (vs. local) processing could be replicated with BW (vs. color) imagery. To test this, participants were shown consumer products either in BW or in color which also differed in terms of form and detail. Results showed that BW images promoted categorization based on form rather than on detail, while for color images the reverse was the case. This means that BW vs. color imagery promoted global vs. local processing and thus directed attention to high-level vs. low-level features, respectively. Moreover, participants were shown videos, either in BW or in color, with the instructions to indicate when they felt like a meaningful action was completed. Former studies suggest that high-level construal leads participants to structure behavior more broadly, which is reflected in fewer but larger detected meaningful actions (Henderson, Fujita, Trope, & Liberman, 2006; Wakslak et al., 2006). Accordingly, results showed that participants who watched BW, as opposed to color, videos indeed divided the behavior into relatively fewer but larger meaningful actions. This suggests that looking at BW (vs. color) imagery promotes high-level (vs. low-level) construal.

Similarly, darkness also facilitated a global processing style and thus high-level construal, as opposed to brightness. Results from an IAT supported this assumption across all four dimensions of psychological distance (Steidle, Werth, & Hanke, 2011). One reason for that might be that we associate BW images with the distant past (something temporally distant) and color images with recent events or the near past (something temporally close). This in turn is because color images in the media (e.g., color television) is a relatively new technological invention. Additionally, BW images are nowadays frequently used to portray something as old. Hence, over time a mental association between temporal distance and BW (vs. color) images is established which results in high (vs. low) level construal (Lee et al., 2014).

Overall, these results demonstrate that even a simple feature of an image, like its color saturation level, can have an impact on the construal level of the observer. However, this does

not automatically mean that the opposite is the case, namely that high-level vs. low-level construal generates visualization of images in BW vs. color.

Effects of Construal Level on BW vs. Color Visualization

Lee et al. (2017) investigated this reverse direction of influence, or more precisely, the effect of construal level on the color saturation level of our mental representations. These results are important as it is also the direction of influence being investigated in this research. First, temporal distance was manipulated by instructing participants to imagine a series of scenarios all taking place either in the distant or the near future. Then, for each scenario participants were shown different versions of the same picture, differing only in color saturation level, and were asked to pick the picture and hence color saturation level which best approximated their mental representation. Results showed that when visualizing scenarios in the distant future, participants picked increasingly less colorful pictures (or, more monochrome), relative to visualizing near future scenarios. One reason for that might be that attention to high-level features like shape relative to low-level features like color increased as temporal distance increased. If people pay relatively greater attention to shape than to color when visualizing a scenario, it appears less colorful. This line of reasoning is important to this study, as this shift of attention should also occur when manipulating spatial distance, as psychological distance dimensions are to a certain degree interchangeable (Maglio et al., 2013).

Effects of Construal Level on Donation Behavior

Studies show that construal level systematically effects our decision making. These effects have been reported in many domains such as marketing (Qiuying, Huifan, Huarui, & Tang, 2014), consumer behavior (Lee et al., 2017), political persuasion (Kim, Rao, & Lee, 2009), environmental behavior (Fujita, Clark, & Freitas, 2013) and donation behavior (e.g., Ein-Gar & Levontin, 2013; MacDonnell & White, 2015; Song & Kim, 2019). The results on the interplay between construal level and donation behavior are especially interesting for this study and will thus be discussed in more detail.

Studies using CLT as a theoretical background to investigate donation behavior mainly focused on manipulating the construal level mindset of potential donors (MacDonnell & White, 2015), manipulating the psychological distance to the focal event by changing its features (Ein-Gar & Levontin, 2013; Lee et al., 2017) or varying the resources being donated (MacDonnell & White, 2015; Song & Kim, 2019). Regarding the different types of resources MacDonnell and White (2015) found that in a donation context, people construed money relatively concretely (low-level construal) and time relatively abstractly (high-level

construal). In line with CLT, research showed that donors preferred to give time over money, as the time of donation moved further into the future, this means as temporal distance increased (Song & Kim, 2019). Ein-Gar and Levontin (2013) found that single victims are associated with low-level construal, while whole nonprofit organizations (NPOs) are associated with high-level construal. Furthermore, they manipulated temporal and social distance to the target donation and measured participants' willingness to donate to the cause. Results showed that messages including low temporal and social distance were more effective if the donation target was a single victim, while messages including high temporal and social distance were more effective for whole NPOs. MacDonnell and White (2015) found similar patterns of results by manipulating the construal level at which the donor considers the cause through changing the description of the donation appeal. Results showed that for low-level construal inducing descriptions, donation appeals asking for money were more effective, while for high-level construal inducing descriptions, donation appeals asking for time were more effective. Moreover, Song and Kim (2019) compared the performance of donation appeals asking either for money or time depending on the temporal distance to the time of donation. Results showed that low temporal distance in combination with a low construal resource request (i.e., money) and high temporal distance in combination with a high construal resource request (i.e., time) performed best.

These results suggest that a match between the construal level of the donation appeal and the donor can lead to increased donation behavior.

The Construal Level Match Hypothesis

More generally speaking, a match between the construal level of the message receiver and the abstractness of the message proved to be efficacious regarding persuasion and attitude change (e.g., Kim et al., 2009). This matching effect will be discussed in more depth below, as this study investigates the effects of construal level match on donation behavior in the environmental domain.

In one study by Fujita, Eyal, Chaiken, Trope, and Liberman (2008) participants were given descriptions of classes which were ostensibly going to take place next semester (near future condition) or next academic year (distant future condition). According to CLT, level of construal increases as temporal distance increases. The descriptions consisted either of high-level arguments (e.g., interesting course material) or low-level arguments (e.g., lecture hall facilities). Then, participants had to rate the class as a measurement of persuasive potential of the arguments. In line with the construal level match hypothesis, results showed that high-level arguments were more persuasive than low-level arguments as temporal distance

increased. According to the construal level match hypothesis this effect occurred because, as temporal distance increased, participants construed the future event (i.e., the class) more abstractly and thus, perceived processing fluency increased for high-level arguments which resulted in a more persuasive appeal of those arguments (Fujita et al., 2008; White, Macdonnell, & Dahl, 2011).

This means that a match between the construal level of the message receiver and the type of message (abstract vs. concrete) enhances evaluations, while a mismatch deteriorates evaluations (Kim et al., 2009). It is argued that this effect occurs due to a perception of fluency, which leads the message perceiver to feel right about the message or event. The message perceiver then misattributes this feeling-right experience to an increased preference for the message or event (Reber, Schwarz, & Winkielman, 2004).

Construal level match effects could also be confirmed for promoting pro-environmental behavior and attitudes (White et al., 2011), however, research suggests that this is only the case for consumers who report a higher level of environmental concern (Chang, Zhang, & Xie, 2015).

Furthermore, one study by Rabinovich, Morton, Postmes, and Verplanken (2009) yielded results not in line with the construal level match hypothesis. Donation behavior increased even though there was no match between specificity levels of goal and mindset. Participants in the abstract mindset condition reported higher donation behavior when the goal of the donation was specific (i.e., reducing one's carbon footprint), while participants in the specific mindset condition reported higher donation behavior when the goal was abstract (i.e., slowing down global warming). However, it is possible that these contradicting results occurred due to a simultaneous manipulation of goal and mindset specificity, while usually in research on CLT, goal and mindset manipulations are introduced consecutively (Freitas, Salovey, & Liberman, 2001). Results from one study on climate change even indicate that altering the construal level of a message receiver through psychological distance and ultimately changing its behavior can be problematic in the environmental domain (Wang, Hurlstone, Leviston, Walker, & Lawrence, 2019). Still, a large body of research supports the idea of construal level match and its implications for changing environmental attitudes and donation behavior (e.g., Chang et al., 2015; Ein-Gar & Levontin, 2013; Fujita et al., 2013; MacDonnell & White, 2015; Song & Kim, 2019; Tugrul & Lee, 2018)

Furthermore, research suggests that effects of construal level match do not only occur on a conceptual, but also on a perceptual level (Amit et al., 2009). Reber et al. (2004), for example, showed that people perceive objects as more aesthetic if they can process them more

fluently. In one study by Septianto, Kemper, and Paramita (2019) a match in construal level on a perceptual level increased advertisement effectiveness, likelihood of purchasing and participants' willingness to pay (WTP) for organic food.

Moreover, Lee et al. (2017) found effects of construal level match on a perceptual level on donation behavior in an environmental context. To test this, participants were given a flyer for a fundraiser either in BW or in color. Temporal distance was manipulated by informing the participants that the fundraiser was going to take place either in the near or distant future. Prior research suggests that distant future events, compared to near future events, are visualized less colorfully (Lee et al., 2017). Then, participants had to indicate how much they want to donate to the fundraiser. In line with the construal level match hypothesis, participants in the distant future condition were willing to donate more when the flyer was BW relative to in color, while participants in the near future condition were willing to donate more when the flyer was in color relative to BW, respectively. As already noted, this enhanced persuasive potential is the result of increased processing fluency which in turn is a result of a match between the construal level which the message conveys and that of the message receiver (Fujita et al., 2008; Reber et al., 2004).

The Present Research

According to CLT, our level of construal of an event increases the further away it is from our direct experience. Hence, we think about that event more abstractly. The gap between our direct experience and the event is called psychological distance. (Trope & Liberman, 2010). Moreover, research has shown effects of psychological distance not only on a conceptual, but also on a perceptual level (Lee et al., 2014; Liberman & Förster, 2009b).

H1: Effects of Spatial Distance on Color Saturation Level of Mental Representations

More specifically, research on the effects of psychological distance on our mental representations found that shape constitutes a visual feature associated with high-level construal, while color constitutes a visual feature associated with low-level construal. In line with CLT, visualizing the distant instead of the near future leads to a shift of attention from the color to the shape of the visualized event. Consequently, as temporal distance increases, mental representations of visualized events appear less colorful (Lee et al., 2017).

Manipulating different dimensions of psychological distance yielded comparable effects on decision making, perception and evaluations (Amit et al., 2009; Eyal et al., 2008; S. Rim, Uleman, & Trope, 2009; Stephan et al., 2010). This feature of interchangeability exists because all four dimensions share one underlying construct, namely psychological distance (Bar-Anan et al., 2007; Maglio et al., 2013). Therefore, I expect that manipulating spatial

distance has the same effects on the color saturation level of our mental representations as manipulating temporal distance does. More precisely, because of a shift of attention from color towards shape, I expect our mental representations to appear more BW (or less colorful) as spatial distance increases.

H1: Participants in the low (vs. high) spatial distance condition report more (vs. less) colorful mental representations than participants in the high (vs. low) spatial distance condition.

No work in CLT literature has specifically investigated whether peoples' mental representations of spatially close vs. distant events differ in color saturation level so far. This research aims to fill this gap.

H2: Matching Effects Between Spatial Distance and Color Saturation Level on Donation Behavior

Researching the effects of spatial distance on the color saturation level of our mental representations has valuable implications for the design of fundraisers of spatially close vs. distant causes. This is because persuasiveness increases to the extent that the image that the message recipient (e.g., donor) sees in front of his inner eye corresponds with what the message (e.g., fundraiser) depicts (Lee et al., 2017; Petrova & Cialdini, 2005; Zhao, Dahl, & Hoeffler, 2014). According to CLT, this effect is based on a match of construal levels between message and message receiver, which occurs due to a misattribution of processing fluency (Kim et al., 2009). Building on these results, Lee et al. (2017) manipulated temporal distance (distant vs. near future) and color saturation level (BW vs. color) of a flyer for a fundraiser event and measured participants' WTP. In line with the construal level match hypothesis, participants in the distant (vs. near) future condition wanted to donate more when the flyer was in BW (vs. color) relative to in color (vs. BW).

Again, as psychological distance dimensions are to a certain degree interchangeable (Maglio et al., 2013), I expect the same pattern of results when manipulating spatial instead of temporal distance. Additionally, the dependent variable is extended from WTP to Intention to Contribute (ITC) to cover non-monetary types of support as well, like volunteering and social support (See methods part for a more detailed description of ITC).

To summarize, the goal of hypothesis 2 was to investigate the effect of spatial distance and color saturation level on ITC in the environmental domain. Based on the assumption that our mental representations appear more BW as spatial distance increases, I expect participants to report higher levels of ITC when there is a construal level match vs. mismatch between the ad and the recipients' mental representations. More specifically, I expect participants in the high spatial distance condition to report higher levels of ITC when the ad is in BW as

compared to in color. By contrast, I expect participants in the low spatial distance condition to report higher levels of ITC when the ad is in color as compared to in BW.

H2: Participants in the distant (vs. close) spatial distance condition report higher levels of ITC when the ad is BW (vs. in color) as compared to in color (vs. BW).

Methods

Participants

154 psychology students (114 females; M_{age} = 21.45 years, SD_{age} = 2.80) of the University of Vienna participated in the study in exchange for course credit. All participants were randomly assigned to conditions and were given informed consent upon starting the study. The study took place in the computer lab of the Department of Applied Psychology and Consumer Research. The whole study was conducted in German.

Manipulation

To manipulate spatial distance, participants were asked to imagine ten different scenarios consecutively (e.g., going to a bakery to get a snack; see Appendix A for full list of scenarios and Appendix B for an overview of the images used) either in Tulln, Lower Austria (close condition) or in Hampton on the East Coast of the USA (distant condition). Additionally, participants were shown a map of Lower Austria (vs. the Western Hemisphere) to further strengthen the manipulation (see Appendix C). Participants were instructed to take one minute of their time to close their eyes and visualize the scenario in front of their inner eye. The order of scenarios was counterbalanced across participants. As a manipulation check, participants reported on a 7-point Likert scale whether they felt like Tulln in Lower Austria or Hampton at the East Coast of the USA is far away from Vienna (0 = *Strongly disagree* to 6 = *Strongly agree*).

Materials

To test hypothesis 1, the color saturation level of mental representations was assessed through two different measures: a Likert scale and an image matching method. First, participants had to indicate the colorfulness and vividness of their mental representation on a 6-point Likert scale by reporting how much they agree with the two statements: “I have a vivid picture in front of my inner eye” and “I have a colorful picture in front of my inner eye” (0 = *Strongly disagree* to 6 = *Strongly agree*). Second, participants were shown six versions of the same image, each with a marginally lower color saturation level (figure 1). The lower the color saturation level, the more BW the image appears. Participants had to choose the image which best approximated what they saw in front of their inner eye.

Figure 1

Exemplary item for image matching method

Note. Color saturation level in percentage %. Exemplary item: Bakery. Participants had to choose which image best matched their mental representation.

This image matching method has been previously used to assess the color saturation level of mental representations (e.g., Lee et al., 2017).

Participants motivation and ease in visualizing the scenarios was assessed by having them rate to what extent they agreed with five statements like "I was motivated in visualizing the scene" (see Appendix E) on a 7-point Likert scale (0 = *Strongly disagree* to 6 = *Strongly agree*), similar to the measure used in Lee et al. (2017; Experiment 2C).

To test hypothesis 2, participants were presented with a flyer for a fundraiser either in BW or in color (see Appendix D), which read that an endangered bird species is about to go extinct unless there is enough support to build a breeding station. To manipulate spatial distance, the fundraiser was described to be either for a breeding station in Tulln, Lower Austria (close condition) or in Hampton at the East Coast of the USA (distant condition).

Intention to Contribute (ITC) is a self-created scale covering monetary, voluntary and social support and was assessed by having participants rate how much they agreed with the following three statements "How likely is it that you are going to donate money?", "How likely is it that you are going to support the project in your free time?" and "How likely is it that you are going to share the flyer on your social media?" on a 7-point Likert scale (0 = *Not likely at all* to 6 = *Very likely*).

Participants' Attitude Towards Charitable Organizations (ACO; Webb, Green, & Brashear, 1992) was measured on a 5-point Likert scale (Cronbach's alpha = .81), by having them report how much they agreed with items like "The money given to charities goes for good causes." (0 = *Strongly disagree* to 4 = *Strongly agree*). I used a self-translated version of the original scale (See Appendix).

Design

Participants were randomly assigned to a 2 (spatial distance: close vs. distant) x 2 (color saturation level: BW vs. color) between-subjects design. As independent variables, I varied the spatial distance to the event and the color saturation level of the fundraiser. As dependent variables, I assessed the color saturation level of participants' mental representations and participants' ITC to the fundraiser. As control variables, I assessed participants' motivation and ease in visualizing the scenarios and their ACO.

Procedure

First, participants were informed that the study is about our imagination and what the images that we construe in front of our inner eye look like. Second, participants provided demographic data before being presented with a map either of Tulln, Lower Austria or Hampton at the East Coast of the USA. Third, participants were instructed to take one minute of their time to close their eyes and visualize ten consecutive scenarios. Then, participants rated the vividness and colorfulness of their mental representation on a Likert scale, before moving on to an image matching method. After each scenario participants reported their ease and motivation in visualizing the scenario. As a cover story, participants were told that the Department of Applied Social Psychology and Consumer Research needs their help in testing materials for a fundraiser for a nature conservation organization. After reading the flyer for the fundraiser, participants indicated their ICO to the event and their ACO. Lastly, participants were thanked and debriefed.

Results

All participants were included in the analysis, as no participants guessed the hypotheses. Gender had no effect on the results and will not be discussed further.

G*Power Analysis

Two a priori power analyses were conducted using G*Power3 (Franz, Erdfelder, Lang, & Axel, 2007). The first power analysis showed that a total sample size of $N = 210$ participants with two equal sized groups of $n = 105$ participants was needed to achieve a power of .95 in order to test the difference between two independent group means using a two-tailed test, a medium effect size ($d = .50$), and an alpha of .05.

The second power analysis showed that in order to detect an effect of $d = .50$ with 95% power in a two-way between-subjects ANOVA (four groups, alpha = .05), a total sample size of $N = 107$ participants was needed. Hence, the minimum required number of participants was met for both the ANOVA and the independent T-test.

Manipulation Check

Participants in the distant condition reported a greater perceived distance (M = 5.91, SD = 1.17) than participants in the close condition (M = 2.73, SD = 1.31). Higher values indicate a higher perceived distance. An independent T-Test revealed a significant difference between the two groups ($t(152) = -17.141$, $p < .001$). Thus, the manipulation of perceived spatial distance was deemed to be successful.

Motivation and Ease, Vividness

There was no significant difference in the motivation and ease of visualizing the scenarios between the distant (M = 5.69, SD = 0.85) and close group (M = 5.81, SD = 0.89), $t(152) = -.793$, $p = .429$. Also, participants in the distant (M = 4.78, SD = 0.67) and close group (M = 4.71, SD = 0.62) did not differ in terms of vividness of the visualized scenarios, $t(152) = -.673$, $p = .502$. Therefore, participants motivation and ease in visualizing the scenarios as well as vividness of the visualized scenarios was not included in further statistical analysis.

Scenarios

No scenario was excluded from the analysis, as participants reported similar levels of color saturation level and vividness across all ten scenarios (see Appendix A).

Difference between the Likert Scale and the Image Matching Method

As the color saturation level was assessed through both a Likert scale and an image matching method, I computed the average difference between the two measures across all ten scenarios to see if participants' response behavior differed between the two measures. Regarding the 6-point Likert scale, higher values indicate a higher color saturation level. Similarly, answers from the image matching method were reverse coded in a way that a color saturation level of 0% = 1, 20% = 2, 40% = 3, 60% = 4, 80% = 5 and 100% = 6. On average, participants' responses between the Likert scale and the image matching method differed by only M = .57 response units (SD = 0.29). Therefore, to simplify further statistical testing, I only used the image matching method as a dependent variable, as this was also the measure used in similar previous studies (Lee et al., 2017). Furthermore, this also facilitates comparability across studies.

Color Saturation Level of Mental Representations

The color saturation level of participants' mental representations was averaged across all ten scenarios and reverse coded so that higher values indicate higher levels of color saturation. Participants in the distant condition reported an average color saturation level of M = 4.22 (SD = 0.67), while participants in the close condition reported an average color

saturation level of $M = 4.23$ ($SD = 0.77$). This is roughly equivalent to a color saturation level of 60%. To test hypothesis 1, namely that low (vs. high) spatial distance is associated with more (vs. less) colorful mental representations than high (vs. low) spatial distance, I conducted an independent T-test. Contradictory to the hypothesis, results revealed that there was no significant difference between both conditions, $t(152) = .044$, $p = .965$. Therefore, hypothesis 1 could not be confirmed.

Intention to Contribute

Participants' ITC was computed by averaging the scores of all three items. Participants in the distant condition who were presented with a BW flyer reported a mean ITC of $M = 2.77$ ($SD = 1.07$), while those who were presented with a colored flyer reported a mean ITC of $M = 2.72$ ($SD = 1.33$). Participants in the close condition who were presented with a BW flyer reported a mean ITC of $M = 2.82$ ($SD = 1.20$), while those who were presented with a colored flyer reported a mean ITC of $M = 2.67$ ($SD = 1.23$). Higher values indicate a higher ITC. To test hypothesis 2, namely that participants in the distant (vs. close) spatial distant condition show a higher ITC if the flyer is BW (vs. color) as compared to in color (vs. BW), I conducted a two-way ANOVA (figure 2).

Results regarding the effect of spatial distance and color saturation level on ITC revealed that the interaction was not significant, $F(1, 150) = .65$, $p = .799$. Therefore, hypothesis 2 could not be confirmed. Also, there was no significant effect of spatial distance and color saturation level on WTP, $F(1, 150) = .04$, $p = .842$.

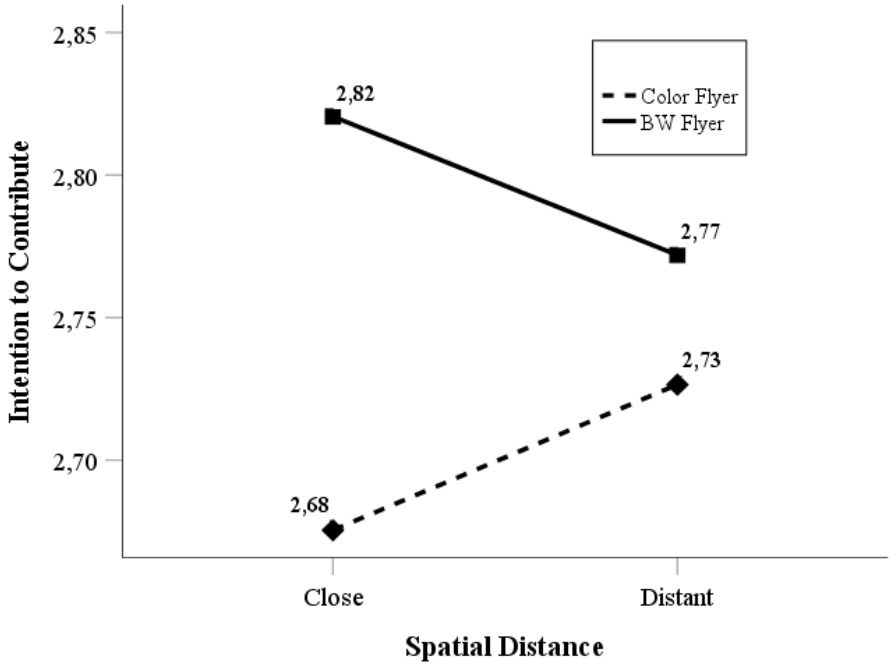
Discussion

Results did not support the two novel hypotheses, namely that we visualize spatially distant (vs. close) events more (vs. less) BW than spatially close (vs. distant) events and that the level of ITC is higher for spatially distant (vs. close) events than for spatially close (vs. distant) events when the ad is in BW (vs. in color) as compared to in color (vs. BW).

However, results from the manipulation check showed that participants in the distant condition were indeed reporting significantly higher levels of perceived spatial distance than participants in the close condition. According to CLT, thinking about more distant locations leads to higher levels of mental construal (Fujita et al., 2006) and that BW imagery is more strongly associated with high-levels of mental construal than with low-levels of mental construal (Lee et al., 2014). Therefore, I can rule out the possibility that participants' mental representations of spatially distant events were not more BW than their mental representations of spatially close events because they did not engage in higher levels of mental construal.

Figure 2

Effect of Spatial Distance and Color Saturation Level of Flyer on Intention to Contribute



Note. Higher values indicate a higher Intention to Contribute.

Implications

This study contributes to the existing CLT literature in several ways. First, based on the premise that psychological distance dimensions are to a certain degree interchangeable (Maglio et al., 2013), my findings are inconsistent with previous research by Lee et al. (2017), which showed that as temporal distance to the imagined event increased, the color saturation level of our mental representations decreased. Contradictory to CLT, this finding could not be replicated with spatial distance. One possible explanation for that incongruence is that people associate BW (vs. color) images with the distant (vs. near) past. Because color images are a relatively new technological development, people consider BW images to be something temporally distant and color images to be something temporally close (Lee et al., 2014). So it is conceivable that the mere association between BW imagery and temporally distant events accounted for the reported relationship between temporal distance and increasingly less colorful mental representations - as opposed to an activation of high level construal and as a consequence thereof a shift of attention from color to shape resulting in less colorful mental representations. Otherwise, the same effects on color saturation level of our mental representations should have been found when manipulating spatial distance. Further research is needed to clarify these contradictory findings.

Second, Lee et al. (2017) findings that donation appeals concerning distant future events lead to greater WTP when paired with BW as compared to color images could not be replicated with spatial distance. Note that, although there was neither an effect of spatial distance and color saturation level on ITC nor on WTP, these results do not contradict the construal level match hypothesis. This is because high spatial distance – as opposed to temporal distance - did not lead to increasingly less colorful mental representations in the first place, which would have been an important prerequisite to observe construal level match effects in this study. Further research is needed to investigate the interplay between spatial distance, color saturation level and donation behavior.

Limitations

Several limitations of this study should be acknowledged. These limitations include sample composition, scale validity and methodology. First, the entire sample consisted entirely of psychology students at the University of Vienna. Multiple studies claim that such homogeneous student samples can cause issues regarding representativeness, generalizability and comparability of results (Henrich, Heine, & Norenzayan, 2010; Peterson & Merunka, 2014; Sears, 1986). Second, the validity of the scales used was not tested. More precisely, the two scales Attitude towards Charitable Organizations and Motivation and Ease which have already been used in previous studies (Lee et al., 2017; Webb et al., 1992) were translated from English to German by me and were not back-translated by a professional translator. This is crucial to mention, as potentially poor translations such as incorrect word choice can lead to item-bias (Gudmundsson, 2009). Furthermore, the validity of the ITC scale which I conceptualized around WTP, was not assessed, and thus cannot be guaranteed. Third, this study relies entirely on introspection. Therefore, all self-report measures in this study might be affected by self-presentational biases.

Future Research

To overcome the limitations of introspection, future research should test the hypotheses of this study with behavioral methods like the IAT (Greenwald, Mcghee, & Schwartz, 1998). Additionally, future research could utilize an image reconstruction method similar to Lee et al. (2017; Experiment 3) instead of an image matching method. In this method, participants are asked to imagine an event at a spatially close vs. far location and are being provided with color pencils and a line drawing of the depicted event. CLT would suggest, contradictory to the results of the present study, that those who imagine a spatially distant (vs. near) event would use less color when coloring the drawing. Such a multi-method approach could yield more robust results.

Future research might also look at the effect of high vs. low probability events and socially close vs. distant others on the color saturation level of our mental representations. Extending the study objective to these two dimensions of psychological distance could shed light on the contradictory findings regarding the effects of temporal distance vs. spatial distance on the color saturation of mental representations. Such a study could answer the question if out of the four dimensions of psychological distance, only temporal distance affects the color saturation level of mental representations (Lee et al., 2017). This would support an explanation for this finding outside of construal level theory, like a learned association between BW imagery and temporally distant events because of old BW imagery e.g., on television. In contrast, if the psychological distance dimensions hypotheticality and social distance also prove to affect the color saturation level of mental representations, this would be indicative of methodological issues of the present study.

Future research should also explore construal level fit effects of spatial distance and color saturation level on donation behavior outside of the environmental domain, as prior research suggests that influencing pro-environmental behavior by manipulating psychological distance and construal level can be difficult (Brügger, 2019).

Conclusion

This study is the first to investigate the effects of spatial distance on the color saturation level of our mental representation and possible construal level match effects between the color saturation level of a message and the mental representation of a recipient caused by a manipulation of spatial distance. Although no statistically significant results were found, this study still contributes to existing CLT literature by revealing contradictory findings and giving rise to new research questions.

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Appendices

Appendix A

Scenarios

Table A1

List of Scenarios Used and Descriptive Statistics

Scenario	Color Saturation Level		Vividness	
	M	*SD*	*M*	*SD*
Bakery	4.21	1.11	4.84	1.00
Bookshop	4.47	1.28	4.86	0.98
Café	3.75	1.12	4.73	1.01
Church	3.91	1.33	4.47	1.08
Countryroad	4.04	1.13	4.99	0.95
Hotelroom	3.88	1.17	4.94	0.94
Meadow	4.73	1.22	4.69	1.04
Park	4.36	1.15	4.71	1.10
Playground	4.47	1.23	4.56	0.93
Soccer	4.49	1.18	4.76	1.01

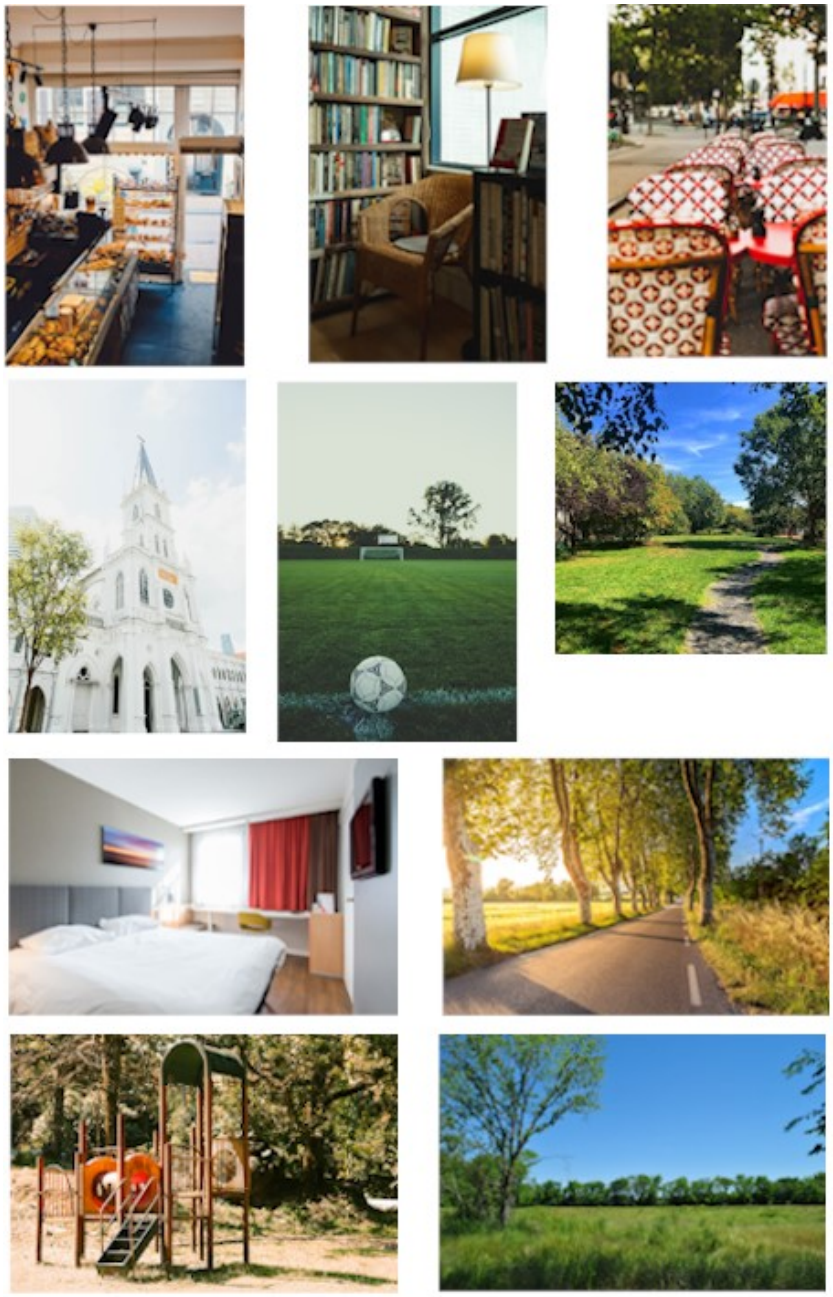
Note. The order of scenarios was counterbalanced across participants.

Appendix B

Scenarios

Figure B1

Overview Over Scenarios Used in Image Matching Method



Note. Participants were shown six versions of each image, varying only in color saturation level. Displayed here are only the color versions. Starting from top left corner: Bakery, bookshop, café, church, soccer, park, hotel room, country road, playground, meadow.

Appendix C

Maps

Figure C1

Maps Shown to Participants to Further Strengthen the Manipulation

Note. Top: Lower Austria (close condition). Below: Western Hemisphere (distant condition).

Appendix D

Flyer for Fundraiser

Figure D1

Flyer for Fundraiser for Breeding Station in Tulln, Lower Austria (vs. Hampton at the East Coast of the US) Shown to Participants Either in BW or in Color

Note. Translation: The “kleine Glucksdrossel” (fictitious bird species) is about to go extinct. These birds find fewer and fewer insects and worms due to increased glyphosate application in agriculture. This poses a problem, especially during breeding season. If the bird parents cannot find enough food, the chicks are banned from the nests even before they fledge. Outside the nest, their chances of survival are extremely small. The last known population consists of only 31 breeding pairs and is located around Tulln in Lower Austria (vs. Hampton at the East Coast of the US). Your donation supports the construction of a breeding station which ensures the survival of this species. Please help. Every donation counts.

Appendix E

Questionnaire

socialpsyWS19 → CloseBW 11.06.2020, 12:30

Seite 01

WT

Liebe Teilnehmerin, lieber Teilnehmer,

Herzlichen Dank für Ihre Bereitschaft, an dieser Studie teilzunehmen. Die Bearbeitungsdauer beträgt ca. 35 Minuten.

Die Studie dient ausschließlich wissenschaftlichen Zwecken. Die Befragung wird vom Institut für Angewandte Psychologie: Arbeit, Bildung, Wirtschaft der Universität Wien durchgeführt. Alle Informationen, die wir von Ihnen erhalten, werden vertraulich behandelt und anonymisiert ausgewertet, sodass keine Rückschlüsse auf Ihre Person möglich sind.

Mit Klicken des "Weiter"-Buttons, bestätigen Sie, die Einleitung gelesen zu haben, und willigen ein, an dieser Studie teilzunehmen:

Seite 02

DD

Bevor die Studie losgeht, bitten wir Sie, folgende demografische Daten anzugeben.

1. Geben Sie ihr Alter an (Zum Beispiel: Ich bin 22 Jahre alt.)

Ich bin [ ] Jahre alt.

2. Geben Sie ihr Geschlecht an.

[Bitte auswählen]

3. Geben Sie ihre Hauptbeschäftigung an.

[Bitte auswählen]

4. Ich erhalte LABS-Credits für die Teilnahme an dieser Studie.

[Bitte auswählen]

Seite 03
AN

Diese Studie beschäftigt sich mit unserer Vorstellungskraft und wie die Bilder, die wir vor unserem "inneren Auge" erschaffen, aussehen.

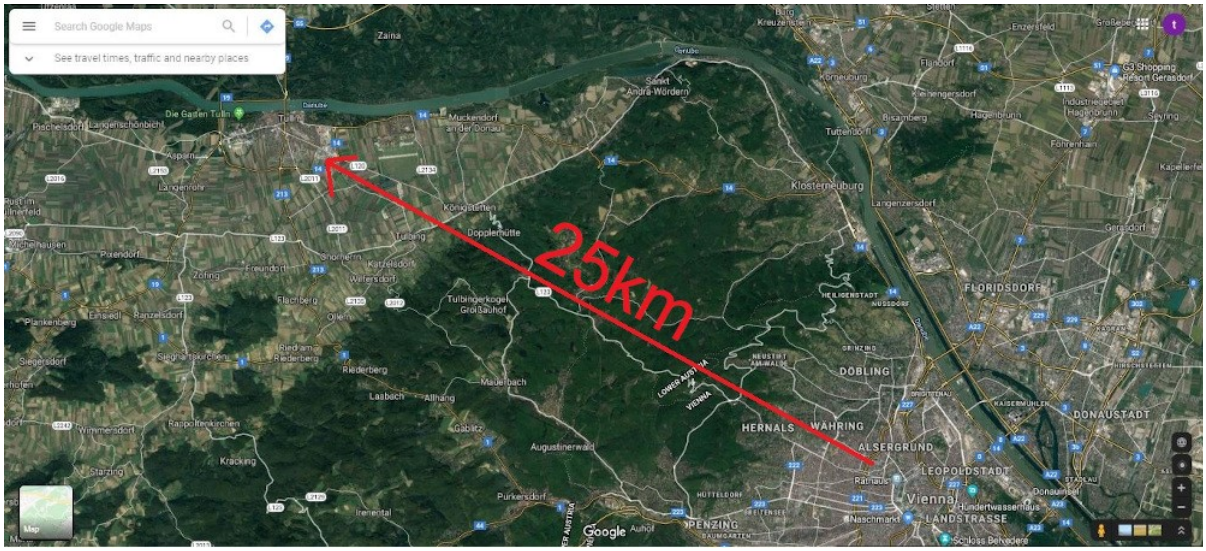
Dafür werden Ihnen eine Reihe von Szenarien beschrieben. Diese sollen Sie sich vor ihrem "inneren Auge" vorstellen.
Ein solches Szenario könnte zum Beispiel sein:

"Stellen Sie sich vor, Sie machen Urlaub in Tulln an der Donau. Tulln ist eine kleine Stadt in Niederösterreich. Als Sie eine Pause vom Sightseeing machen, sehen Sie auf einer Wiese zwei Schafe stehen. Nehmen Sie sich eine Minute Zeit, sich diese Szenerie so gut es geht vor ihrem "inneren Auge" vorzustellen."

Dann werden Ihnen eine Reihe an Bildern von Schafen präsentiert, die sich nur hinsichtlich ihrer Farbintensität unterscheiden. Wählen Sie das Bild aus, dessen Farbintensität am ehesten mit ihrer Vorstellung übereinstimmt. Dabei gibt es keine richtigen oder falschen Antworten.

Bevor es losgeht, werden Sie zur besseren Orientierung auf der nächsten Seite eine Karte sehen.Tulln an der Donau ist rund 25km von Wien entfernt. Betrachten Sie die Karte gründlich und drücken Sie dann auf "Weiter".

Seite 04
MN



Seite 05
B1Start

Stellen Sie sich vor, sie machen einen Urlaub in Tulln an der Donau in Niederösterreich. Sie kaufen sich in einer Bäckerei etwas zu Essen, um sich zu stärken.
Schließen Sie die Augen, und nehmen Sie sich eine Minute Zeit, sich diese Bäckerei vor ihrem inneren Auge vorzustellen. Drücken Sie dann auf "Weiter".

Seite 06

Geben Sie an, inwieweit die folgenden Aussagen über das Bild vor ihrem inneren Auge zutreffen.

	Trifft gar nicht zu					Trifft komplett zu
	0	1	2	3	4	5
Ich habe ein deutliches Bild vor meinem inneren Auge	○	○	○	○	○	○
Ich habe ein farbintensives Bild vor meinem inneren Auge	○	○	○	○	○	○

Seite 07
B1End

5. Wählen Sie das Bild aus, dessen Farbintensität am ehesten mit ihrer Vorstellung übereinstimmt.

Seite 08
B3Start

Stellen Sie sich vor, sie machen einen Urlaub in Tulln an der Donau in Niederösterreich. Sie besuchen einen Buchladen um nach einer Urlaubslektüre zu suchen.
Schließen Sie die Augen, und nehmen Sie sich eine Minute Zeit, sich diesen Buchladen vor ihrem inneren Auge vorzustellen. Drücken Sie dann auf "Weiter".

Seite 09

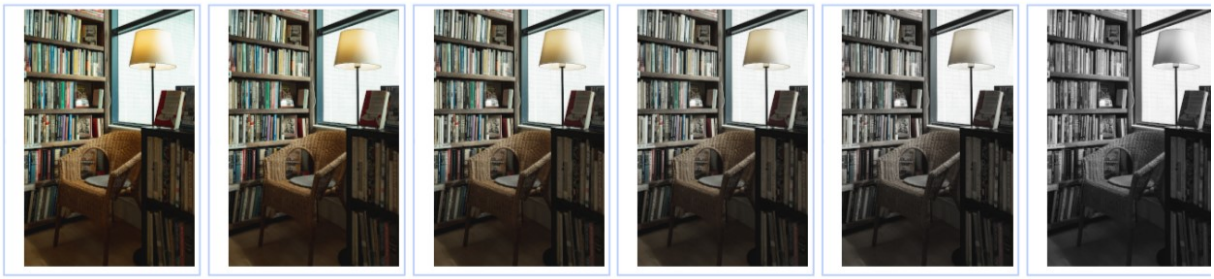
Geben Sie an, inwieweit die folgenden Aussagen über das Bild vor ihrem inneren Auge zutreffen.

	Trifft gar nicht zu					Trifft komplett zu
	0	1	2	3	4	5
Ich habe ein deutliches Bild vor meinem inneren Auge	○	○	○	○	○	○
Ich habe ein farbintensives Bild vor meinem inneren Auge	○	○	○	○	○	○

Seite 10

B3End

6. Wählen Sie das Bild aus, dessen Farbintensität am ehesten mit ihrer Vorstellung übereinstimmt.



Seite 11

B4Start

Stellen Sie sich vor, sie machen einen Urlaub in Tulln an der Donau in Niederösterreich. Sie gehen in ein Café um sich ein wenig auszuruhen.
Schließen Sie die Augen, und nehmen Sie sich eine Minute Zeit, sich dieses Café vor ihrem inneren Auge vorzustellen. Drücken Sie dann auf "Weiter".

Seite 12

Geben Sie an, inwieweit die folgenden Aussagen über das Bild vor ihrem inneren Auge zutreffen.

	Trifft gar nicht zu					Trifft komplett zu
	0	1	2	3	4	5
Ich habe ein deutliches Bild vor meinem inneren Auge	○	○	○	○	○	○
Ich habe ein farbintensives Bild vor meinem inneren Auge	○	○	○	○	○	○

Seite 13

B4End

7. Wählen Sie das Bild aus, dessen Farbintensität am ehesten mit ihrer Vorstellung übereinstimmt.

Seite 14

B5Start

Stellen Sie sich vor, sie machen einen Urlaub in Tulln an der Donau in Niederösterreich. Sie besichtigen dort eine imposante Kirche.
Schließen Sie die Augen, und nehmen Sie sich eine Minute Zeit, sich diese Kirche vor ihrem inneren Auge vorzustellen. Drücken Sie dann auf "Weiter".

Seite 15

Geben Sie an, inwieweit die folgenden Aussagen über das Bild vor ihrem inneren Auge zutreffen.

	Trifft gar nicht zu					Trifft komplett zu
	0	1	2	3	4	5
Ich habe ein deutliches Bild vor meinem inneren Auge	○	○	○	○	○	○
Ich habe ein farbintensives Bild vor meinem inneren Auge	○	○	○	○	○	○

Seite 16

B5End

8. Wählen Sie das Bild aus, dessen Farbintensität am ehesten mit ihrer Vorstellung übereinstimmt.

Seite 17

B6Start

Stellen Sie sich vor, sie machen einen Urlaub in Tulln an der Donau in Niederösterreich. Sie fahren eine Landstraße entlang, an der links und rechts Bäume wachsen.
Schließen Sie die Augen, und nehmen Sie sich eine Minute Zeit, sich diese Landstraße vor ihrem inneren Auge vorzustellen. Drücken Sie dann auf "Weiter".

Seite 18

Geben Sie an, inwieweit die folgenden Aussagen über das Bild vor ihrem inneren Auge zutreffen.

	Trifft gar nicht zu					Trifft komplett zu
	0	1	2	3	4	5
Ich habe ein deutliches Bild vor meinem inneren Auge	○	○	○	○	○	○
Ich habe ein farbintensives Bild vor meinem inneren Auge	○	○	○	○	○	○

Seite 19

B6End

9. Wählen Sie das Bild aus, dessen Farbintensität am ehesten mit ihrer Vorstellung übereinstimmt.

Seite 20

B7Start

Stellen Sie sich vor, sie machen einen Urlaub in Tulln an der Donau in Niederösterreich. Sie checken in ihr Hotelzimmer ein. Es ist ein Doppelbettzimmer.
Schließen Sie die Augen, und nehmen Sie sich eine Minute Zeit, sich dieses Hotelzimmer vor ihrem inneren Auge vorzustellen. Drücken Sie dann auf "Weiter".

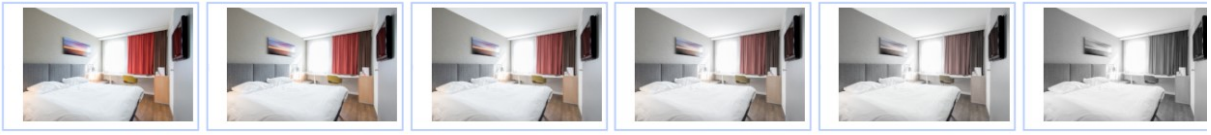
Seite 21

Geben Sie an, inwieweit die folgenden Aussagen über das Bild vor ihrem inneren Auge zutreffen.

	Trifft gar nicht zu					Trifft komplett zu
	0	1	2	3	4	5
Ich habe ein deutliches Bild vor meinem inneren Auge	○	○	○	○	○	○
Ich habe ein farbintensives Bild vor meinem inneren Auge	○	○	○	○	○	○

Seite 22
B7End

10. Wählen Sie das Bild aus, dessen Farbintensität am ehesten mit ihrer Vorstellung übereinstimmt.



Seite 23
B8Start

Stellen Sie sich vor, sie machen einen Urlaub in Tulln an der Donau in Niederösterreich. Sie machen einen Spaziergang und kommen an eine große Wiese.
Schließen Sie die Augen, und nehmen Sie sich eine Minute Zeit, sich diese Wiese vor ihrem inneren Auge vorzustellen. Drücken Sie dann auf "Weiter".

Seite 24

Geben Sie an, inwieweit die folgenden Aussagen über das Bild vor ihrem inneren Auge zutreffen.

	Trifft gar nicht zu					Trifft komplett zu
	0	1	2	3	4	5
Ich habe ein deutliches Bild vor meinem inneren Auge	○	○	○	○	○	○
Ich habe ein farbintensives Bild vor meinem inneren Auge	○	○	○	○	○	○

Seite 25
B8End

11. Wählen Sie das Bild aus, dessen Farbintensität am ehesten mit ihrer Vorstellung übereinstimmt.

Seite 26
B9Start

Stellen Sie sich vor, sie machen einen Urlaub in Tulln an der Donau in Niederösterreich. Sie machen einen Ausflug zu einem Park, um ein Picknick zu machen.
Schließen Sie die Augen, und nehmen Sie sich eine Minute Zeit, sich diesen Park vor ihrem inneren Auge vorzustellen. Drücken Sie dann auf "Weiter".

Seite 27

Geben Sie an, inwieweit die folgenden Aussagen über das Bild vor ihrem inneren Auge zutreffen.

	Trifft gar nicht zu					Trifft komplett zu
	0	1	2	3	4	5
Ich habe ein deutliches Bild vor meinem inneren Auge	○	○	○	○	○	○
Ich habe ein farbintensives Bild vor meinem inneren Auge	○	○	○	○	○	○

Seite 28
B9End

12. Wählen Sie das Bild aus, dessen Farbintensität am ehesten mit ihrer Vorstellung übereinstimmt.

Seite 29
B10Start

Stellen Sie sich vor, sie machen einen Urlaub in Tulln an der Donau in Niederösterreich. Während eines Spaziergangs kommen Sie an einem Spielplatz vorbei.
Schließen Sie die Augen, und nehmen Sie sich eine Minute Zeit, sich diesen Spielplatz vor ihrem inneren Auge vorzustellen. Drücken Sie dann auf "Weiter".

Seite 30

Geben Sie an, inwieweit die folgenden Aussagen über das Bild vor ihrem inneren Auge zutreffen.

	Trifft gar nicht zu					Trifft komplett zu
	0	1	2	3	4	5
Ich habe ein deutliches Bild vor meinem inneren Auge	○	○	○	○	○	○
Ich habe ein farbintensives Bild vor meinem inneren Auge	○	○	○	○	○	○

Seite 31
B10End

13. Wählen Sie das Bild aus, dessen Farbintensität am ehesten mit ihrer Vorstellung übereinstimmt.

Seite 32
B12Start

Stellen Sie sich vor, sie machen einen Urlaub in Tulln an der Donau in Niederösterreich. Auf ihrem Weg zurück zum Hotel kommen Sie an einem Fußballplatz vorbei.
Schließen Sie die Augen, und nehmen Sie sich eine Minute Zeit, sich diesen Fußballplatz vor ihrem inneren Auge vorzustellen. Drücken Sie dann auf "Weiter".

Seite 33

Geben Sie an, inwieweit die folgenden Aussagen über das Bild vor ihrem inneren Auge zutreffen.

	Trifft gar nicht zu					Trifft komplett zu
	0	1	2	3	4	5
Ich habe ein deutliches Bild vor meinem inneren Auge	○	○	○	○	○	○
Ich habe ein farbintensives Bild vor meinem inneren Auge	○	○	○	○	○	○

Seite 34
B12End

14. Wählen Sie das Bild aus, dessen Farbintensität am ehesten mit ihrer Vorstellung übereinstimmt.

Seite 35
SD

Vielen Dank. Sie haben nun alle Szenarien bearbeitet. Geben Sie nun an, inwieweit Sie den folgenden Aussagen zustimmen.

Im Großen und Ganzen...	Stimme gar nicht zu 0	1	2	3	4	5	Stimme komplett zu 6
Fiel es mir schwer mir die Situationen vorzustellen	○	○	○	○	○	○	○
Konnte ich mir die Situationen leicht vorstellen	○	○	○	○	○	○	○
War ich motiviert mir die Situationen vorzustellen	○	○	○	○	○	○	○
Habe ich mir viel Mühe gegeben, mir die Situationen vorzustellen	○	○	○	○	○	○	○
Konnte ich die Situationen vor meinem inneren Auge sehen	○	○	○	○	○	○	○

Geben Sie bitte an, ob Sie denken, dass Tulln in Niederösterreich weit von Wien entfernt ist.

	stimme gar nicht zu 0	1	2	3	4	5	stimme voll zu 6
Ich habe das Gefühl, dass es weit weg ist.	○	○	○	○	○	○	○

Seite 36

Lieber Teilnehmer, liebe Teilnehmerin,

Das Institut für Angewandte Psychologie der Universität Wien testet in Zusammenarbeit mit der Naturschutzorganisation "International Fund for Endangered Birds" Materialien für Spendenaktionen zugunsten von bedrohten Vogelarten rund um Tulln an der Donau in Niederösterreich. Dabei brauchen wir Ihre Hilfe!

Im Folgenden wird Ihnen ein Flyer für einen Spendenaufruf präsentiert. Betrachten Sie diesen aufmerksam und lesen Sie den Text gut durch.

Seite 37

Die kleine Glucksdrossel (Mimus parvi ligulus) ist vom Aussterben bedroht. Durch erhöhten Glyphosateinsatz in der Landwirtschaft finden sie immer weniger Würmer und Insekten. Dies ist besonders während der Brutzeit ein Problem. Können die Vogeleltern nicht genug Nahrung finden, werden die Küken noch bevor sie flügge werden aus dem Nest verbannt. Außerhalb des sicheren Nests sind ihre Überlebenschancen verschwindend gering.
Die letzte bekannte Population besteht aus lediglich 31 Brutpaaren und ist rund um Tulln in Niederösterreich zu Hause.
Mit Ihrer Spende unterstützen sie den Bau einer Aufzuchtstation für Jungtiere und sichern damit das Überleben dieser Art.

Helfen Sie mit. Jede Spende zählt.

Spendenkonto:
Kreditinstitut: Alpha Bank Amsterdam
Begünstigter: International Fund for Endangered Birds
IBAN: NL91 5354 0417 1644
Betreff: Glucksdrossel Tulln Niederösterreich

Geben Sie hier an, wie wahrscheinlich es ist, dass Sie das Projekt in Tulln unterstützen.

	überhaupt nicht wahrscheinlich						sehr wahrscheinlich
	0	1	2	3	4	5	6
Wie wahrscheinlich ist es, dass Sie Geld spenden?	○	○	○	○	○	○	○
Wie wahrscheinlich ist es, dass Sie das Projekt in ihrer Freizeit unterstützen? (z.B. Betreuung der Website)	○	○	○	○	○	○	○
Wie wahrscheinlich ist es, dass sie den Flyer auf Social Media teilen?	○	○	○	○	○	○	○

Seite 38

15. Als letztes, geben Sie bitte an, inwieweit Sie den folgenden Aussagen über Hilfsorganisationen zustimmen.

	stimme gar nicht zu				stimme komplett zu
	0	1	2	3	4
Geld, das an Hilfsorganisationen gespendet wird, kommt einem guten Zweck zu.	○	○	○	○	○
Ein Großteil des für wohltätige Zwecke gespendeten Geldes wird verschwendet.	○	○	○	○	○
Mein Bild von Hilfsorganisationen ist positiv.	○	○	○	○	○
Hilfsorganisationen konnten bereits erfolgreich vielen Bedürftigen helfen.	○	○	○	○	○
Hilfsorganisationen erfüllen eine wichtige Funktion für unsere Gesellschaft.	○	○	○	○	○

Seite 39

Vielen Dank für Ihre Teilnahme.

Diese Studie basiert auf der Construal-Level Theorie. Diese beschreibt den Zusammenhang zwischen psychologischer Distanz und dem Grad an mentaler Abstraktion. Dabei geht hohe psychologische Distanz mit einem hohen Grad an mentaler Abstraktion einher. Psychologische Distanz ist die Entfernung eines Events auf einer zeitliche, räumlichen, sozialen oder hypothetischen Dimension. Mentale Abstraktion wiederum beschreibt das Ausmaß, in dem eine Person abstrakt oder konkret denkt. Bei niedrigem Abstraktionslevel werden Objekte konkret, auf hohem Abstraktionslevel abstrakt repräsentiert.
Des Weiteren zeigen Forschungsergebnisse, dass mentale Repräsentationen (also das, was wir vor unserem "inneren Auge" sehen), von zeitlich weit entfernten Events eher farblos sind, während unsere mentalen Repräsentationen von zeitlich nahen Events eher farbintensiv sind. Da zeitliche und räumliche Distanz beide Teil eines gemeinsamen Konstrukts (nämlich psychologische Distanz) sind, sollten wir für räumlich nahe und entfernte Events ähnliche Ergebnisse erwarten.

Die hier getestete Hypothese ist also, dass wir uns räumlich nahe gelegene Events farbintensiver vorstellen, als räumlich weiter entfernte Events und vice versa. Dafür wurden die Versuchspersonen in zwei Gruppen eingeteilt (nah: Tulln in Niederösterreich; fern: Hampton an der Ostküste der USA).

Im zweiten Teil der Studie wurde getestet, ob eine Übereinstimmung zwischen Construal-Level der "Message" (hier der Flyer) und Construal-Level des Betrachters (die Versuchsperson) zu einer größeren Spendenbereitschaft führt. Dies wird Construal-Level-Match genannt.
Versuchspersonen, die einen schwarz-weißen Flyer für eine räumlich weit entfernte Spendenaktion (hier: Ost-Küste der USA) sehen, sollten also eher bereit sein etwas zu spenden, als wenn der Flyer farbig ist. Für räumlich nah gelegene Spendenaktionen (hier: Tulln an der Donau) sollten farbige Flyer effektiver sein, als schwarz-weiße.

Falls Sie noch Fragen zur Studie haben, wenden Sie sich bitte an den Versuchsleiter.
Email: a01348118@unet.univie.ac.at

Zusammenfassung

Aufbauend auf der Construal-Level Theorie untersucht diese Studie, ob das Farbsättigungslevel mentaler Repräsentationen mit zunehmender räumlicher Distanz zum Zielort der mentalen Repräsentation abnimmt. Darüber hinaus untersucht diese Studie, ob eine Übereinstimmung der Construal-Level zwischen räumlicher Distanz zum Zielort und Farbsättigungslevel eines Spendenaufrufs zu erhöhtem Spendenverhalten führt. Dies hat wertvolle Implikationen für die Gestaltung von Werbemitteln, wie zum Beispiel Spendenaufrufen. Unter Verwendung eines Between-Subject-Designs wurden 154 Teilnehmer zufällig den Versuchsbedingungen zugewiesen. Dabei wurden sie gebeten, sich eine Reihe von räumlich nahen (vs. entfernten) Szenarien vorzustellen und sich einen farbigen (vs. schwarz-weißen) Flyer für einen Spendenaufruf für einen räumlich nahen (vs. entfernten) Zielort anzusehen. Die Teilnehmer mussten aus jeweils sechs Bildern pro Szenario, die sich nur in ihrem Farbsättigungslevel unterschieden, jenes auswählen, das am ehesten ihrer mentalen Repräsentation entsprach. Auch die Absicht der Teilnehmer, zur Spendenaktion beizutragen, wurde erfasst. Im Gegensatz zu früheren Studien zeigten die Ergebnisse der Image-Matching-Methode, dass die Farbsättigungslevel sich zwischen räumlich nahen vs. entfernten Orten nicht unterschieden. Räumliche Distanz hatte daher keinen Einfluss auf das Farbsättigungslevel mentaler Repräsentationen. Obwohl das Spendenverhalten für entfernte (vs. nahe) Zielorte nicht zunahm, wenn der Flyer in schwarz-weiß (vs. in Farbe) gehalten war, widersprechen diese Ergebnisse nicht der Construal-Level-Match-Hypothese. Implikationen für bestehende Forschung, Limitationen und Ideen für zukünftige Forschung werden diskutiert.

Schlagwörter: Construal-Level-Theorie, Construal-Level-Match, mentale Repräsentation, räumliche Distanz, Farbsättigungslevel, Spendenverhalten

Curriculum Vitae

Personal data

Name	Theo Pattschull
Place of Birth	Stuttgart, Germany
Citizenship	German

Education

2017 – Today	Master of Science, Work and Organisational Psychology, University of Vienna
2015 – 2017	Exchange Semester at University of Wroclaw
2013 – 2017	Bachelor of Science, Psychology, University of Vienna
2012 – 2013	Bachelor of Science, Economics, University of Heidelberg
2003 – 2012	Deutschordengymnasium Bad Mergentheim

Internships

September 2019 – January 2020	Internship at *Datenwerk*. Usability Testing and Social Media Support
May 2013 – June 2013	Internship at *Fischer&Friends*. Creation of Print and Online Advertisement

Skills and Qualifications

Computer Skills	MS Office, SPSS, Soscisurvey
Languages	German (native), English (fluent), French (advanced), Polish (basic)