



When seeing the forest reduces the need for trees: the role of construal level in attraction to choice

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HIGHLIGHTS

- Abstract construals promote a greater similarity focus when comparing objects.
- Within choice-sets, abstract construals encourage belief that options are similar.
- Similar options within choice-sets should be seen as more redundant.
- Redundant options should decrease the appeal of having larger choice-sets.
- Abstract construals were found to decrease attraction to larger choice-sets.

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ABSTRACT

Research has shown that more abstract, higher-level thinking induces a greater focus on similarities when comparing things. Using this framework, I posited that individuals' attraction to choice-sets that included a larger number of options would be reduced when they engaged in more abstract thinking, because a greater focus on similarities would lead people to expect options to be more redundant, thereby lowering the expected benefit of having more of them. As predicted, I found that a more abstract (vs. more concrete) mindset reduced (and sometimes even eliminated) individuals' general tendency to prefer larger choice-sets across various hypothetical situations (e.g., purchases; Experiment 1) as well as two real-world helping situations (Experiments 2–4). Further, this effect appeared to be at least partially mediated by the degree to which people expected the options within a choice-set to be similar to one another (Experiment 4). Implications for choice are discussed.

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Introduction

Many decisions require a choice between options when deciding how to act. Identifying what to eat at a restaurant involves choosing between different items on a menu. Planning air travel involves considering different itineraries and fares. When more than one person runs for public office, elections inherently involve a choice between candidates. Sometimes, people have the ability to seek out or avoid situations in which they expect to be confronted with a larger number of options when making a choice. Consider, for example, that some ice cream parlors in Austin, Texas sell over 80 different flavors, whereas other parlors in the same city have fewer than 10 flavors available. Research suggests that people are generally attracted to situations in which they expect to have more options available when making their choice (Brown & Carpenter, 2000; Iyengar & Lepper, 2000). In the present research, I examine the circumstances under which this general tendency to be attracted to larger choice-sets will be reduced. Specifically, I examine

whether adopting more abstract, higher-level mindsets can reduce individuals' attraction to larger choice-sets.

Choice-set size

People value choice, as they react negatively when their freedom to choose among options is threatened (Worchel, 1974). Further, people are generally attracted to more options when choosing, as consumers are attracted to larger assortments (Iyengar & Lepper, 2000) and products that offer more features (Brown & Carpenter, 2000). Moreover, in individualist cultures where uniqueness is valued, people seek variety in the items they choose and the manner in which they choose (Kim & Drolet, 2003). Indeed, highlighting a plethora of options is frequently used as a strategy to entice people to act. Case in point: While President Obama was explaining his 2010 basketball bracket to ESPN he made an appeal on behalf of tsunami victims by highlighting the variety of ways that people could help, specifically stating “if you're on your laptop, et cetera, go to usaid.gov – U-S-A-I-D dot G-O-V – and that's going to list a whole range of charities where you can potentially contribute to help the people who have been devastated in Japan”.

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Prior work has highlighted a distinction between choice-sets that people are most attracted to and choice-sets that people are most satisfied with once they actually make a selection. That is, despite individuals' attraction to larger choice-sets, psychological costs are often incurred when people are presented with too many options (e.g., greater regret). This experience has been dubbed a "choice overload" or "paradox of choice", because once people have the opportunity to select from within larger choice-sets, their likelihood of making a choice and satisfaction (if a choice is made) is frequently lower (Iyengar & Lepper, 2000; Polman, 2012; Schwartz, 2004; although see Scheibehenne, Greifeneder, & Todd, 2010). Consequently, identifying factors that reduce individuals' initial attraction to larger choice-sets would be beneficial, as such factors would minimize the psychological costs that are incurred when selections are ultimately made. Next, I discuss the rationale for why individuals' construal level should affect their attraction to different sized choice-sets.

Construal level

Though levels of mental representation or construal are rooted in cognitive and developmental psychology (e.g., Brown, 1958; Kay, 1971; Rosch, 1975; Rosch, Mervis, Gray, Johnson, & Boyes-Braem, 1976; Schank & Abelson, 1977), lower and higher-levels construals are highly researched across other subdisciplines of psychology, including social (e.g., Fujita & Roberts, 2010; Semin & Fiedler, 1989; Wolfin, Corneille, Yzerbyt, & Förster, 2011) and clinical (e.g., Ayduk & Kross, 2008; Dar & Katz, 2005; Ehrling, Szeimies, & Schaffrick, 2009). Across psychology, lower-level, more concrete construals of objects and events have been shown to extract vivid, imageable features (Strack, Schwarz, & Gschneidinger, 1985), capture superficial information (Kay, 1971), and be based on temporary properties (Semin, Gil de Montes, & Vlencia, 2003). Higher-level, more abstract construals, on the other hand, are less vivid, but extract the overarching meaning or gist (Schul, 1983), capture important information (McCarthy & Skowronski, 2011), and are based on stable, cross-situational properties (Medin & Ortony, 1989; for more detailed discussions, see Förster, 2012; Förster & Dannenberg, 2010; Ledgerwood, Trope, & Liberman, 2010; Trope & Liberman, 2010; Trope, Liberman, & Wakslak, 2007).

In the present research, I draw on findings that support social-cognitive theories of mental representation (action identification theory, Vallacher & Wegner, 1987; construal level theory, Trope & Liberman, 2010; GLOMO^{sys}, Förster, 2012) to understand how changes in individuals' construal level can shape their attraction to different sized choice-sets. Specifically, findings from different lines of research suggest that when people construe objects in more abstract terms, they tend to focus less on the multitude of incidental features that distinguish one object from another, and instead focus on the few essential or important features that tie them together. For example, Liberman, Sagristano, and Trope (2002) found that participants who were led to adopt more abstract construals relied on broader categories when classifying objects, which implied that they focused more on the shared, essential properties of those objects.

Indeed, part of the way in which people abstract essential properties of objects is by trying to identify the aspects of objects that are consistent or similar across contexts (Burgoon, Henderson, & Markman, *in press*). As a result, more abstract construals naturally focus people on similarities rather than differences. Consider, for example, Förster (2009) who found that participants who were primed with abstract perceptual processing styles generated more similarities (vs. differences) on unrelated tasks. Similarly, Levy, Freitas, and Salovey (2002) found that people who chronically thought about actions in more abstract terms focused less on the unique variability of group members as opposed to the similarities between them (see also Henderson, 2009). In fact, a key way in which researchers manipulate construal level is by manipulating individuals' attention to similarities (e.g., Fujita & Roberts, 2010; Mullen, Pizzuto, & Foels, 2002; also see Burgoon et al., *in press*).

Hypothesis

Initial attraction to larger choice sets is presumably driven by the value that people experience when they encounter a variety of options (Iyengar & Lepper, 2000, pg. 997). By definition, variety within a choice-set is based on the *differences* between options. Based on research that has shown that more abstract construals foster a greater focus on similarities (e.g., Förster, 2009), I hypothesize that when people adopt more abstract construals, they should be more inclined to expect the options within a choice-set to be more similar to one another and therefore expect them to be more redundant, which should then decrease the expected benefit of having more of them. Indeed, a basic principle of self-regulation is that when people have redundant means for accomplishing a goal, they tend to place less value on any particular mean (Kruglanski et al., 2002; also see research on "fan effect" in memory, Anderson, 1974, 1983). As people adopt more abstract construals, I hypothesize that their general tendency to be attracted to larger choice-sets will be reduced, as they will come to expect the options within those choice-sets to be more similar to one another. Lower-level, more concrete construals, on the other hand, should focus individuals' attention on the unique and distinct aspects of each option within a choice-set, which should then maintain individuals' general attraction to larger choice-sets.

Of course, other factors besides construal level (e.g., IQ, perceived social norms) may affect individuals' attraction to larger versus smaller choice-sets. Consequently, I do not expect more abstract construals to necessarily lead individuals to prefer smaller choice-sets over larger ones, as these other factors can still exert their influence on abstract thinkers. Rather, I expect more abstract construals to (at a minimum) make individuals' general preference for larger choice-sets less rigid. I designed the following experiments to test this hypothesis.

Pilot study

Before examining the causal role that construal level plays in individuals' attraction to different sized choice-sets, I wanted to at least establish a basic relationship between individuals' construal level and their attraction to different sized choice-sets. Prior research has shown that individual differences exist in baseline or chronic levels of construal (e.g., Vallacher & Wegner, 1987, 1989). In this pilot, I examine whether individuals' attraction to different sized choice-sets is related to individual differences in construal level.

Method

One hundred and eighty-one individuals in the US (89 females, 37 unreported, $M_{age} = 33.64$, $SD_{age} = 13.12$) participated in a survey about community services via Amazon's Mechanical Turk system. First, I presented participants with some brief information about a philanthropic cause (world hunger), along with a pie chart that illustrated the number of people in different parts of the world that suffer from undernourishment.

I then randomly assigned participants to the large ($n = 103$) or small ($n = 78$) choice-set condition, specifically informing them that 27 or 3 different organizations dedicated to combating world hunger had been identified. For both conditions, I listed the website for each organization, so that participants either saw a list of websites for 27 or 3 organizations. I generated the list of these organizations after doing a search on "world hunger" at the universalgiving.org website. Participants were then asked, "Would you like to receive (via email) instructions about how to get started helping to end world hunger?" Participants indicated "no" or "yes", and were told to provide an email where the instructions could be sent if they answered yes.

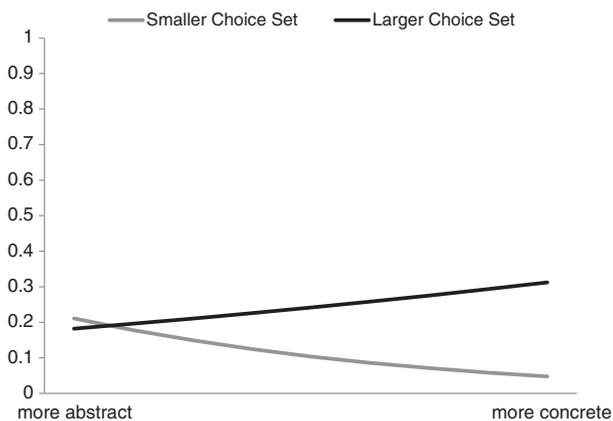
Finally, I measured participants' tendency to adopt more concrete versus abstract construals by having them complete a classification task, which has been commonly used to measure differences in construal

level (Burgoon et al., in press). Specifically, I showed participants a list of objects (e.g., brush, tent) that were described in Liberman et al.'s (2002) camping scenario. Participants classified the objects into as many or few categories as they thought appropriate. I counted the number of groups into which participants classified the objects ($M = 4.77$, $SD = 1.91$). As noted earlier, people who adopt more abstract construals naturally categorize objects into fewer, broader groups. I reversed-scored participants' categorization score so that higher numbers indicated more abstract construals.

Results

I tested whether participants who have a tendency to adopt more abstract construals exhibited less attraction to the larger choice-set. Specifically, I analyzed the proportion of participants who indicated that they wanted to receive information about how to help the victims of world hunger using binary-logistic regression. The presented choice set (smaller coded -1 ; larger coded 1), participants' construal level as indexed by the reversed-scored number of categories they created (centered), and the interaction between them were entered as predictors. Results revealed no effect of construal level ($\beta = .13$, $S.E. = .13$, $Wald = .96$, $p = .33$, $OR = 1.13$). However, there was an effect of choice-set ($\beta = .50$, $S.E. = .24$, $Wald = 4.47$, $p = .04$, $OR = 1.66$), as participants were 66% more likely to seek information about how to help when a greater rather than fewer number of ways to help were presented to them. This is consistent with the notion that people generally prefer larger choice-sets. Critically, results also revealed a construal level \times choice-set effect ($\beta = -.31$, $S.E. = .13$, $Wald = 5.95$, $p = .02$, $OR = .73$; see Fig. 1). Specific comparisons at one standard deviation below and above the mean of construal level revealed that when participants adopted more concrete construals, they were more likely to seek information about how to help when they were presented with a larger rather than smaller choice-set ($\beta = 1.10$, $S.E. = .40$, $Wald = 7.66$, $p = .006$). However, when participants adopted more abstract construals, they were equally likely to seek information about how to help when they were presented with a larger or smaller choice-set ($\beta = -.09$, $S.E. = .27$, $Wald = .10$, $p = .75$).

One obvious limitation of this study is that construal level was measured rather than manipulated, preventing any causal interpretation of the results. Another limitation is that the presentation of the larger and smaller choice-sets occurred in between-participants fashion. Meaning that while the sets objectively differed in size, participants may not have necessarily perceived the larger choice-set as larger given that participants were not presented with an explicit



Note. Likelihood of that participants were attracted to the organization that offered a larger or smaller choice-set as a function of measured construal level (Pilot Study).

Fig. 1. Note. Likelihood of that participants were attracted to the organization that offered a larger or smaller choice-set as a function of measured construal level (Pilot study).

comparison set. Having established at least a relationship between construal level and attraction to different sized choice-sets in this study, I address these limitations in the following experiments and explore my primary question: whether more abstract construals causally decrease individuals' attraction to larger choice-sets.

Experiment 1

In this first experiment, I examine whether more abstract (vs. concrete) thinking decreases individuals' attraction to larger choice-sets across a variety of hypothetical situations (e.g., purchases).

Method

I primed 65 University of Texas at Austin students (54 females, $M_{age} = 18.50$, $SD_{age} = 1.29$) with a concrete or abstract mindset (Fujita, Trope, Liberman, & Levin-Sagi, 2006). Specifically, participants were presented with 40 common objects and activities (e.g., soda, computer, sport), and those in the concrete condition ($n = 33$) generated specific examples of these objects and activities (e.g., coke, Microsoft, tennis) and those in the abstract condition ($n = 32$) generated categories for the same objects (e.g., food, technology, recreation). Procedurally priming people to think about categories (vs. exemplars) has been shown to foster thinking at a more abstract level, which carries over to subsequent judgments (Fujita et al., 2006; also see Burgoon et al., in press).

Readers may question why I do not report a no-prime group in the present research. Individuals must operate at some construal level and participants vary from experiment to experiment in their chronic construal level. Consequently, the interpretation of the comparison between experimental groups and any no-prime group is ambiguous in different construal level studies, which is why a no-prime group is often purposefully not included in construal studies (e.g., Fujita et al., 2006; Ledgerwood & Callahan, 2012; Schmeichel, Vohs, & Duke, 2011; Wakslak, 2012).

After the construal level manipulation, I presented participants with seven scenarios that included a smaller and larger choice-set (see Appendix A).¹ For example, one scenario stated, "Imagine that you plan on reading a good mystery novel. One of the bookstores in your city has 1,000,000 books in stock. Another bookstore has 20,000 books in stock." For each scenario, I asked participants via a forced-choice item to indicate whether they would prefer a smaller- or larger-choice set. I randomized whether the smaller or larger choice-set was listed first, and calculated the proportion of scenarios in which participants preferred the larger choice-set (larger and smaller coded 1 and 0, respectively).

Results

As expected, participants' general tendency to prefer larger choice-sets was reduced when people adopted a more abstract construal, as a smaller proportion of participants in the abstract (vs. concrete) condition preferred the larger choice-sets, $M = .50$, $SD = .13$, vs. $M = .58$, $SD = .12$, $t(63) = 2.54$, $p = .01$, $r = .30$ (see Table 1 for results for each scenario). These findings suggest that more abstract thinking makes individuals' preference for larger choice-sets less rigid, as participants in the concrete condition were more likely to prefer the larger rather than smaller choice-sets, but participants in abstract condition were just as likely to prefer the larger and smaller choice-sets. One limitation of this experiment is that participants responded to hypothetical events. One might question whether these findings generalize to real-world situations. The next experiment addressed this concern by examining

¹ Two scenarios were presented that involved purchasing alcohol. When I constructed the scenarios, I neglected to consider that most of my sample (96%) was below the legal drinking age. Therefore, I excluded these scenarios because they could not apply to my sample.

Table 1
Percentage that preferred the larger choice-set as a function of mindset condition (Experiment 1).

Scenario	Mindset	
	Concrete (<i>n</i> = 33)	Abstract (<i>n</i> = 32)
Class assignment	51.5	51.6
Speed dating	54.5	18.8
Album purchase	51.5	43.8
Charitable donation	84.8	68.8
Suit purchase	81.8	62.5
Sushi meal	30.3	53.1
Novel purchase	51.5	53.1

individuals' attraction to different sized choice-sets when deciding whether to engage in prosocial behavior in response to a real-world disaster.

Experiment 2

Given individuals' general tendency to be attracted to larger choice-sets, charitable organizations may assume that they must present people with an abundance of options about where they can donate their money or volunteer their time in order to encourage them to get involved with their organization. While the presentation of a larger choice set would likely encourage many people to learn more about a charitable organization, people might find the ultimate process of choosing a particular way of helping overwhelming when too many options are available. In such cases, it is useful to know whether more abstract thinking can make individuals' preference for larger choice-sets less rigid, as people may be more open to learning about organizations that present a smaller choice-set for helping when people adopt more abstract construals. In this experiment, I test whether more abstract (vs. concrete) construals decrease individuals' attraction to a larger choice-set for helping when being informed of a real-world disaster.

Method

I sampled 59 individuals in the United States (33 females, $M_{age} = 33.56$, $SD_{age} = 14.52$) via Amazon's Mechanical Turk system and primed them with either a concrete or abstract mindset (Freitas, Gollwitzer, & Trope, 2004). Participants described three things that they wanted to accomplish, and those in the concrete condition ($n = 27$) elaborated on three ways that they could accomplish each thing and those in the abstract condition ($n = 32$) elaborated on three reasons that they wanted to accomplish each thing. Thinking about why (vs. how) an action is carried out fosters thinking at a more general, superordinate level (Strack et al., 1985; Vallacher & Wegner, 1987, 1989), which carries over to subsequent judgments (Freitas et al., 2004).

After the construal level manipulation, I presented participants with an abbreviated article from the USA Today that described the destructive impact of the 2011 Texas wildfires, along with a photo of an area that was affected by the wildfires. I informed participants that two (unspecified) organizations had been identified that described alternative ways to help the wildfire victims – one that described 350 options and one that described 20 options. I randomized whether the smaller or larger choice-set was listed first, and asked participants to indicate whether they wanted to receive information about the organization that described more ways to help, information about the organization that described fewer ways to help, or no information about either organization.

Results

As in Experiment 1, results revealed that participants' general tendency to prefer larger choice-sets was reduced when they adopted a more abstract mindset (see Table 2). My dependent variable had three

possible levels. However, because such a small number of people selected the option to receive no information about either organization, it was impossible for me to run a multinomial logistic regression. Thus, in order to examine whether participants' construal level significantly affected their attraction to the different sized choice-sets, I focused on participants who indicated that they wanted more information about the organization that described either a larger or smaller number of ways to help. Specifically, using binary logistic regression I entered participants' construal condition (concrete coded -1 ; abstract coded 1) as a predictor of their preferred choice-set (smaller coded 0 ; larger coded 1).

Results revealed that participants were 51% less likely to prefer the larger choice-set when they adopted a more abstract rather than more concrete construal, $\beta = -.71$, $S.E. = .30$, $Wald = 5.77$, $p = .02$, $OR = .49$. Further analyses revealed that participants in the concrete condition were more likely to prefer the larger rather than smaller choice-set, although the difference failed to reach significance, $\beta = .51$, $S.E. = .24$, $Wald = 1.47$, $p = .23$, $OR = 1.67$. In contrast, participants in the abstract condition were less likely to prefer the larger rather than the smaller choice-set, $\beta = -.91$, $S.E. = .42$, $Wald = 4.80$, $p = .03$, $OR = .40$ (see Table 2). As in Experiment 1, these findings suggest that more abstract thinking makes individuals' preference for larger choice-sets less rigid, so much so that more abstract thinking even fostered a greater attraction to the smaller choice-set in this experiment.

Experiment 3

Although the construal level manipulations that I used in the previous experiments have been documented as valid manipulations (e.g., see Freitas et al., 2004; Fujita et al., 2006), a potential criticism of those manipulations is that participants in the abstract and concrete groups were required to generate different content in their responses. While I do not believe that this serves as a viable alternative explanation for my findings, to assuage any concerns I used a modified version of the construal level manipulation that I used in Experiment 1, which held the content constant for my experimental groups. Further, to confirm the robustness and generalizability of my findings, I tested whether more abstract construals would decrease individuals' attraction to a larger choice-set for helping when responding to another real-world disaster.

Method

Given the size of the effects observed in Experiments 1 and 2, I sampled a larger number of participants in Experiment 3 to increase power to detect group differences. I sampled 146 individuals in United States via Amazon's Mechanical Turk system but excluded 25 participants because they either participated in one of my previous experiments ($n = 3$) or did not follow the instructions for the construal level manipulation ($n = 22$), leaving me with a sample of 121 individuals (55 females, $M_{age} = 29.78$, $SD_{age} = 10.99$). Goodman, Cryder, and Cheema (in press) found that relative to student samples, participants completing experiments on Mechanical Turk were significantly less likely to pay attention to experimental materials, presumably because participants are not monitored by an experimenter when completing tasks online. I suspect that because the construal level manipulation simply involved

Table 2
Percentage that preferred no information versus percentage that was attracted to organization that offered a larger or smaller choice-set as a function of manipulated construal level.

Experiment	Mindset					
	Concrete			Abstract		
	Larger	Smaller	No info	Larger	Smaller	No info
2	55.6	33.3	11.1	25.0	62.5	12.5
3	70.3	26.6	3.1	45.6	43.9	10.5
4	67.9	20.2	11.9	52.8	38.9	8.9

clicking buttons (rather than writing texts as was required in Experiments 1 and 2), those participants who failed to follow instructions were simply not paying attention to the task, and therefore were excluded from the analysis.

For my construal level manipulation, I primed participants with either a concrete ($n = 64$) or abstract ($n = 57$) mindset using a modified exemplar versus category focus task that was based on the procedure developed by Fujita et al. (2006). Participants were presented with 36 common objects (e.g., soda, finger, car). For each object, participants were presented with two options. One option represented an example of the object. The other option represented a category that the object belonged to.² I randomized whether the example or category was listed first. Those in the concrete condition were told to pick the option that referred to an example, while those in the abstract condition were told to pick the option that referred to a category. For example, participants were presented with the object “soda” and presented with “a bottle of Mountain Dew” and “liquids”. Those in the concrete condition were asked, “Which of the following is an example of ‘soda’?”, whereas those in the abstract condition were asked, “Which of the following is a group that “soda” belongs to?”. As I noted earlier, thinking about categories (vs. exemplars) fosters thinking at a more abstract level, which carries over to subsequent judgments (Fujita et al., 2006).

After the construal level manipulation, I presented participants with an article from the Associated Press that described the destructive impact of tornadoes across the United States in 2012, along with a photo of an area that was affected by the tornadoes. I informed participants that two (unspecified) organizations had been identified that described alternative ways to help the tornado victims – one that described 35 options and one that described 6 options. I randomized whether the smaller or larger choice-set was listed first, and participants indicated whether they wanted to receive information about either organization or no information at all.

Results

Again, using binary logistic regression I entered participants' construal condition (concrete coded -1 ; abstract coded 1) as a predictor of their preferred choice-set (smaller coded 0 ; larger coded 1). As in Experiments 1 and 2, results revealed that participants' general tendency to prefer larger choice-sets was reduced when they adopted a more abstract construal. Specifically, participants were 37% less likely to prefer the larger choice-set when they adopted a more abstract rather than more concrete construal, $\beta = -.47$, $S.E. = .20$, $Wald = 5.47$, $p = .02$, $OR = .63$. Further inspection of the data revealed that participants in the concrete condition were more likely to prefer the larger rather than smaller choice-set, $\beta = .97$, $S.E. = .29$, $Wald = 11.69$, $p = .001$, $OR = 2.65$. In contrast, participants in the abstract condition were just as likely to prefer the smaller and larger choice-set, $\beta = .04$, $S.E. = .28$, $Wald = .02$, $p = .89$, $OR = 1.04$ (see Table 2). As in Experiments 1 and 2, these findings suggest that more abstract construals make individuals' preference for larger choice-sets less rigid, so much so that more abstract thinking again eliminated individuals' general tendency to prefer the larger choice-set.

Experiment 4

In the present research, I hypothesize that one reason that more abstract thinkers are less attracted to larger choice-sets is because they expect the options within choice-sets to be more similar to one another, and thus more redundant. I designed the following experiment to examine whether the expected similarity of options does in fact mediate the effect of more abstract construals on individuals' decreased attraction to larger choice-sets.

Method

I sampled 177 individuals in the United States via Amazon's Turk system but excluded 21 participants because they did not follow the instructions of the construal level manipulation, leaving me with a sample of 156 individuals (83 females, $M_{age} = 33.60$, $SD_{age} = 12.50$). I used the same procedure that I used in Experiment 3 with the following modification. After assigning participants to their respective construal conditions ($n_{concrete} = 84$; $n_{abstract} = 72$) and informing them about the two (unspecified) organizations that described alternative ways to help the tornado victims, I asked participants “When you think about helping the tornado victims, how similar do you think each way of helping tends to be to one another? $1 =$ not at all similar to $7 =$ very similar”. Afterwards, I asked participants to indicate whether they wanted to receive information about the organization that described more ways to help, information about the organization that described fewer ways to help, or no information about either organization.

Results

Expected option similarity

As expected, participants in the abstract condition expected the options for helping the tornado victims to be more similar to each other ($M = 4.69$, $SD = 1.32$) than participants in the concrete construal condition ($M = 4.24$, $SD = 1.39$), $t(154) = 2.09$, $p = .04$, $r = .16$.

Preferred choice-set

Again, using binary logistic regression I entered participants' construal condition (concrete coded -1 ; abstract coded 1) as a predictor of their preferred choice-set (smaller coded 0 ; larger coded 1). As expected, results revealed that participants' general tendency to prefer larger choice-sets was reduced when they adopted a more abstract construal. Specifically, participants were 36% less likely to prefer the larger choice-set when they adopted a more abstract rather than more concrete construal, $\beta = -.45$, $S.E. = .19$, $Wald = 5.91$, $p = .02$, $OR = .64$. Further inspection of the data revealed that participants in both the concrete and abstract condition were more likely to prefer the larger rather than smaller choice-set, $\beta = 1.21$, $S.E. = .27$, $Wald = 19.17$, $p < .001$, $OR = 3.35$ and $\beta = .31$, $S.E. = .25$, $Wald = 1.50$, $p = .22$, $OR = 1.36$; however, this preference was less pronounced in the abstract condition (see Table 2). As in Experiments 1–3, these findings suggest that more abstract construals make individuals' preference for larger choice-sets less rigid.

Tests of mediation

I used a bootstrapping method (see Preacher & Hayes, 2008; Shrout & Bolger, 2002) to estimate the indirect effect of an abstract (vs. concrete) construal on participants' preferred choice-set with the expected similarity of options as a mediator.³ The basic idea of this procedure is to extract n cases with replacement from the original sample, and estimate the size of the indirect effect in the new sample. If, when using standard significance levels of $\alpha = .05$, the size of the indirect effect in at least 95% of the samples is in all cases either greater or less than 0 (as indicated by the obtained confidence intervals), the indirect effect is significant. Accordingly, using 10,000 bootstrap samples, confidence intervals that did not contain zero at the 95% level were obtained (LL CI = $-.2435$; UL CI = $-.0012$; $ab/c = .19$).⁴ Thus, the expected similarity of options at least partially mediated the effect of more abstract construals on participants' decreased attraction to the larger choice-set. Of course, this

³ Many thanks to Andrew F. Hayes for providing a macro for SPSS to estimate models with dichotomous outcomes at <http://www.afhayes.com/spss-sas-and-mplus-macros-and-code.html>.

⁴ ab/c refers to the ratio of the indirect ($-.0895$) to total effect ($-.4712$) and serves as an estimate of the effect size of the indirect effect (see <http://www.afhayes.com/public/process.pdf> on pgs. 8–9).

² Contact the author for the full list of objects.

experiment only explored whether changes in the expected similarity of options related to individuals' preferred choice-set size, and therefore future research should examine other mechanisms.

General discussion

In the present research, I examined the role of construal level in individuals' attraction to different sized choice-sets. I predicted that more abstract construals would increase the expected similarity of options within choice-sets, which would result in options being seen as more redundant and therefore larger choice-sets being seen as less attractive. Although the findings across my four experiments were consistent with my hypothesis, there were some notable differences worth discussing.

Whereas participants in the concrete condition generally preferred the larger rather than smaller choice-set across most of the experiments, the pattern of the results for the abstract condition varied more across experiments. Specifically, Experiments 1 and 3 (along with the [Pilot study](#)) demonstrated that more abstract thinkers preferred the larger and smaller choice-sets equally. Experiment 2 demonstrated that more abstract thinkers preferred the smaller rather than larger choice-set. Finally, Experiment 4 demonstrated that more abstract thinkers preferred the larger rather than smaller choice-set. Note that I did not expect more abstract construals to necessarily eliminate individuals' general tendency to prefer larger choice-sets (as my pilot study foreshadowed), but rather make individuals' attraction to larger choice-sets less rigid. Nevertheless, it is interesting that more abstract construals have the potential to completely overcome individuals' preference for large choice-sets.

What might account for the different pattern of results in the abstract condition across experiments? One possible explanation is that participants started off at different baseline levels of construal across the experiments. Indeed, people vary in their chronic level of construal (e.g., [Vallacher & Wegner, 1987, 1989](#); also see [Pilot study](#)). In the experiments in which the abstract condition decreased individuals' attraction to the larger choice-set the least (e.g., Experiment 4), it is possible that participants started off at a more concrete level than participants in the other experiments, providing a more conservative test of my hypothesis. Importantly, the take away message from the present research is still clear: more abstract construals reduce individuals' general attraction to larger choice-sets. Below I discuss the implications of my findings and additional ideas for future research.

Implications

[Iyengar and Lepper \(2000, Study 1\)](#) were the first to empirically highlight the distinction between the choice-sets that people are most attracted to and the choice-sets that are most likely to elicit an actual selection from people. They found that more people were initially attracted to a larger-choice set, but that less people were likely to take action (make a purchase) when selecting from the larger choice-set. While some research has followed up on this paradoxical finding by examining what factors affect individuals' attraction to different size choice-sets (e.g., [Chernev & Hamilton, 2009](#)), most of the attention has been directed at studying what factors lead people to be more or less likely to make a selection or what factors affect individuals' satisfaction if a selection is made (see [Scheibehenne et al., 2010](#)). That is, relatively less research has examined what factors affect individuals' attraction to different size choice-sets in the first place. Therefore, the present research provides a valuable contribution to the choice literature by identifying a previously unexplored moderator of individuals' attraction to different sized choice-sets.

Future directions

Activation of construal

In the present research, I drew on research that was inspired by different social-cognitive theories of mental representation (action

identification theory, [Vallacher & Wegner, 1987](#); construal level theory, [Trobe & Liberman, 2010](#); GLOMO^{SVS}, [Förster, 2012](#)), which has shown that more abstract construals promote a greater focus on similarities. These theories have identified several important variables that naturally shift individuals' construal level. For example, research in support of construal level theory has shown that increased psychological distance from objects and events (e.g., temporal distance, social distance) triggers more abstract thinking. In addition, research in support of GLOMO^{SVS} has shown that situations that elicit more global processing (e.g., focusing on the entirety of a song versus the details of the composition) trigger more abstract thinking. Given their effects on construal level, these variables should also affect individuals' attraction to different-sized choice-sets. Future research should examine this possibility.

Imagined vs. actual selection experience

One might think of many choice overload situations as resulting from a kind of forecasting error. Previous research has shown that people tend to make more accurate forecasts when they have access to more knowledge about future experience (e.g., advice from surrogates who have experienced events already, [Gilbert, Killingsworth, Eyre, & Wilson, 2009](#)). In the choice domain, when people imagine what their selection experience will be like when they deal with a larger number of alternatives, they are sometimes unaware of how burdensome it will be to actually make a selection. Consequently, people can end up forecasting that they will want more options than they actually do when they ultimately make their selection. If one thinks about choice overload in this way, should I have expected more concrete construals to more closely mimic the way individuals think when they actually experience choice-sets and therefore reduce rather than maintain individuals' attraction to larger choice-sets? I believe the answer is no, as my data supports, because more concrete construals do not bestow more knowledge upon forecasters, but rather maintain individuals' attention on lower-level, distinct features. Consequently, I did not expect more concrete construals would more closely mimic the actual selection experience, but rather focus individuals' expectations on the distinct aspects of individual alternatives when forecasting, thereby maintaining their attraction to larger choice-sets.

Regarding individuals' actual selection experience, it is interesting to consider whether and how construal level might affect choice-overload. In addition to the relationship that more abstract and concrete construals have with a similarity and difference focus, respectively, previous research (e.g., [Liberman & Trope, 1998](#)) has shown that more abstract and concrete construals heighten individuals' concern with the desirability and feasibility of actions, respectively. During individuals' actual selection experience, I expect that individuals' desirability (feasibility) concerns will likely weigh more heavily when more abstract (concrete) thinkers make their selection from within a choice-set. Moreover, I expect that individuals' desirability and feasibility concerns will likely interact with the degree to which people maximize versus satisfice when making a selection ([Schwartz et al., 2002](#)). Specifically, when options within a choice-set are equally desirable (feasible) and people are motivated to find a satisfactory rather than best option, more abstract (concrete) thinkers are likely to find it easier to make a selection. However, when people are motivated to find the best option, more abstract (concrete) thinkers are likely to find it more difficult to make a selection from within a choice-set that includes options that are equally desirable (feasible). Of course, these are empirical questions and future research should examine them.

Coda

The present research provided a novel demonstration of the effects of construal level on individuals' attraction to different sized choice-sets, and research should continue to examine the consequences of construal level for judgments and intentions more broadly.

Appendix A

For the next section, please read each scenario and answer each question that follows. There are no right or wrong answers.

Imagine that you will start attending a new class and the teacher wants your opinion about whether she should offer a large or small number of topics for you to choose from for writing your class paper. Your teacher is considering offering 24 or 6 topics to choose from. Each topic would come with a paragraph description that elaborates on what the topic is about.

Which of the following would you prefer?

- 24 topics to choose from
- 6 topics to choose from

Imagine that you know you're going to be single because the person you're currently seeing is moving away. Consequently, you're going to be looking for love. You plan on trying speed dating and go on the web to check out different services. One service that you find offers the opportunity to chat with 10 people for 5 min at a time, while another service offers the opportunity to chat with 70 people for 5 min at a time. Both services cost around the same amount of money.

Which of the following would you prefer?

- chat with 10 people
- chat with 70 people

Imagine that you know a friend of yours is going to pay back some money to you. You plan on taking that money and buy a new music album. You have the option of shopping in a store that sells approximately 10,000,000 albums or a store that sells approximately 100,000 albums.

Which of the following would you prefer?

- store with 10,000,000 albums
- store with 100,000 albums

Imagine that you plan on donating to a charity. One website that you visit lists 45 charities that you can possibly donate to. Another website lists 7 charities that you can possibly donate to.

Which of the following would you prefer?

- the website that lists 7
- the website that lists 45

Imagine that you're going to need a suit when you start your new job. You know there is a small store in the shopping mall that sells 22 different suits and another large store that sells 327 different suits.

Which of the following would you prefer?

- the store that sells 327
- the store that sells 22

Imagine that you're planning on having a date at a sushi restaurant. One restaurant has 200 different sushi rolls. Another restaurant has 10 different sushi rolls.

Which of the following would you prefer?

- the restaurant that has 10
- the restaurant that has 200

Imagine that you plan on reading a good mystery novel. One of the bookstores in your city has 1,000,000 books in stock. Another bookstore has 20,000 books in stock.

Which of the following would you prefer?

- the bookstore with 1,000,000 in stock
- the bookstore with 20,000 in stock

References

Anderson, J. R. (1974). Retrieval of propositional information in long-term memory. *Cognitive Psychology*, 6, 451–474.

- Anderson, J. R. (1983). A spreading activation theory of memory. *Journal of Verbal Learning and Verbal Behavior*, 22, 261–295.
- Ayduk, Ö., & Kross, E. (2008). Enhancing the pace of recovery: self-distanced analysis of negative experiences reduces blood pressure reactivity. *Psychological Science*, 19(3), 229–231.
- Brown, R. (1958). How shall a thing be called? *Psychological Review*, 65(1), 14.
- Brown, C. L., & Carpenter, G. S. (2000). Why is the trivial important? A reasons-based account for the effects of trivial attributes on choice. *Journal Of Consumer Research*, 26, 372–385.
- Burgoon, E. M., Henderson, M. D., & Markman, A. B. (in press). There are many ways to see the forest for the trees: A tour guide for abstraction. *Perspectives on Psychological Science*.
- Chernev, A., & Hamilton, R. (2009). Assortment size and option attractiveness in consumer choice among retailers. *Journal Of Marketing Research*, 46(3), 410–420.
- Dar, R., & Katz, H. (2005). Action identification in obsessive-compulsive washers. *Cognitive Therapy and Research*, 29(3), 333–341.
- Ehring, T., Szeimies, A., & Schaffrick, C. (2009). An experimental analogue study into the role of abstract thinking in trauma-related rumination. *Behaviour Research and Therapy*, 47(4), 285–293.
- Förster, J. (2009). Relations between perceptual and conceptual scope: How global versus local processing fits a focus on similarity versus dissimilarity. *Journal of Experimental Psychology: General*, 138(1), 88–111.
- Förster, J. (2012). GLOMO^{sys}: The how and why of global and local processing. *Current Directions in Psychological Science*, 21(1), 15–19.
- Förster, J., & Dannenberg, L. (2010). GLOMO^{sys}: A systems account of global versus local processing. *Psychological Inquiry*, 21(3), 175–197.
- Freitas, A. L., Gollwitzer, P., & Trope, Y. (2004). The influence of abstract and concrete mindsets on anticipating and guiding others' self-regulatory efforts. *Journal of Experimental Social Psychology*, 40, 739–752.
- Fujita, K., & Roberts, J. C. (2010). Promoting prospective self-control through abstraction. *Journal of Experimental Social Psychology*, 46(6), 1049–1054.
- Fujita, K., Trope, Y., Liberman, N., & Levin-Sagi, M. (2006). Construal levels and self-control. *Journal of Personality and Social Psychology*, 90, 351–367.
- Gilbert, D. T., Killingsworth, M. A., Eyre, R. N., & Wilson, T. D. (2009). The surprising power of neighborly advice. *Science*, 323(5921), 1617–1619.
- Goodman, J.K., Cryder, C.E., & Cheema, A. (in press). Journal of Behavioral Decision Making <http://dx.doi.org/10.1002/bdm.1753>.
- Henderson, M. D. (2009). Psychological distance and group judgments: The effect of physical distance on beliefs about common goals. *Personality and Social Psychology Bulletin*, 35(10), 1330–1341.
- Iyengar, S. S., & Lepper, M. R. (2000). When choice is demotivating: Can one desire too much of a good thing? *Journal of Personality and Social Psychology*, 79, 995–1006.
- Kay, P. (1971). Taxonomy and semantic contrast. *Language*, 47(4), 866–887.
- Kim, H. S., & Drolet, A. (2003). Choice and self-expression: A cultural analysis of variety-seeking. *Journal of Personality and Social Psychology*, 85, 373–382.
- Kruglanski, A. W., Shah, J. Y., Fishbach, A., Friedman, R., Chun, W., & Sleeth-Keppler, D. (2002). A theory of goal systems. In M. P. Zanna (Ed.), *Advances in experimental social psychology*, Vol. 34. (pp. 331–378) San Diego, CA US: Academic Press.
- Ledgerwood, A., & Callahan, S. P. (2012). The social side of abstraction: Psychological distance increases conformity to group norms. *Psychological Science*, 23, 907–913.
- Ledgerwood, A., Trope, Y., & Liberman, N. (2010). Flexibility and consistency in evaluative responding: The function of construal level. In M. P. Zanna, & J. M. Olson (Eds.), *Advances in experimental social psychology*, Vol. 43. (pp. 257–295) San Diego, CA: Academic Press.
- Levy, S. R., Freitas, A. L., & Salovey, P. (2002). Construing action abstractly and blurring social distinctions: Implications for perceiving homogeneity among, but also empathizing with and helping, others. *Journal of Personality and Social Psychology*, 83(5), 1224–1238.
- Liberman, N., Sagristano, M. D., & Trope, Y. (2002). The effect of temporal distance on level of mental construal. *Journal of Experimental Social Psychology*, 38(6), 523–534.
- Liberman, N., & Trope, Y. (1998). The role of feasibility and desirability considerations in near and distant future decisions: A test of temporal construal theory. *Journal of Personality and Social Psychology*, 75(1), 5–18.
- McCarthy, R. J., & Skowronski, J. J. (2011). You're getting warmer: Level of construal affects the impact of central traits on impression formation. *Journal of Experimental Social Psychology*, 47(6), 1304–1307.
- Medin, D., & Ortony, A. (1989). *Psychological essentialism*. Similarity and analogical reasoning. New York, NY US: Cambridge University Press, 179–195.
- Mullen, B., Pizzuto, C., & Foels, R. (2002). Altering intergroup perceptions by altering prevailing mode of cognitive representation: "They look like people.". *Journal of Personality and Social Psychology*, 83(6), 1333–1343.
- Polman, E. (2012). Effects of self-other decision making on regulatory focus and choice overload. *Journal of Personality and Social Psychology*, 102, 980–993.
- Preacher, K. J., & Hayes, A. F. (2008). Asymptotic and resampling strategies for assessing and comparing indirect effects in multiple mediator models. *Behavior Research Methods*, 40(3), 879–891.
- Rosch, E. (1975). Cognitive representations of semantic categories. *Journal of Experimental Psychology: General*, 104, 192–233.
- Rosch, E., Mervis, C., Gray, W., Johnson, D., & Boyes-Braem, P. (1976). Basic objects in natural categories. *Cognitive Psychology*, 8, 382–439.
- Schank, R. C., & Abelson, R. P. (1977). *Scripts, plans, goals and understanding*. Hillsdale, NJ: Lawrence Erlbaum Associates, Inc.
- Scheibehenne, B., Greifeneder, R., & Todd, P. M. (2010). Can there ever be too many options? A meta-analytic review of choice overload. *Journal of Consumer Research*, 37, 409–425.
- Schmeichel, B. J., Vohs, K. D., & Duke, S. (2011). Self-control at high and low levels of mental construal. *Social Psychological and Personality Science*, 2, 182–189.
- Schul, Y. (1983). Integration and abstraction in impression formation. *Journal of Personality and Social Psychology*, 44(1), 45–54.

- Schwartz, B. (2004). *The paradox of choice: Why more is less*. New York, NY US: HarperCollins Publishers.
- Schwartz, B., Ward, A., Monterosso, J., Lyubomirsky, S., White, K., & Lehman, D. R. (2002). Maximizing versus satisficing: Happiness is a matter of choice. *Journal of Personality and Social Psychology*, 83(5), 1178–1197.
- Semin, G. R., & Fiedler, K. (1989). Relocating attributional phenomena within the language-cognition interface: The case of actor-observer perspectives. *European Journal of Social Psychology*, 19, 491–508.
- Semin, G. R., Gil de Montes, L., & Vlencia, J. F. (2003). Communication constraints on the linguistic intergroup bias. *Journal of Experimental Social Psychology*, 39(2), 142–148.
- Shrout, P. E., & Bolger, N. (2002). Mediation in experimental and nonexperimental studies: New procedures and recommendations. *Psychological Methods*, 7(4), 422–445.
- Strack, F., Schwarz, N., & Gschneidinger, E. (1985). Happiness and reminiscing: The role of time perspective, affect, and mode of thinking. *Journal of Personality and Social Psychology*, 49(6), 1460–1469.
- Trope, Y., & Liberman, N. (2010). Construal-level theory of psychological distance. *Psychological Review*, 117(2), 440–463.
- Trope, Y., Liberman, N., & Wakslak, C. (2007). Construal levels and psychological distance: Effects on representation, prediction, evaluation, and behavior. *Journal of Consumer Psychology*, 17(2), 83–95.
- Vallacher, R. R., & Wegner, D. M. (1987). What do people think they're doing? Action identification and human behavior. *Psychological Review*, 94, 3–15.
- Vallacher, R. R., & Wegner, D. M. (1989). Levels of personal agency: Individual variation in action identification. *Journal of Personality and Social Psychology*, 57(4), 660–671.
- Wakslak, C. J. (2012). The experience of cognitive dissonance in important and trivial domains: A construal-level theory approach. *Journal of Experimental Social Psychology*, 48(6), 1361–1364.
- Wolfin, K., Corneille, O., Yzerbyt, V. Y., & Förster, J. (2011). Narrowing down to open up for other individuals' concerns: Empathic concern can be enhanced by inducing detailed processing. *Journal of Experimental Social Psychology*, 47(2), 418–424.
- Worchel, S. (1974). The effect of three types of arbitrary thwarting on the instigation to aggression. *Journal of Personality*, 42, 300–318.