

The Cognitive Consequences of Formal Clothing

Michael L. Slepian¹, Simon N. Ferber², Joshua M. Gold²,
and Abraham M. Rutchick²

Social Psychological and
Personality Science
2015, Vol. 6(6) 661-668
© The Author(s) 2015
Reprints and permission:
sagepub.com/journalsPermissions.nav
DOI: 10.1177/1948550615579462
spps.sagepub.com



Abstract

Drawing from literature on construal-level theory and the psychological consequences of clothing, the current work tested whether wearing formal clothing enhances abstract cognitive processing. Five studies provided evidence supporting this hypothesis. Wearing more formal clothing was associated with higher action identification level (Study 1) and greater category inclusiveness (Study 2). Putting on formal clothing induced greater category inclusiveness (Study 3) and enhanced a global processing advantage (Study 4). The association between clothing formality and abstract processing was mediated by felt power (Study 5). The findings demonstrate that the nature of an everyday and ecologically valid experience, the clothing worn, influences cognition broadly, impacting the processing style that changes how objects, people, and events are construed.

Keywords

clothing, processing, construal level, power, social distance

People wear formal clothing in a variety of situations, such as when at work, meeting someone new, or on a job interview. Formal clothing is often worn to follow norms, but also serves to obtain respect, signaling professionalism and maintenance of social distance. Indeed, wearing formal clothing is associated with perceptions of more professionalism but also less approachability (Butler & Roesel, 1989, 1991; Lukavsky, Butler, & Harden, 1995). Wearing formal clothing is thus related to psychological formality and social distance, whereas casual clothing is related to intimacy and familiarity. For example, people who wear formal clothes describe themselves as more competent and rational, whereas people who wear casual clothes describe themselves as more friendly and laid-back (Hannover & Kühnen, 2002; Peluchette & Karl, 2007). The current article examines the impact of wearing formal clothing on cognitive processing, proposing that wearing formal clothing induces more abstract cognitive processing.

Psychology has long been interested in the meaning of clothing. William James (1890/1983) placed clothing just after the physical body (and before the immediate family) when he described the components of the material self. Clothing influences impressions of others (Albright, Kenny, & Malloy, 1988; Forsythe, 1990; Reid, Lancuba, & Morrow, 1997) and how others are treated (Darley & Cooper, 1972; Suedfeld, Bochner, & Metas, 1971). One's own clothing can influence self-perception (Hannover & Kühnen, 2002; Kellerman & Laird, 1982; Peluchette & Karl, 2007). The current research seeks to add to this body of work by examining the influence

of clothing upon a fundamental element of cognitive processing—whether it is abstract or concrete.

Abstract processing consists of superordinate, holistic, and broad mental representations, whereas concrete processing includes more subordinate and narrow mental representations. These processing styles influence a wide range of decision-making processes (Trope & Liberman, 2010), including information search, intertemporal choice, and probability estimates (Fujita, Trope, Liberman, & Levin-Sagi, 2006; Shani, Igou, & Zeelenberg, 2009; Wakslak & Trope, 2009). For instance, concrete processing often leads people to prefer smaller immediate gains relative to larger future gains (Thaler, 1981), a bias that is more likely overcome when utilizing an abstract processing style (Fujita et al., 2006). Intertemporal choices are important in many decision contexts (e.g., avoiding temporal discounting is critical for saving money for the future; Diamond & Köszegi, 2003). More broadly, abstract processing facilitates the pursuit of long-term goals over short-term gains (Fujita et al., 2006). Construal level theory (Trope & Liberman, 2010) posits that abstract versus concrete thinking is determined in significant

¹ Columbia University, New York, NY, USA

² California State University, Northridge, CA, USA

Corresponding Author:

Abraham M. Rutchick, California State University, Northridge, 376 Sierra Hall,
18111 Nordhoff St, Northridge, CA 91330, USA.
Email: abraham.rutchick@csun.edu

part by psychological distance. Events that are psychologically distant are conceived of relatively abstractly, while events that are psychologically near are conceived of relatively concretely.

Recent work demonstrates that social distance in the form of politeness increases abstract thinking (Stephan, Liberman, & Trope, 2010). Polite language is more formal and is used in contexts when people are more socially distant and less familiar with others (Brown & Levinson, 1987). For example, people often address an unfamiliar person by title, rather than by first name, even when they have the same social status (Holtgraves & Yang, 1992). Stephan, Liberman, and Trope (2010) demonstrated that increased psychological distance and more abstract construals were associated with preferences for formal, polite language. The reverse relationship was also demonstrated; in one study, when asked to address someone politely, participants used more abstract language.

The current work integrates the literatures on construal level and psychological consequences of clothing by considering the impact of clothing on abstract and concrete cognitive processing. Specifically, as formal clothing is associated with enhanced social distance, we propose that wearing formal clothing will enhance abstract cognitive processing. Studies 1 and 2 tested whether the formality of the clothing participants wore was associated with more abstract processing, as measured by action identification (Study 1) and category inclusiveness (Study 2). Studies 3 and 4 manipulated the clothing participants wore and examined the impact of wearing formal clothing on category inclusiveness (Study 3) and global perceptual processing (Study 4). Finally, Study 5 examined the proposed mediator, that formal clothing is associated with increased social distance and in turn with abstract processing.

Study 1

Study 1 examined the relation between the clothing participants wore and the abstract processing. Additionally, Study 1 measured a potentially important covariate, socioeconomic status (SES), which can vary with the formality of clothing worn (Sybers & Roach, 1962). We hypothesized that currently worn clothing would be associated with abstract processing over and above the effect of SES. We measured abstract processing by examining participants' action identification levels. Actions can be construed abstractly, at a high level; an action construed more abstractly is described using the intentions behind the action (e.g., locking a door might be construed as "securing the house"). Alternatively, actions can be construed concretely, at a low level; an action construed more concretely is described using the mechanics of the action (e.g., locking a door might be construed as "turning a key"; Vallacher & Wegner, 1987). We expected that wearing more formal clothing would be associated with construing actions at higher levels.

Method

Sixty undergraduates (78% female), recruited through a university subject pool, participated in an Internet survey.¹ Because

the students on this campus tend to dress casually, they rated the formality of their currently worn clothing relative to their peers, dragging a slider to any integer between -50 (*very much less formal*) and $+50$ (*very much more formal*). Next, participants were given a 10-item Behavioral Identification Form (Vallacher & Wegner, 1987). Items (e.g., choose the preferred description for "voting": "influencing the election" [high] vs. "marking a ballot" [low]) were pretested to be evenly divided between high [vs. low] identifications (Slepian, Masicampo, & Ambady, 2015). The order of the items and response options were randomized. Finally, participants indicated how much financial aid they were receiving for their education from 1 (*all tuition paid by financial aid*) to 5 (*receiving no financial aid*), a proxy for SES in this population (see Johnson, Richeson, & Finkel, 2011).

Results and Discussion

The number of actions identified at the high level served as the dependent measure. Regression analyses revealed that clothing formality ($M = -2.38$, $SD = 28.91$) predicted action identification level, $\beta = .28$, $t(58) = 2.23$, $p = .03$, whereby participants wearing relatively more formal clothing demonstrated higher action identification levels. Including SES as a predictor did not change the pattern of results; the covariate was non-significant, $\beta = -.01$, $t(57) = -.09$, $p = .93$, and clothing formality still predicted action identification level, $\beta = .28$, $t(57) = 2.21$, $p = .03$.

Study 1 demonstrated that wearing relatively formal clothing was associated with increased abstract processing, as measured by identifying actions at higher levels. This effect occurred when controlling for a measure of students' SES. Thus, initial evidence suggests that wearing formal clothing is associated with increased abstract processing in everyday life, outside a laboratory context.

Study 2

Study 2 served as a conceptual replication of Study 1, utilizing a different measure of abstract processing, category inclusiveness. Study 2 also measured participants' affect. Positive affect has been linked to abstract processing in past work (Isen & Daubman, 1984), and thus it is possible that clothing formality is associated with positive affect, driving the relationship observed in Study 1.

Method

Sixty undergraduates (45% female), approached on a university campus, were asked to participate in a survey. They first rated the formality of their currently worn clothing, relative to their peers, using a Likert-type scale ranging from 1 (*very much less formal*) to 7 (*very much more formal*). Next, participants completed the Positive and Negative Affect Schedule (PANAS; Watson, Clark, & Tellegen, 1988). Participants then completed a measure of cognitive processing, category inclusiveness, which indicates how abstractly perceivers construe categories. People thinking more abstractly are more likely to

consider weak exemplars as good fits to categories (e.g., a camel being an appropriate example of a vehicle; Isen & Daubman, 1984). For this task, three strong, moderate, and weak exemplars of three different categories (furniture, vehicles, and vegetables) were selected (from Slepian & Ambady, 2012). Exemplars were randomly ordered within each category (the first was always strong). Participants rated how well each exemplar belonged to the category from 1 (*definitely does not belong*) to 10 (*definitely does belong*). Finally, participants filled out the same measure of SES from Study 1.

We predicted that, over and above any effects of SES and affect, wearing more formal clothing would be associated with enhanced category inclusiveness, as indicated by goodness-of-fit ratings to categories for weak exemplars. In line with prior work examining category inclusiveness, we did not make predictions for moderate and strong exemplars (Isen & Daubman, 1984; Price & Harmon-Jones, 2010; Slepian & Ambady, 2012; Slepian et al., 2015).

Results and Discussion

Regression analyses revealed that clothing formality ($M = 3.98$, $SD = 1.28$) predicted category inclusiveness for weak exemplars, $\beta = .27$, $t(58) = 2.12$, $p = .04$, whereby participants wearing relatively more formal clothing demonstrated greater inclusion of weak exemplars. Clothing formality did not significantly predict the remaining measures (moderate exemplars, $\beta = .11$, $t(58) = 0.87$, $p = .39$; strong exemplars, $\beta = .05$, $t(58) = 0.36$, $p = .72$; positive affect, $\beta = -.07$, $t(58) = 0.51$, $p = .61$; negative affect, $\beta = -.13$, $t(58) = 1.01$, $p = .32$).

Including SES as a predictor² did not change the pattern of results; clothing formality still predicted category inclusiveness for weak exemplars, $\beta = .30$, $t(39) = 2.03$, $p = .05$, and the other measures were still not predicted by clothing formality, $\beta_s < |.16|$, $t_s < 1.00$, $p_s > .33$. The covariate was nonsignificant for each of these measures, $\beta_s < |.17|$, $t_s < 1.13$, $p_s > .26$.

Finally, as positive affect is associated with enhanced category inclusiveness of weak exemplars (Isen & Daubman, 1984), the regression predicting inclusion of weak exemplars was also conducted with positive affect as a predictor. Positive affect here did not predict category inclusiveness, $\beta = -.09$, $t(57) = 0.47$, $p = .47$, and clothing still predicted inclusion of weak exemplars, $\beta = .26$, $t(57) = 2.06$, $p = .04$.

Wearing relatively formal clothing was again associated with increased abstract processing, using a new measure of processing. This association held even when controlling for a measure of SES. Worn clothing was not associated with affect, and all effects remained when controlling for positive affect, suggesting that the current findings are not contingent on an association between formal clothing and positive affect.

The first two studies examined the influence of the clothing that participants were already wearing. Although both studies demonstrated the predicted positive relationship between clothing formality and abstract processing in an ecologically valid context, the correlational nature of the studies precludes causal

claims. Studies 3 and 4 therefore experimentally manipulated the formality of participants' clothing.

Study 3

Wearing formal clothing was associated with enhanced abstract processing, measured by action identification level (Study 1) and category inclusiveness (Study 2). Study 3 manipulated clothing formality by having participants change into either formal or casual clothing. We predicted that wearing formal clothing would enhance category inclusiveness, as indicated by goodness-of-fit ratings to categories for weak exemplars.

Method

Fifty undergraduates were told to bring two sets of clothing (in addition to what they were wearing) to the laboratory for a study that ostensibly concerned forming impressions from clothing. One set of clothing was formal, operationalized as "clothing you would wear to a job interview"; the other was casual, operationalized as "clothing you would wear to class." Participants were randomly assigned to change into either their formal or casual clothes. As participants were students participating before or after class, the casual clothing served as a control set of clothing (similar in formality to their currently worn clothing). Of the 50 potential participants, 16 did not bring two sets of clothing to the laboratory as instructed, and were thus unable to participate (they could not undergo the clothing manipulation). The remaining 34 participants were given the category inclusiveness task (from Study 2) after changing into either formal or casual clothing.

Results and Discussion

As predicted, participants wearing formal clothing rated weak exemplars as belonging more to the provided category ($M = 5.04$, $SD = 1.20$) than those in the casual condition ($M = 3.99$, $SD = 1.33$), $t(32) = 2.40$, $p = .02$, $d = 0.82$. Though we again did not make predictions for other exemplars, we present the data for moderate and strong exemplars, neither of which differed significantly by clothing, moderate: ($M_{\text{formal}} = 7.62$, $SD = 1.25$; $M_{\text{casual}} = 7.92$, $SD = 1.04$), $t(32) = 0.77$, $p = .45$, $d = 0.27$; strong: ($M_{\text{formal}} = 9.32$, $SD = 1.00$; $M_{\text{casual}} = 9.43$, $SD = 0.85$), $t(32) = 0.34$, $p = .74$, $d = 0.12$.

Study 3 demonstrated that wearing formal clothing increased the extent to which participants exhibited category inclusiveness, suggesting a causal link between wearing formal clothing and abstract processing. However, this conclusion must be made with some caution; although the effect was statistically significant, it was based on the small sample of participants who complied with instructions (bringing two sets of clothing to the laboratory). We addressed this issue in Study 4 with a conceptual replication that more prominently emphasized the instruction to bring two sets of clothing

and recruited a larger sample to account for anticipated noncompliance.

Study 4

The first three studies suggested that clothing formality is associated with abstract processing, with greater formality associated with enhanced abstract processing. The measures used thus far (action identification level and category inclusiveness) focus specifically on conceptual processing. Wearing formal clothing was associated with describing actions in more meaningful ways, as well as more frequently perceiving meaningful relationships between objects and categories. Wearing formal clothing in these studies was thus associated with greater conceptual coherence. Abstract processing is not only associated with greater conceptual coherence but also with greater *perceptual* coherence (Trope & Liberman, 2010). Thus, we expected that wearing formal clothing would also lead to a global perceptual processing advantage.

Method

Sixty undergraduates were told to bring two sets of clothing to the laboratory (as in Study 3, but these instructions were presented in boldface in a stand-alone paragraph). Six potential participants did not bring two sets of clothing as instructed and were thus unable to participate. The remaining 54 participants (80% female) changed into one set of clothing based on random assignment, and subsequently completed a modified Navon (1977) task (adapted from Förster, Friedman, Özelsel, & Denzler, 2006). The task consisted of 32 trials presenting 8 local Ls (a large letter composed of small Ls), 8 global Ls (a large L composed of small letters), and 8 local and 8 global Hs. Participants identified each stimulus as an “L” or “H” using the computer keyboard. Because this task requires participants to *concurrently* search both globally and locally, separate measures of global versus local processing are difficult to interpret. The appropriate measure for this task is therefore the favoring of global over local processing (therefore, we subtract response time [RT] for global identification from RT for local identification per others utilizing similar tasks; Förster et al., 2006; Gable & Harmon-Jones, 2008, 2010a, 2010b).

Results and Discussion

Errors and RTs exceeding 2.5 *SDs* above participants’ personal means were excluded, as was one participant with a mean RT of 2.5 *SDs* above the grand mean (Robinson, 2007). A 2 (letter type: global, local) \times 2 (clothing: formal, casual) mixed-design analysis of variance with RT as the dependent variable revealed a main effect of letter type, $F(1, 51) = 25.47, p < .001, d = 1.41$; consistent with prior research (Navon, 1977), participants identified global letters more quickly ($M = 1,383.34$ ms, $SD = 465.96$) than local letters ($M = 1,561.86$ ms, $SD = 481.86$). There was no main effect of clothing, $F(1, 51) = 2.15, p = .15, d = 0.41$. As predicted, there was a significant interaction between letter type

Table 1. Mean (SD) RTs, ms, From the Modified-Navon Task Used in Study 4.

Condition	Global	Local
Casual	1,341 _a (482)	1,439 _a (468)
Formal	1,443 _a (447)	1,734 _b (457)

Note. RT = response time. Matching subscripts indicate means that do not significantly differ at $p < .05$.

and clothing, that is, participants wearing formal clothing favored global processing over local processing (subtracting RT for global identification from RT for local identification; $M = 251.29$ ms) more than those in the casual condition ($M = 99.99$ ms), $F(1, 51) = 4.75, p = .03, d = 0.61$ (Table 1).³

Study 5

In Studies 1–4, clothing formality was associated with abstract processing, including higher levels of action identification, greater category inclusiveness, and more favoring of global over local perceptual processing. Study 5 examined the proposed mechanism underlying these effects. We propose that the relationship between clothing formality and abstract processing is mediated by enhanced social distance. Formal clothing is essentially “socially distant” clothing. That is, formal clothing is typically introduced in settings that are explicitly not the intimate, comfortable, familiar, and socially close settings in which there is no dress code (Easterling, Leslie, & Jones, 1992). Study 5 therefore used a multidimensional measure of social distance created for the current work, in conjunction with the picture-oriented Self-Assessment Manikin (SAM) instrument, to assess social commonality, social closeness, intimacy, power, and two other potential mediators, mood and arousal. Social commonality, social closeness, and intimacy are associated with decreased social distance, whereas power is associated with increased social distance.

Studies 1 and 2 demonstrated that even when controlling for parents’ SES, clothing formality was associated with abstract processing. SES, however, may not meaningfully capture social rank for undergraduates. *Sociometric status*, the respect and admiration from others within one’s social circles (Anderson, Kraus, Galinsky, & Keltner, 2012) may be superior in this regard. Study 5 therefore measured participants’ sociometric status and also whether participants planned to complete detail-oriented tasks.

Additionally, Study 5 measured our proposed mediator, social distance. Participants completed a multidimensional measure of social distance created for the current work (composed of four measures). First, as interpersonal similarity is a measure of social distance (Liviatan, Trope, & Liberman, 2008), we measured perceived *social commonality* with others. Second, as prior work has measured strength of social bonds as a measure of social distance (Williams & Bargh, 2008), we measure *social closeness* with others. Third, we developed a measure of *intimacy* that measured how physically close participants would choose to be with other people. Fourth, we

measured power. Having power (vs. not) indicates being more distinct from, more remote from, and less dependent on others, and thus has been considered an instance of asymmetrical social distance (i.e., the powerful feeling more distant from the powerless; Smith & Trope, 2006; Smith, Wigboldus, & Dijksterhuis, 2008; Trope & Liberman, 2010; for a review, see Magee & Smith, 2013). Participants also completed measures of arousal and affect (other potential mediators), and finally, abstract processing.

Method

Undergraduate participants ($N = 150$), recruited from a university subject pool, completed the study over the Internet. Participants first judged the formality of their clothing, relative to their peers, using the measure from Study 1. Next, participants were asked how much they felt they had in common with the typical person their age, living in their hometown, and at their school (1 = *nothing* to 7 = *a lot*): *social commonality* ($\alpha = .75$). Participants next indicated how close they felt to their best friend, their other friends, their family, and their classmates (1 = *none at all* to 7 = *very*): *social closeness* ($\alpha = .73$). Subsequently, participants indicated how likely they would be to sit next to a classmate if they ran into them at a movie theater, to hug a classmate goodbye at the end of a party, and to sip from a classmate's drink if they wanted to try it (1 = *none at all* to 7 = *very*): *intimacy* ($\alpha = .72$). Participants then completed a measure of felt *power* using the widely used and validated picture-oriented SAM, which also measured arousal and affect. Participants rated how they felt on 9-point scales, with anchors set at 1 = *very unpleasant* and 9 = *very pleasant*; 1 = *calm* and 9 = *excited*; 1 = *very powerless* and 9 = *very powerful*, with manikins representing odd-numbered scale points (see Bradley & Lang, 1994).

Next, participants completed the measure of abstract processing from Study 1, the Behavioral Identification Form. Additionally, it is conceivable that "clothing worn to class" (which participants in the casual condition wore) is associated with detail-oriented tasks (such as note taking), which could resemble concrete processing. Thus, we explored this alternative explanation for the link between clothing formality and processing by asking, "Do you plan on completing any detail-oriented tasks today?" (*yes/no*). Finally, participants completed a measure of sociometric status (Anderson et al., 2012), answering, "I have a high level of respect in others' eyes," "Others admire me," "I have high social standing," and "Others look up to me" from 1 (*strongly disagree*) to 7 (*strongly agree*), for three social groups that they chose; a global average was taken for all groups ($\alpha = .90$).

Results and Discussion

We predicted that, over and above any influences of sociometric status and planned tasks, clothing formality would predict higher levels of action identification, mediated by increased social distance. We first examined whether the

Table 2. Partial Correlations of Study 5 Social Distance Measures (Controlling for Other Mediators in the Mediation Analysis, Mood, and Arousal).

	Non-Closeness	Non-Intimacy	Power
Non-commonality	.36**	.18*	.11
Non-closeness		.30**	-.07
Non-intimacy			.18*

Note. For ease of presentation, the three reverse-scored measures are relabeled accordingly (i.e., increasing numbers for measures indicate increasing social distance).

* $p \leq .05$. ** $p \leq .001$.

multidimensional scale of social distance (reverse scoring the first three measures, so that increasing values indicate more social distance) indeed measured distinct dimensions of social distance by examining their interrelationships (after accounting for mood and arousal, the other potential mediators). They did not form a reliable global scale (Table 2). We therefore treated each social distance scale separately.⁴ The number of actions identified at the high level served as the dependent measure of abstract processing.

We used Preacher and Hayes' (2004) bootstrapping technique (with 5,000 iterations) to estimate the indirect effect of our proposed model, entering clothing formality as the independent measure, abstract processing as the dependent measure, and the four dimensions of social distance, as well as affect and arousal, as parallel mediators. This produced a 95% confidence interval (CI) for each indirect effect (controlling for the mediating influence of the other variables). As we were interested in the strength of these indirect paths over and above the influence of sociometric status and whether participants planned to complete detail-oriented tasks, these variables were entered as covariates. Because the online study did not force participants to respond to all questions, participants sometimes skipped questions; their ($n = 37$) data could not be included in the model, yielding a final sample of 113 participants. Neither planned tasks, $p = .68$, nor sociometric status, $p = .08$, were statistically significant covariates. The 95% CIs for the indirect path for each mediator were as follows: non-commonality 95% CIs [.0008, .0048], non-closeness 95% CIs [.0018, .0015], non-intimacy 95% CIs [.0008, .0043], power 95% CIs [.0002, .0132], affect 95% CIs [-.0030, .0133], and arousal 95% CIs [-.0008, .0050]. Only the power 95% CI did not include zero, demonstrating that felt power significantly mediated the relationship between clothing formality and the number of actions identified at a high level.⁵ This does not indicate that the other variables do not play a role in these effects, but only that each, unlike power, did not demonstrate a unique indirect effect.

General Discussion

Wearing formal clothing was associated with enhanced abstract processing, as measured by higher levels of action identification (Study 1) and enhanced category inclusiveness

(Studies 2 and 5). Those relationships were present when controlling for SES (Studies 1 and 2), sociometric status (Study 5), positive affect (Studies 2 and 5), and arousal (Study 5). In Studies 3 and 4, clothing formality was manipulated, and wearing formal, relative to casual, clothing was associated with enhanced abstract processing, both conceptual processing (category inclusiveness, Study 3) and favoring global perceptual processing (Study 4). In Study 5, felt power mediated the relationship between formal clothing and abstract processing. There were no significant indirect paths through other measures of social distance, affect, or arousal. Additionally, these effects held when accounting for sociometric status and tasks participants planned to complete (and the significant meditational path was still present without these covariates).

Having power is having control over resources that others do not. This leads to an asymmetrical social distance; the powerless depend on the powerful (for those resources), whereas the powerful are more independent, and thereby more socially distant (Magee & Smith, 2013). Power as a measure of social distance should principally be considered in this relative sense; the powerful do not feel more socially distant from all people, but specifically from low-power counterparts (from whom they are more independent). This may explain why we only found a unique indirect effect through power. The other measures of social distance did not capture relative differences in social distance; they asked participants to consider social targets broadly, instead of asking participants to consider their motivation to affiliate with low- versus high-power counterparts. This may explain why the other measures of social distance did not explain a unique portion of the variance in our mediation model (the measures of both clothing formality and power are relative in nature). Formal clothing (like formal language) signals situations that are not casual and familiar (i.e., situations of increased social distance; Easterling et al., 1992). Indeed, we found that over and above any sociometric status felt when wearing formal clothing, this enhanced social distance (feelings of power) predicts abstract processing. This aligns with work demonstrating the relationship between the formality of language (i.e., its politeness) and abstract cognitive processing (Stephan et al., 2010), as well as with a recent social distance theory of power (Magee & Smith, 2013).

One alternative possibility is that wearing formal clothing was novel, and this experience of novelty induced abstract processing (Förster, Liberman, & Shapira, 2009), rather than the experience of formality. An additional study examined this possibility by replicating Study 5's procedure, but also asking, "How normal/novel is it for you to be wearing the clothes that you are wearing right now?" on a sliding scale from -50 (*very normal for me to wear*) to $+50$ (*very novel for me to wear*). As in Study 5, participants were not forced to complete each question, leaving missing data. Formality of clothing ($n = 148$) predicted felt power (as in Study 5), $\beta = .19$, $t(145) = 2.25$, $p = .03$; novelty of clothing did not, $\beta = -0.04$, $t(145) = -0.52$, $p = .60$ (both predictors entered simultaneously). Yet neither variable (when including the other mediators and covariates from Study 5; $n = 143$) predicted abstract processing indirectly

through power (formality 95% CI [$-.0008$, $.0079$], novelty 95% CI [$-.0044$, $.0005$]; both analyses control for the alternate predictor). This study replicates the formality–social distance relationship, but does not find a novelty–social distance relationship, casting doubt on novelty as a mediator in the current work. Although this study also did not find effects on abstract processing, meta-analyses encompassing all studies still found an overall significant power–abstract processing relationship ($N = 288$, sample-size weighted $r = .25$, $p = .001$) and an overall significant formality–abstract processing relationship ($N = 449$, sample-size weighted $r = .20$, $p < .001$).

The current findings extend the aforementioned work on formality of language and abstract processing (Stephan et al., 2010). Here, we demonstrate that not only does formal language increase abstract processing but so does formal dress. The current findings also extend work on multimodal influences on conceptual processing. Manipulations including smelling fish oil (Lee & Schwarz, 2012), putting on a lab coat (Adam & Galinsky, 2012), and squeezing a hard ball (Slepian, Rule, & Ambady, 2012), enhance suspicion, attention, and categorization of faces as Republican rather than Democrat, respectively. Such studies have provided new insights into the nature of conceptualization and categorization, including how sensory states influence and are influenced by cognitive processes (see Lee & Schwarz, 2012; Slepian, 2015; Slepian & Ambady, 2014). Yet to understand how these processes occur in daily life, it is important to examine everyday and ecologically valid influences and to examine their impact on basic and fundamental cognitive processes. The current work sought to address this goal.

Future work could consider how formal clothing influences a variety of decisions by influencing processing style. Processing style influences attention to choice attributes, information search, intertemporal choice, probability estimates, and a variety of other decision processes (Fujita et al., 2006; Malkoc, Zauberman, & Ulu, 2005; Shani et al., 2009; Wakslak & Trope, 2009). Processing style also influences employee concerns about treatment at work, estimated monetary savings, and whether people approach decisions in pragmatic or idealistic manners, all of which are real-world decisions that could plausibly be made while wearing either formal or casual clothing (Cojuharenco, Patient, & Bashshur, 2011; Kivetz & Tyler, 2007; Tam & Dholakia, 2011). The formality of clothing might not only influence the way others perceive a person (Albright et al., 1988; Forsythe, 1990; Reid et al., 1997), and how people perceive themselves (Hannover & Kühnen, 2002; Peluchette & Karl, 2007), but could influence decision making in important ways through its influence on processing style.

Declaration of Conflicting Interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding

The author(s) received no financial support for the research, authorship, and/or publication of this article.

Notes

1. In all studies, we planned to collect at least 60 participants. In Study 3, however, the semester's data collection period ended before this goal could be reached.
2. Eighteen of the 60 participants approached for the study were not enrolled in college, and thus could not answer the question regarding college financial aid. These participants were therefore not included in the regression analysis with socioeconomic status as a predictor.
3. Importantly, the Study 4 task was not the standard Navon task. This modified task required concurrent global and local processing. Therefore, favoring global processing could lead to faster response times (RTs) to global stimuli but also slower RTs to local stimuli (i.e., *both* indicate favoring global processing). Given that we did not have specific predictions regarding the measure(s) that would be influenced by clothing formality, we collapsed across both measures (per previous work using such tasks, Förster et al., 2006; Gable & Harmon-Jones, 2008, 2010a, 2010b). For the interested reader, local RTs differed, $t(51) = 2.05, p = .046$, but not global RTs, $t(51) = 0.77, p = .44$, a possible consequence of (typical) quicker performance for global stimuli (Navon, 1977).
4. For all analyses, tests of multicollinearity indicated independence among the variables in the model (all variance-inflation factors < 10, all tolerances > .10; see Kline, 1998), affirming the validity of treating each measure as a separate parallel mediator. Combining the three moderately correlated measures (social commonality, social closeness, and intimacy) into a composite also yielded only one significant indirect effect, through power (including when excluding covariates).
5. Excluding covariates did not alter the results.

References

- Adam, H., & Galinsky, A. D. (2012). Enclothed cognition. *Journal of Experimental Social Psychology, 48*, 918–925.
- Albright, L., Kenny, D. A., & Malloy, T. E. (1988). Consensus in personality judgments at zero acquaintance. *Journal of Personality and Social Psychology, 55*, 387–395.
- Anderson, C., Kraus, M. W., Galinsky, A. D., & Keltner, D. (2012). The local ladder effect: Social status and subjective well-being. *Psychological Science, 23*, 764–771.
- Bradley, M. M., & Lang, P. J. (1994). Measuring emotion: The self-assessment manikin and the semantic differential. *Journal of Behavior Therapy and Experimental Psychiatry, 25*, 49–59.
- Brown, P., & Levinson, S. (1987). *Politeness: Some universals in language usage*. Cambridge, England: Cambridge University Press.
- Butler, S., & Roesel, K. (1989). The influence of dress on students' perceptions of teacher characteristics. *Clothing and Textile Research Journal, 7*, 57–59.
- Butler, S., & Roesel, K. (1991). Students' perceptions of male teachers: The effects of teachers' dress and students' characteristics. *Perceptual and Motor Skills, 73*, 943–951.
- Cojuharenco, I., Patient, D., & Bashshur, M. R. (2011). Seeing the “forest” or the “trees” of organizational justice: Effects of temporal perspective on employee concerns about unfair treatment at work. *Organizational Behavior and Human Decision Processes, 116*, 17–31.
- Darley, J. M., & Cooper, J. (1972). The “Clean for Gene” phenomenon: The effect of students' appearance on political campaigning. *Journal of Applied Social Psychology, 2*, 24–33.
- Diamond, P., & Koszegi, B. (2003). Quasi-hyperbolic discounting and retirement. *Journal of Public Economics, 87*, 1839–1872.
- Easterling, C. R., Leslie, J. E., & Jones, M. A. (1992). Perceived importance and usage of dress codes among organizations that market professional services. *Public Personnel Management, 21*, 211–219.
- Förster, J., Friedman, R. S., Özelsel, A., & Denzler, M. (2006). Enactment of approach and avoidance behavior influences the scope of perceptual and conceptual attention. *Journal of Experimental Social Psychology, 42*, 133–146.
- Förster, J., Liberman, N., & Shapira, O. (2009). Preparing for novel versus familiar events: Shifts in global and local processing. *Journal of Experimental Psychology: General, 138*, 383–399.
- Forsythe, S. M. (1990). Effect of applicants' clothing on interviewer's decisions to hire. *Journal of Applied Social Psychology, 20*, 1579–1595.
- Fujita, K., Trope, Y., Liberman, N., & Levin-Sagi, M. (2006). Construal levels and self-control. *Journal of Personality and Social Psychology, 90*, 351–367.
- Gable, P. A., & Harmon-Jones, E. (2008). Approach-motivated positive affect reduces breadth of attention. *Psychological Science, 19*, 476–482.
- Gable, P. A., & Harmon-Jones, E. (2010a). Late positive potential to appetitive stimuli and local attentional bias. *Emotion, 10*, 441–446.
- Gable, P. A., & Harmon-Jones, E. (2010b). The blues broaden, but the nasty narrows: Attentional consequences of negative affects low and high in motivational intensity. *Psychological Science, 21*, 211–215.
- Hannover, B., & Kühnen, U. (2002). The clothing makes the self via knowledge activation. *Journal of Applied Social Psychology, 32*, 2513–2525.
- Holtgraves, T., & Yang, J. (1992). Interpersonal underpinnings of request strategies: General principles and differences due to culture and gender. *Journal of Personality and Social Psychology, 62*, 246–256.
- James, W. (1983). *The Principles of Psychology (Vol. 1)*. Cambridge, MA: Harvard University Press. (Original work published 1890)
- Johnson, S. E., Richeson, J. A., & Finkel, E. J. (2011). Middle class and marginal? The influence of socioeconomic status on the self-regulatory resources of students at an elite university. *Journal of Personality and Social Psychology, 100*, 838–852.
- Isen, A. M., & Daubman, K. (1984). The influence of affect on categorization. *Journal of Personality and Social Psychology, 47*, 1206–1217.
- Kellerman, J. M., & Laird, J. D. (1982). The effect of appearance on self-perceptions. *Journal of Personality, 50*, 296–351.
- Kivetz, Y., & Tyler, T. R. (2007). Tomorrow I'll be me: The effect of time perspective on the activation of idealistic versus pragmatic selves. *Organizational Behavior and Human Decision Processes, 102*, 193–211.

- Kline, R. B. (1998). *Principles and practice of structural equation modeling*. New York: Guilford Press.
- Lee, S. W. S., & Schwarz, N. (2012). Bidirectionality, mediation, and moderation of metaphorical effects: The embodiment of social suspicion and fishy smells. *Journal of Personality and Social Psychology, 103*, 737–749.
- Liviatan, I., Trope, Y., & Liberman, N. (2008). Interpersonal similarity as a social distance dimension: Implications for perception of others' actions. *Journal of Experimental Social Psychology, 44*, 1256–1269.
- Lukavsky, J., Butler, S., & Harden, A. J. (1995). Perceptions of an instructor: Dress and students' characteristics. *Perceptual and Motor Skills, 81*, 231–240.
- Magee, J. C., & Smith, P. K. (2013). The social distance theory of power. *Personality and Social Psychology Review, 17*, 158–186.
- Malkoc, S. A., Zauberaman, G., & Ulu, C. (2005). Consuming now or later? The interactive effect of timing and attribute alignability. *Psychological Science, 16*, 411–417.
- Navon, D. (1977). Forest before trees: The precedence of global features in visual perception. *Cognitive Psychology, 9*, 353–383.
- Peluchette, J. V. E., & Karl, K. (2007). The impact of workplace attire on employee self-perceptions. *Human Resource Development Quarterly, 18*, 345–360.
- Preacher, K. J., & Hayes, A. F. (2004). SPSS and SAS procedures for estimating indirect effects in simple mediation models. *Behavior Research Methods, Instruments, and Computers, 36*, 717–731.
- Price, T. F., & Harmon-Jones, E. (2010). The effect of embodied emotive states on cognitive categorization. *Emotion, 6*, 934–938.
- Reid, A., Lancuba, V., & Morrow, B. (1997). Clothing style and formation of first impressions. *Perceptual and Motor Skills, 84*, 237–238.
- Robinson, M. D. (2007). Lives lived in milliseconds: Using cognitive methods in personality research. In R. W. Robins, R. C. Fraley, & R. Krueger (Eds.), *Handbook of research methods in personality psychology* (pp. 345–359). New York, NY: Guilford Press.
- Shani, Y., Igou, E., & Zeelenberg, M. (2009). Different ways of looking at unpleasant truths: How construal levels influence information search. *Organizational Behavior and Human Decision Processes, 110*, 36–44.
- Slepian, M. L. (2015). Disentangling multimodal processes in social categorization. *Cognition, 136*, 396–402.
- Slepian, M. L., & Ambady, N. (2012). Fluid movement and creativity. *Journal of Experimental Psychology: General, 141*, 625–629.
- Slepian, M. L., & Ambady, N. (2014). Simulating sensorimotor metaphors: Novel metaphors influence sensory judgments. *Cognition, 130*, 309–314.
- Slepian, M. L., Masicampo, E. J., & Ambady, N. (2015). Cognition from on high and down low: Verticality and construal level. *Journal of Personality and Social Psychology, 108*, 1–17.
- Slepian, M. L., Rule, N. O., & Ambady, N. (2012). Proprioception and person perception: Politicians and professors. *Personality and Social Psychology Bulletin, 38*, 1621–1628.
- Smith, P. K., & Trope, Y. (2006). You focus on the forest when you're in charge of the trees: Power priming and abstract information processing. *Journal of Personality and Social Psychology, 90*, 578–596.
- Smith, P. K., Wigboldus, D. H. J., & Dijksterhuis, A. (2008). Abstract thinking increases one's sense of power. *Journal of Experimental Social Psychology, 44*, 378–385.
- Stephan, E., Liberman, N., & Trope, Y. (2010). Politeness and social distance: A construal level perspective. *Journal of Personality and Social Psychology, 98*, 268–280.
- Suedfeld, P., Bochner, S., & Metas, C. (1971). Petitioner's attire and petition signing by peace demonstrators: A field experiment. *Journal of Applied Social Psychology, 1*, 278–283.
- Sybers, R., & Roach, M. E. (1962). Sociological research: Clothing and human behavior. *Journal of Home Economics, 54*, 184–187.
- Tam, L., & Dholakia, U. M. (2011). Delay and duration effects of time frames on personal savings estimates and behavior. *Organizational Behavior and Human Decision Processes, 114*, 142–152.
- Thaler, R. H. (1981). Some empirical evidence on dynamic inconsistency. *Economic Letters, 8*, 201–207.
- Trope, Y., & Liberman, N. (2010). Construal level theory of psychological distance. *Psychological Review, 117*, 440–463.
- Vallacher, R. R., & Wegner, D. M. (1987). What do people think they're doing? Action identification and human behavior. *Psychological Review, 94*, 3–15.
- Wakslak, C. J., & Trope, Y. (2009). The effect of construal-level on subjective probability estimates. *Psychological Science, 20*, 52–58.
- Watson, D., Clark, L., & Tellegen, A. (1988). Development and validation of brief measures of positive and negative affect: The PANAS scales. *Journal of Personality and Social Psychology, 54*, 1063–1070.
- Williams, L. E., & Bargh, J. A. (2008). Keeping one's distance: The influence of spatial distance cues on affect and evaluation. *Psychological Science, 19*, 302–308.

Author Biographies

Michael L. Slepian is a Postdoctoral Research Scholar at Columbia University. His research examines how people judge others' trustworthiness, detect deception, and cope with secrecy.

Simon N. Ferber is a PsyD candidate at The California School of Professional Psychology, San Francisco Campus. His research focuses on social interaction and its impact on cognition and emotional well-being.

Joshua M. Gold is a doctoral student in health psychology at the University of Iowa. His research explores how a person's social identity influences their health decisions and willingness to engage in healthy behavior change.

Abraham M. Rutchick is an Associate Professor of Psychology at California State University, Northridge. His research examines non-conscious processes and social perception.