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Statement of Research Interests

Two hallmark features of humans are our immense sociality and our cognitive capacity for higher-level abstract thought. Our sociality is unique both in the extent to which we rely on others to learn about and navigate the world, and in the diversity of those that we rely on to do so. Our capacity for abstraction—the process of identifying higher-level meanings that are common across distinct objects or events—is also unique. It produces a distinctly human form of higher-level conceptual thought that underlies many of our most important cognitive abilities such as the transfer of knowledge from one context to another, problem-solving, prediction, planning, creativity, and self-control. **While these two adaptations are often studied independently, my research proposes that our sociality and capacity for abstract thought are elementally intertwined in a bidirectional and mutually reinforcing relationship.**

In my primary line of research, I provide evidence for both sides of this relationship. First, I demonstrate that social learning—particularly from distant and diverse others—promotes abstract thinking. Second, I show that higher levels of abstract thought facilitate effective social interaction and coordination across more diverse individuals. Throughout my work, I take a social-cognitive approach to research that uses methods ranging from tightly controlled behavioral experiments to large-scale field tests of theory. Ultimately, my goal is to understand how diverse individuals transcend personal differences to learn from one another and work together in order to build cultural knowledge and achieve collective goals.

Social Learning Promotes Abstract Thought

As highlighted by past research, one major benefit of social learning is the vast amount of information that can be acquired by learning from the experiences of diverse others (Bandura, 1977). My research posits a second major benefit of observing and learning from diverse others: not only does it expose people to new information, it also promotes new—more abstract—ways of understanding information and the world at large (Kalkstein, Hubbard, & Trope, 2018a; Hackel & Kalkstein, under review).

Social Learning. Across multiple lines of work, I have shown that people represent the same information at a higher level of abstraction when it is encountered through social observation than through direct experience. In one set of studies, illustrated by Figure 1, I found that people tend to represent the same object at a more abstract level—in terms of its relational role rather than its surface level appearance—when it is observed alongside a person than when it is observed in a non-social scene where people do not appear (Kalkstein, Hackel, & Trope, 2020, *JESP*). In related work, I found that when people learned how to categorize shapes through social observation rather than through direct experience, they represented these same shapes at a higher level—in terms of their global gestalt forms rather than local components (Kalkstein et al., 2016, *JPSP*).

Why does social learning promote more abstract thinking than learning from direct experience? The immersive nature of direct experience can lead people to become absorbed in the concrete details of the event at hand. In contrast, social learning necessarily puts some distance between the learner and the event. With this distance comes the potential for concrete details to vary

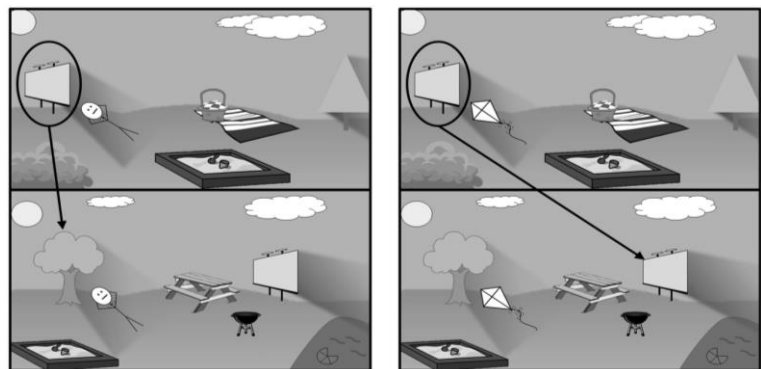


Figure 1. Participants were presented with either a pair of social scenes (left) or nonsocial scenes (right) and asked which object in the bottom picture corresponded to the circled billboard in the top picture. Participants who saw the version with a person in it (left) were more likely to select the tree in the bottom since it occupied the same relational role as the billboard—providing shade. Participants who saw the nonsocial version (right) were more likely select to the other billboard since it had the same surface level appearance (Kalkstein et al., 2020, *JESP*).

between one's own context and that of another person. As a result, when learning from others, people engage in abstract processing which omits superficial details that vary with circumstance and instead identifies higher level meanings that are common across the unique contexts of self and other.

Learning from Distant and Diverse Others. Going a step further, this logic suggests that learning from more distant or dissimilar others should promote higher levels of abstraction since there is greater potential for the lower-level details of their experience to vary from one's own (Kalkstein & Trope, in press, *BBS*). Supporting this prediction, in multiple studies, I have found that when people learn from more distant others—such as outgroup members—they construe what is learned at a higher, more abstract level than when they learn from closer others (Kalkstein et al., 2016, *JPSP*). While social psychology has traditionally focused on the influence that proximal and similar others have on thought and behavior (e.g., Asch, 1956; Festinger, 1954; Turner, 1991), my research highlights a distinct value of interacting with distant and diverse others: their ability to orient people to bigger-picture ways of understanding the world.

Abstraction Promotes Social Learning and Coordination Across Diverse Individuals

In related research, I explore the opposite direction of influence: How does abstraction help people overcome the psychological and social challenges presented by learning from and interacting with diverse others.

Expanding Social Horizons. One challenge of learning from diverse others is that learners may not always recognize the relevance of people who are distant or different from themselves and may thus dismiss them as sources of information altogether. I have shown that abstract thinking helps people overcome this myopia and expand their social horizons. For instance, in several studies, I found that when people are primed to think about learning at a more abstract level versus a concrete level (e.g., about *why* to eat healthy vs. *how* to eat healthy), they express greater interest in learning from more distant others (e.g., authors of older articles) (Kalkstein et al., 2016, *JPSP*). This work illustrates that one way in which abstraction contributes to humans' sociality is by expanding our social horizons to consider more distant and diverse others as relevant sources of information.

Bridging Group Divides. While thinking abstractly does help orient people to more distant and diverse others, it does not, by itself, ensure effective communication or coordination across diverse individuals. Social coordination is a two-way street that additionally requires the people involved to hold a *shared* abstract understanding of the information or event at hand. The necessity of holding a shared abstract representation can pose a challenge for interacting with diverse others: differences in personal experience can lead people to approach the same situation with divergent beliefs, assumptions, or worries. For instance, across several studies, my colleagues and I explored how Black and White people feel about discussing race-related experiences with friends from a different racial group. We found that each side had distinct concerns: Whereas Black participants worried about not being heard or understood, White participants worried about appearing prejudiced. This potential for misalignment led both sides to respond to the prospect of such conversations with anxiety and avoidance, despite both also perceiving benefits to these conversations (Sanchez, Kalkstein, & Walton, 2021, *JPSP*).

Even when people overcome this avoidance and conversations are had, differences in perspective and social backgrounds can still lead people to extract different higher-level meanings from the same information or event. For example, in classroom settings, delivering critical feedback across group lines (e.g., from a White teacher to a Black student) can create the potential for interpersonal misunderstandings. The teacher may genuinely intend for that feedback to serve the higher-level purpose of helping the student learn and grow. However, given the prevalence of negative stereotypes in society, the student may reasonably wonder whether the feedback is instead a reflection of biases that the teacher holds about students from certain racial/ethnic groups (e.g., Cohen, Steele, & Ross, 1999).

My research proposes that such interpersonal misalignment can be avoided by explicitly establishing shared higher-level understandings that bridge the variable perspectives of diverse individuals. In ongoing work (Sanchez, Kalkstein, & Walton, in progress), my colleagues and I are testing whether it is possible to make conversations between interracial friends about race-related experiences more productive and beneficial for each party by providing them with a higher-level framing that represents such conversations as a means to learn about each other and build a stronger friendship. In another ongoing project, I have partnered with national education organizations (The College Board, Equal Opportunity Schools, and Leading Educators) to test this proposal in large-scale applied educational settings (Kalkstein et al., in progress). Here, I have used an iterative design process to develop an intervention that explains to teachers the importance of explicitly establishing a *shared* higher-level understanding of *why* they give critical feedback—to help the student learn and grow. This intervention aims to align the perspectives of students and teachers thereby improving trust and their ability to work together. Overall, the goals of this stream of work are *a)* to demonstrate that abstraction can facilitate effective communication across diverse people by situating individual perspectives within shared higher-level goals and *b)* to use this insight to develop interventions that help people bridge group divides.

Facilitating Social Coordination. In addition to facilitating interpersonal interactions, shared abstractions are also functional for coordinating diverse individuals within groups, organizations, and societies. In another line of research (Kalkstein et al., in press, *JPSP*), I explored how social norms guide individual psychology to influence behavior, structure self-regulation, and promote social coordination. Social norms are a type of consensually held abstractions that identify which behaviors are common and appropriate in a given setting and which are not. Across five studies, I showed that social norms shape people's representations of what behaviors are afforded to them by the situation. Using diverse methods ranging from a cognitive change-blindness paradigm to a semester-long field experiment, I found that when contemplating actions to take in a given context, counternormative behaviors do not even come to mind, and if they do, they are readily dismissed as impossible or undesirable. Moreover, I showed that even tempting behaviors that typically pose difficult self-control conflicts (e.g., eating extra dessert) often go unconsidered when they are counternormative in context (e.g., the dessert is on a stranger's plate). By effectively excluding counternormative behaviors from consideration social norms efficiently guide people away from socially disruptive behaviors and towards behaviors that maintain social harmony. When social norms align with personal goals, they can also aid self-control by guiding people away from temptations and towards goal consistent behavior. The operation of this process across diverse individuals within a collective is one example of how shared abstractions enable relatively effortless large-scale coordination and guide self-regulation. Going forward, I am eager to continue exploring how other kinds of shared abstractions (e.g., policies, morals, stories) promote coordination and structure individual self-regulation. Ultimately, by showing that shared abstractions can be used to coordinate diverse individuals, and by understanding the underlying mechanisms, I hope to use this work to continue developing interventions that help individuals and groups pursue valued goals.

Abstraction Functions to Manage and Anticipate Variability

In a complementary line of research, I focus on individual cognition to explore the basic underpinnings of my theorized relationships between social interaction, diversity, and abstract thought. Here, I explore how people learn from their own experiences across diverse contexts and with diverse objects.

Memory and Propection. Drawing on memory to understand one's current situation requires individuals to identify commonalities across the distinct contexts of past and present. I posit that people bridge past and present events by engaging in abstract thought. Supporting this, I have shown that people represent objects in their current environment more abstractly (e.g., in terms of their functional purpose instead of their surface level appearance) when they compare them to previously encountered objects than to other concurrently present objects (Kalkstein, Hubbard, & Trope, 2018b, *JEP:G*). Theoretically, this work speaks to the prospective function of memory (cf. Schacter, Addis, & Buckner,

2007). Whereas previous accounts argue that people simulate future events by recombining concrete details of past experiences; my research suggests that people draw upon memory by engaging in abstract thinking that omits such concrete details and instead focuses on higher-level meanings that hold across lower-level variations in specifics. This allows people to use previously acquired knowledge to navigate a novel context even when it is populated by previously unencountered details.

In additional work on inductive reasoning, I demonstrated that through abstract representations of category structures (e.g., representing ‘fruits’ and ‘vegetables’ as subcategories under the common parent ‘food’), people can even use the diversity of observed counterexamples to infer how far to generalize from a single novel example (Kalkstein, Bosch, & Kleiman, 2020, *JEP:LMC*). For instance, in one study, I found that people generalized the property containing “Vitamin X” from a single apple to the whole category of fruit when it was contrasted with three different vegetables that did not contain “Vitamin X,” but generalized only to other apples when it was contrasted with a single carrot. At a broader level, these findings join those above to support the argument that abstraction is the primary psychological mechanism underlying generalization from past experience to future and unknown contexts.

In future work, I plan to build on these findings and formalize a general theory wherein experience with variability promotes abstraction, and abstraction in turn supports generalization. Overall, with this research I hope to gain insights into how people cognitively process variability and apply these insights to better understand how individuals think and behave in socially diverse environments.

Future Directions

Looking forward to directing my own lab, I am excited to extend my research into the domain of collective thought and group-regulation. If integration across diverse contexts promotes abstraction, then collectives that are comprised of individuals with diverse experiences and perspectives should be capable of producing more abstract knowledge than isolated individuals. Such a finding would have major implications for group-regulation and collective agency. Higher levels of abstract thought have been linked to improved self-control and regulation towards more distal outcomes (for reviews, see Kalkstein & Fujita, 2020; Kalkstein, Fujita, & Trope, 2018). Thus, the hypothesis that collective thought leads to greater abstraction implies that group-regulation may be more expansive and oriented towards more distal outcomes than individual self-regulation. In my lab, I plan to launch a program of research that investigates *a)* whether collective thought tends to be more abstract than isolated individual cognition, *b)* whether groups regulate their behavior towards more distant and global goals than individuals, and *c)* whether this is particularly true of more diverse (vs. less diverse) groups. With this work, I aim to build on past literature exploring the benefits of social diversity (e.g., Phillips, 2014) by highlighting abstraction as a particular cognitive outcome with far reaching implications for thought and behavior in domains such as problem solving, creativity, self-regulation, and group-regulation.

In addition, I am eager to pursue a line of research that investigates parallels between individual functioning/self-regulation and group functioning/group-regulation. Within my previous work, I have already found preliminary evidence for such parallels. For example, I’ve shown that the same general process of abstraction that functions to integrate across an individual’s own diverse experiences (e.g., temporally distinct events) also functions to integrate across the diverse experiences of others (e.g., in social learning). I am intrigued by the possibility that individual mechanisms of self-regulation are reflected at the group-level and vice-versa and plan to launch a line of research that searches for such analogs between individual and group functioning. To the extent that such analogs exist, they may generate novel strategies to improve self-regulation as well as group functioning.

Overall, my lab will continue to leverage psychological theory to generate insights into real-world issues surrounding social diversity. By pursuing both basic experimental work and seeking out collaborations with institutional partners, my goal is to use my research to promote diversity and harness its benefits for groups, organizations, and society at large.