# Social Learning Across Psychological Distance

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While those we learn from are often close to us, more and more our learning environments are shifting to include more distant and dissimilar others. The question we examine in 5 studies is how whom we learn from influences what we learn and how what we learn influences from whom we choose to learn it. In Study 1, we show that social learning, in and of itself, promotes higher level (more abstract) learning than does learning based on one's own direct experience. In Studies 2 and 3, we show that when people learn from and emulate others, they tend to do so at a higher level when learning from a distant model than from a near model. Studies 4 and 5 show that thinking about learning at a higher (compared to a lower) level leads individuals to expand the range of others that they will consider learning from. Study 6 shows that when given an actual choice, people prefer to learn low-level information from near sources and high-level information from distant sources. These results demonstrate a basic link between level of learning and psychological distance in social learning processes.

*Keywords:* social learning, psychological distance, construal level theory



On January 25, 2011, Egyptians protested in the streets of Cairo and Alexandria, seeking to overthrow President Hosni Mubarak. These massive demonstrations quickly gave way to full-scale revolution, leading to the ousting and arrest of Mubarak 18 days after the riots began. This was part of a larger movement toward democracy that swept across Northern Africa and the Middle East, toppling leaders in Yemen, Libya, and Tunisia, in what became known as the Arab Spring (Al Jazeera, 2011). The Egyptian uprising and the Arab Spring was unlike any previous widespread social movement in its unprecedented use of the Internet and social media. Through their use of the Internet, demonstrators were able to transcend traditional barriers presented by geographic and temporal distance and learn from a broader array of sources than was previously possible in historical revolutions. For example, through social media communication with their counterparts involved in the then recent and nearby revolution in Tunisia, Egyptian protesters learned about specific strategies and tactics for engaging in civil actions such as using vinegar or onions to combat the negative effects of tear gas. Using online resources to access the writings and ideas of more distant sources such as the American social theorist Gene Sharp (author of the book *From Dictatorship to Democracy*; Sharp, 2010) and the distant revolutionary Group Optor! (a revolutionary group from Serbia in the late 1990s), leaders of the revolution were also able to access and learn about more general ideals and principles of civil action (Kirkpatrick & Sanger, 2011). From these diverse sources, both proximal to the uprisings and more distant, protesters learned different lessons critical to their cause.

Although anecdotal, the above example points to larger developments in the landscape of our social worlds. While those we learn from are often close to us, more and more our learning environments are shifting to include more distant and dissimilar others. The rise of social media and the proliferation of the Internet, along with the corresponding increase in global interconnectedness, have broadened the scope and diversity of social interaction. As a result, it is now more likely than ever that we learn from people from different cultural and ethnic backgrounds (e.g., protesters from different ethnic groups or international aid workers), who live hundreds of miles away (e.g., professors for online courses or speakers at national conferences), or who are from the past (e.g., authors of older articles or books).

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While social learning has been studied by researchers in a variety of fields such as neuroscience (e.g., Olsson & Phelps, 2007; Rizzolatti & Craighero, 2004), animal psychology (e.g., Heyes, 2012; Tomasello, Davis-Dasilva, Camak, & Bard, 1987), developmental psychology (e.g., Gelman, 2009; Salomon & Perkins, 1998), education (e.g., Enright & Axelrod, 1995; Ginsburg-Block, Rohrbeck, & Fantuzzo, 2006), social psychology (e.g., Bandura, 1977, 1978; Chartrand, Maddux, & Lakin, 2005; Smith & Collins, 2009; Wheeler, 1966; Zimmerman & Rosenthal, 1974), and behavioral economics (McFadden & Train, 1996), the role of distance in social learning has not been a focus of research to date. We suggest that this is a crucial omission in that distance is a fundamental aspect of social learning. Specifically, social learning requires attending to and connecting with others beyond the self, which necessitates the traversing of psychological distance. The amount of psychological distance that needs to be traversed will vary from situation to situation. Thus, while all models for social learning exist at *some* distance from the self, some models are closer to us while others are farther away. Using distance as a metric by which to differentiate the various types of others in our environment, in the research presented here, we ask how whom we learn from influences what we learn and how what we learn influences from whom we learn.

## Social Learning

The idea that nearly all behavior that can be learned through direct experience can also be learned through observation was put forward by Albert Bandura in his seminal social learning theory (Bandura, 1977). The theory proposes that, in fact, the *majority* of human behavior is learned socially through modeling—the process whereby observing another's behavior leads to some form of learning or internalization of that behavior (Bandura, 1971). Importantly, social learning is not limited just to the acquisition of novel response patterns through observation but also extends to the internalization and reproduction of behaviors *already understood* by the observer in response to observation of a model (Bandura, 1977). Decades of research on social learning have documented the propensity for individuals to learn from and emulate models in a variety of situations (e.g., Bandura, 1977; Bandura & McDonald, 1963; Bandura, Ross, & Ross, 1961, 1963; Chartrand & Bargh, 1999; Salomon & Perkins, 1998; Zimmerman & Rosenthal, 1974).

A major finding in the social learning literature is that people can learn from different types of others and social models can take many different forms (see Bandura, 1977; Salomon & Perkins, 1998). For example, in one study, children learned and emulated aggressive behaviors displayed by a diverse set of models ranging from live models to film clips of models to cartoon character models (Bandura et al., 1963). In this study, social learning occurred from both proximal in vivo models and distant symbolic models. Common to both of these, and indeed to any social model, is that they are subjectively experienced as being at *some psychological distance* (close or far) from the immediate self (Trope & Liberman, 2010).

## Traversing Psychological Distance

Psychological distance refers to all of the ways in which an event, object or any other target can be removed from the egocentric here and now (Trope & Liberman, 2010). It can be temporal, spatial, hypothetical, or social, so that any target that exists beyond the ego is experienced as existing at some psychological distance from the self (Liberman & Trope, 2008). Psychological distance increases as a target becomes farther removed from one's own direct experience.

To explore the impact of psychological distance on social learning we adopt the approach of construal level theory (CLT; Liberman & Trope, 2008). According to CLT, any object, event, or action, can be mentally represented at varying levels of construal ranging from high to low. A high-level construal is abstract, global, decontextualized, superordinate, and captures the central and defining features of the target. A low-level construal, on the other hand, is concrete, local, contextualized, and includes subordinate and secondary features of the target. For example, a low-level construal of being healthy may be in terms of the specific behaviors done to accomplish the goal of being healthy such as eating a banana every morning instead of a donut, or running 2 miles every day; a high-level construal may instead focus on being healthy as a general trait one possesses or on the reasons why being healthy is important (Nussbaum, Trope, & Liberman, 2003; see also Vallacher & Wegner, 1987). Moving from a low- to a high-level construal involves retaining the central features of the target and omitting features that are deemed incidental and peripheral as a result of this process of abstraction (Trope & Liberman, 2010).

The central tenet of CLT is that levels function to contract and expand one's mental horizons or regulatory scope (Ledgerwood, Trope, & Liberman, in press; Liberman & Trope, 2014; Trope & Liberman, 2010). Low-level construals contract our mental horizons and aid in immersion into the immediate environment, as they focus on the local details and particularities of the target that may be specific to its current context (Ledgerwood et al., in press). High-level construals, on the other hand, expand our mental horizons and allow us to also represent targets that are removed from the egocentric here-and-now, as they focus on aspects of the stimulus that are central and stable across various contexts. High-level construals are those that remain unchanged across distance. They extract the commonality among various instantiations of a given target and omit contextualized aspects of the target that may fluctuate across psychological distance. Whereas low-level thought is highly contextualized and thus favors consideration of proximal targets, high-level thought is less biased by proximity and extends to *both near and far* targets.

As a result of these functions, level of construal and psychological distance have become cognitively associated. Importantly, this relationship is bidirectional so that not only do higher level construals allow us to consider more distant targets, but distant targets also tend to recruit higher level construals. Construing distant objects at a higher level creates a representation of the target that traverses psychological distance in a stable way. Hence, even when all of the low-level information about a distant target is available to us, we still tend to construe it at a higher level than if the target was more proximal (Trope & Liberman, 2003) because such a construal will render the representation more applicable to perceivers in potentially very different contexts. Generally speaking then, psychologically close stimuli tend to be construed at lower levels while distant stimuli tend to be construed at higher levels (Fujita, Henderson, Eng, Trope, & Liberman, 2006; Henderson, Fujita, Trope, & Liberman, 2006; Liberman & Trope, 1998; Wakslak, Trope, Liberman, & Alony, 2006; Liviatan, Trope, & Liberman, 2008). So, while being healthy tomorrow may be construed at a lower level and focus more on the specific actions involved like eating a banana for breakfast, the idea of being healthy in a year should be construed at a higher level as more of a trait and more in terms of why being healthy is important.

## The Current Research: Social Learning Across Psychological Distance

In this article, we seek to integrate CLT with social learning theory in an attempt to develop a greater understanding of the role of psychological distance in social learning. CLT can advance theorizing and understanding of social learning processes by providing a framework from which to explore the role of psychological distance—a fundamental aspect of social learning. Furthermore, investigating the role of psychological distance in learning processes represents an initial foray into previously uncharted territory within CLT. In this work, we conceptualize learning as a process of acquiring new information with the potential to transfer it to novel contexts and interactions with novel stimuli. While much previous research has documented the tendency for people to construe more distant targets at higher levels (see Trope & Liberman, 2010), the question of how differing construals of the same target are internalized, retained, applied to the self, and later acted on has yet to be addressed in a systematic way. Because this type of learning involves deeper processing than does momentary representation, it remains an open question whether psychological distance to the source of learning will have a substantive impact on what is learned and how it later influences behavior. Similarly, it is yet to be shown that the level at which one is attempting to learn has an influence on the range of others they are willing to consider as sources for learning.

To explore these issues, we examine three interrelated questions. First, we explore basic differences in what we learn from our own experiences versus what we learn from others. That is, compared to learning based on direct experience, how does social learning influence how the learned information is construed and subsequently acted upon? As argued earlier, social learning implies the traversing of the most elemental social distance—the distance between the self and other individuals. Drawing on the premise that high-level construals serve to expand our mental horizons and enable us to transcend the egocentric here-and-now, we suggest that learning from others is made possible by the capacity for high-level thought. That is, social learning requires abstract thought because it necessitates extracting those aspects of another's behavior that will remain stable and relevant when applied to our own context. Thus, we argue that because social learning requires transcendence beyond the self, what is learned will be construed at a higher level when it is learned socially than when it is learned from one's personal direct experience. We further propose that this learning will be reflected in the application of the learned content to new situations and new stimuli.

Given that distance is inherent in social learning, a second question that arises is, within social learning contexts, how do variations in the psychological distance between an observer and a model influence what is learned? The idea that high-level construals travel well across psychological distance suggests that an observer learning from a more distant model would be better served by construing the learning content at a higher level so as to render it applicable to her own context. Building on the notion that learning from others will lead to higher level learning than learning from one's own experience, we further propose that learning from increasingly distant others will lead to increasingly higher levels learning.

Finally, the third question explores the bidirectionality of the association between level and distance by asking how the level at which people are learning influences how psychologically near or far the sources they seek to learn from are. Based on the premise that low-level construals serve a contractive function and tend to orient people to psychological proximal targets, we propose that when people are construing what they want to learn at a low level, they contract their mental horizons, making the selection of a close other as a model for learning more likely. Based on the premise that high-level construals allow people to expand their mental horizons and to traverse psychological distance, we propose that high-level construals enable us to learn socially from more psychologically distant others. When people are construing what they want to learn at a high level, they should therefore broaden their mental horizons to include distant as well as near others (see also Ledgerwood & Callahan, 2012). Note that this is not to say that learning at a high level necessarily leads to selection of a distant model, but that at a high level, people include far others *in addition to* near others in their considerations of potential models from whom to learn.

## Overview of Studies

Across six studies, we explored the role of psychological distance in social learning. The goal of Studies 1–3 was to demonstrate that psychological distance to a source of learning influences how the information is learned and subsequently applied to new contexts and new stimuli. In Study 1, we sought to show that social learning, in and of itself, promotes higher level, more abstract learning than does learning based on one's own direct experience. Study 2 extended Study 1 by aiming to demonstrate that the same information is learned at a higher level when learned from a distant model than from a near model. In Study 3, we aimed to show that psychological distance between an observer and a model impacts emulation behavior to the extent that observers are actually motivated to learn from and emulate that model. Studies 4–6 explored how the level at which people are learning influences the range of others that they will consider learning from. Studies 4 and 5 aimed to show that while low-level learning favors proximal models, high-level learning expands the scope of models from whom people seek to learn. Finally, Study 6 sought to demonstrate that these preferences are borne out in actual selection of others such that people express a greater preference for learning at a high level from distal others and a low level from proximal others than for learning at a low level from distal others and a high level from proximal others.

In all of our studies, we used dimensions of construal level that have been previously shown to influence and be influenced by perceptions of psychological distance—global versus local features in Studies 1 and 2 (Liberman & Förster, 2009; Smith & Trope, 2006; Wakslak & Trope, 2009), payoff versus probability in a gambling context in Study 3 (Sagristano, Trope, & Liberman, 2002), traits versus behaviors in Study 4 (Nussbaum et al., 2003; Rim et al., 2009); and a focus on why versus how to adopt a behavior in Studies 5 and 6 (Freitas, Gollwitzer, & Trope, 2004; Liberman & Trope, 1998). Through the use of several diverse paradigms, we pair these various dimensions of construal level with different operationalizations of psychological distance to demonstrate a general link between level of learning and psychological distance to learning models.

## Study 1

In this study, we sought to test the implications of our assertion that the traversing of psychological distance is inherent to social learning. To do so, this study investigates the difference between learning from one's own experience and learning from a source outside of the self (i.e., another person). This distinction between learning from me versus not-me represents the most elemental form of social distance. In terms of social distance, the self represents a zero point at which there is no psychological distance; psychological distance is created with the introduction of another person who exists outside of the self (Lu, Xie, & Xu, 2013; Polman & Emich, 2011). Thus, social learning necessitates the transcendence of one's own immediate egocentric experience in order to traverse the psychological distance between the self and another person in a way learning based on direct experience does not. Because the source of learning in social learning is more distant than the source in direct experience learning, we propose that people will tend to learn at a higher level when they learn socially than when they learn through direct experience. As a result, we expect that when presented with new stimuli related to what has been learned, people who learned socially will apply higher level aspects of the learned information to the new stimuli than people who learned through direct experience.

To test this idea, we presented participants with a categorization task with the objective of correctly classifying a series of novel shapes into two categories. The categorization task was comprised of two parts: a learning phase and a test phase. The learning phase was designed to create ambiguity as to whether the categorization scheme was based on the high- or the low-level features of the shapes. We manipulated whether participants learned the categorization scheme through direct experience or through observing another participant's responses in the learning phase. During the testing phase of the experiment, participants were presented with novel shapes that could be categorized differently depending on whether participants had learned the categorization scheme at a higher or a lower level. How participants categorized these shapes served as an indication of the level at which they had learned the overall scheme. We expected that participants who learned socially would learn at a higher level and thus apply the higher level aspects of the categorization scheme to novel shapes to a greater extent than participants who learned through direct experience.

### Method

**Participants.** Sixty-seven undergraduates at New York University participated in this study as part of a course requirement.[1] Participants were randomly assigned to either the social learning ($n = 34$) or the direct experience condition ($n = 33$).

**Procedure.** Participants were brought into the lab to complete a study about learning. They were told that their goal in the experiment was to correctly classify shapes into two categories. The experiment was divided into two parts: a learning phase and a test phase. The first part of the experiment was the learning phase, during which participants were exposed to a series of shapes that were to be categorized into two groups.

The shapes used in this study were adapted from Kimchi and Palmer (1982). They varied in size and each shape had two defining features, its local elements and its global configuration (see Figure 1 for examples of the shapes used). These features correspond to perceptual levels of construal where a low-level construal focuses on the local components of the object and a high-level construal focuses on the global configuration (Liberman & Förster, 2009; see also Gasper & Clore, 2002; Huntsinger, Clore, & Bar-Anan, 2010). In the learning phase, participants saw only two types of shapes: global squares that were comprised of local triangles (i.e., the global configuration of the shape was a square and the local components were triangles) and global triangles that were comprised of local squares (i.e., the global configuration of the shape was a triangle and the local components were squares).

We structured the two categories so that correctly classifying the shapes during the learning phase required placing global squares made up of local triangles into Group A and placing global triangles made up of local squares into Group B (see left panel of Figure 1). This categorization scheme was intentionally designed to create ambiguity as to what aspect of the shape defined the separate groups. For example, it was unclear whether a large square made up of local triangles belonged in category A because its global configuration was a square or because its local components were triangles. Hence, the high and low-level aspects of the learning task were confounded during the learning phase.

The learning phase differed depending on condition assignment. Participants in the direct experience condition were told that they were going to be presented with shapes one at a time to categorize into either Group A or Group B. Each trial displayed a shape and the letters "A" and "B" below the shape on the screen. Participants were told to make their categorizations by pressing either "a" key for Group A or the "b" key for Group B. After participants made their selection the screen continued to display the presented shape while a circle appeared around the letter corresponding to the group that the participant selected with a message that said whether or not the participant's classification was correct. Participants in the direct experience condition completed 18 such trials and were presented with feedback following each trial.

Participants in the social learning condition were explicitly told that they would be learning from another participant. They were further instructed that this meant that during the first part of the experiment they would watch the screen of a previous participant completing the learning phase of the experiment. They were told that their goal was to learn how to categorize the objects by watching the screen of this other participant. Participants were instructed that for each trial they would see the participant that they were observing being presented with a shape to categorize into Group A or Group B. Below the shape the letters "A" and "B" were displayed. Participants were then told that when the person

[1] Due to an oversight, we did not collect demographic information on our participants in Studies 1, 2, and 4.

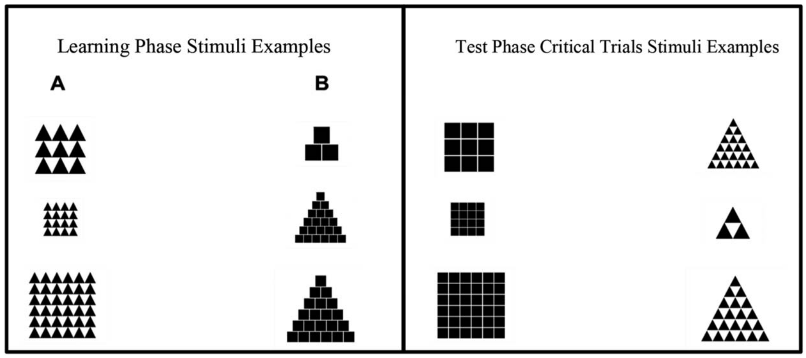


*Figure 1.* Examples of the stimuli used in the learning phase (left panel) and the test phase (right panel) of Studies 1 and 2. The left panel also depicts the categorization scheme employed during the learning phase where the global squares made up of local triangles belong to Group A, and global triangles made up of local squares belong to Group B. The right panel shows examples of the stimuli that were used during the critical trials of the test phase of the experiment.



they were observing made a selection, a circle would appear indicating which group they placed the object into along with a message that indicated whether they had made a correct or incorrect categorization.

Each participant in the social learning condition was matched to a participant in the direct experience condition so that for each participant in the social learning condition there was a participant in the direct experience condition that was exposed to the exact same learning sequence. The yoking was accomplished by recording the responses of participants in the direct experience condition (including RTs) and creating an input file (using DirectRT; Jarvis, 2012) based on the responses of the participant in the direct experience condition. Doing this allowed us to present identical information in an identical manner to the participant in the social learning condition. The only difference was whether the participants learned through generating their own responses, or whether they learned by observation through watching another person generate responses and receive feedback.

Following the learning phase, participants proceeded to the test phase where they were asked to apply what they had learned from the learning phase to categorize a series of novel test shapes. Participants were presented with objects one at a time and told that their task was to classify each object into one of the two categories as quickly and accurately as possible. In this test phase, they did not receive any feedback regarding their categorizations. There were two types of test shapes: global squares that were comprised of local squares and global triangles that were comprised of local triangles (see right panel of Figure 1).

These test shapes could be categorized into the two groups learned in the first part of the study on the basis of either the global features of the shape or on the basis of the local features of the shape. That is, participants could group the test shapes into the two categories either by matching the global configuration of the test shape with the global configuration of the original learning shape, or by matching the local components of the test shape with the local components of the original learning shape. For instance, grouping a global triangle made up of local triangles into Group A (which contained global squares made up of local triangles) would be an example of matching based on local components of the shapes. Grouping a global triangle made up of local triangles into Group B (which contained global triangles made up of local squares) would be an example of matching based on global configuration.

In the test phase, participants were presented with 98 trials. The first 8 trials were practice trials using the same stimuli as in part one. Of the remaining 90 trials, half served as attention checks as they were the same stimuli used during the learning phase of the experiment (i.e., global triangles made up of local squares and global squares made up of local triangles). The remaining 45 trials were our critical trials as they were novel test shapes that the participant had not seen before. Half of these shapes were global triangles made up of local triangles, while the other half were global squares made up of local squares. As with all the shapes in the learning phase, participants had to categorize these into either category A or category B.

To assess whether participants were learning at a high level or low level, we measured whether participants grouped shapes in the critical trials based on their global shape (i.e., the high-level features) or on their local components (i.e., the low-level features). From this, we calculated the percentage of critical trials where the participant categorized the shape on the basis of its global configuration (i.e., high-level features).

## Results

We excluded two participants for failing to classify over 80% of the attention check trials correctly. Inspection of the distribution of the dependent measure revealed a severely bimodal distribution for percentage of critical trials classified on the basis of the shape's high-level features.[2] Due to the bimodal nature of the distribution

[2] Across both Studies 1 and 2, all but two participants either grouped more than 80% or less than 20% of the novel test shapes on the basis of their global features. This shows that participants tended to categorize the test shapes almost completely either on the basis of their high-level features or on the basis of their low-level features. This makes theoretical sense as it demonstrates a marked amount of stability in participants' categorizations. From the perspective of the current studies, it suggests that participants formed a clear representation of the two groups and that this representation is stable in regards to what aspects of the shapes are the defining characteristics for each group.

of the data, we split participants based on whether they classified over 80% or under 20% of the test shapes based on their global features. This created a binary variable of whether the participant made the vast majority of their categorizations based on the global features of the stimulus or on the local features of the stimulus. We excluded from the analysis two additional participants who failed to categorize either over 80% or under 20% of the test shapes based on their global features because it was unclear that they were categorizing in a consistent manner. We were left with a final sample of 63 participants. Whether a person tended to make global (or high level) categorizations or not constituted the dependent measure used in our analysis. Conceptually, we consider this variable to be an indication of whether the participant learned the categorization scheme on the basis of its high-level or its low-level features.

Our analysis supported our main prediction by showing that a greater percentage of participants in the social learning condition (42%) categorized the novel shapes according to their high-level, global features than did participants in the direct experience condition (19%), $\chi^2(1) = 4.02$, $p = .05$ (see left panel of Figure 2).[3] This demonstrates that participants in the social learning condition were more likely to apply the higher level aspects of the categorization scheme to novel stimuli than participants in the direct experience condition.

## Discussion

The results of this study provide evidence for the idea that given the same learning information, people tend to learn it at a higher level when it is learned socially than when it is learned through direct experience. We argue that this is because social learning involves learning from a more distant source than learning based on one's own direct experience. Overall, study supports the idea, put forth by Bandura (1977), that social learning is rooted in symbolic activity, or, in our terms, in the capacity for high-level thought.

# Study 2

In Study 1, we demonstrated that social learning leads to higher level learning than does learning based on direct experience, presumably because social learning involves traversing the most basic psychological distance of moving beyond the ego. The purpose of Study 2 is to expand this finding and explore, within social learning, how variations in the psychological distance to others impacts subsequent behavior. We argue that given the same learning content, people will tend to construe that content at a higher level if it is modeled by a distant source than if it is modeled by a nearby source. This differential construal should lead to differential learning, which should then be apparent in subsequent behavior and performance of the learned content.

In Study 2, participants were again presented with a categorization task with the objective of correctly classifying novel shapes. The task in this study was similar to that of Study 1 except that in this task, all participants learned the categorization scheme socially and we manipulated whether participants learned from a near or distant model. Psychological distance was manipulated by describing the model as either a member of participants' ingroup or of their outgroup, which is an example of social distance (Bar-Anan, Liberman, & Trope, 2006). The categorization scheme was the same as Study 1, so that it was ambiguous whether the categories were defined by their global properties or their local properties. In a testing phase, participants were again forced to make a categorization based either on the global high-level or the local low-level aspects of a series of novel shapes. We predicted that participants who learned from a distant model would be more likely than participants who learned from a near model to learn and emulate the model's categorization scheme based on the high-level features of the shapes.

## Method

**Participants.** Fifty-four undergraduates at New York University participated in this study as part of a course requirement. Participants were randomly assigned to either the near model ($n = 29$) or the distant model condition ($n = 25$).

**Procedure.** Participants were brought into the lab to complete a study about learning. They were told that the goal in the experiment was to correctly classify objects into two categories. We informed participants that in order to help them with this task, they would first see how another student classified objects into two categories. Participants were then introduced to a model who was either psychologically close or psychologically distant from themselves. In the near condition, participants were told that the model was another psychology student at the same university as themselves (New York University). In the distant condition, participants were told that the model was a psychology student at a rival university across town (Columbia). By telling participants that they would be seeing another student perform the task, we provided them with an ostensible model from whom to learn the categories (in reality, there was no other student).

Following introduction to the model, participants proceeded to the categorization portion of the experiment. As in Study 1, the categorization task was divided up into two parts: a learning phase and a test phase. In the learning phase, participants observed the model categorize the same set of Kimchi-Palmer shapes as used in Study 1: global squares made up of local triangles and global triangles made up of local squares. They were given the explicit goal of learning as much as they could from the model, as they would have to correctly classify shapes into the two categories themselves during the test phase of the experiment. The model always categorized the global squares made up of local triangles into Group A and global triangles made up of local squares into

[3] Despite the matched nature of our design, we elected to analyze the data treating each observation independently. From a theoretical standpoint, we do not expect participants' responses in the direct experience condition to be related to their yoked counterparts in the social learning condition. The reason for this is that the categorization scheme is relatively simple and our dependent measure is the level at which participants learned. We did not expect the specific learning sequence to exert much influence on the level of learning. To confirm our reasoning, we ran a chi-square analysis to check for clustering by looking at whether a participant's responses in the direct experience condition were related to his or her yoked counterpart in the social learning condition. With this analysis we did not detect a significant effect, $\chi^2(1) = .00$, $p = .96$, suggesting that the level at which a participant in the direct experience condition learned the categorization scheme was unrelated to the level at which his or her yoked counterpart learned the categorization scheme. As such, we proceeded with the analysis treating observations as independent.

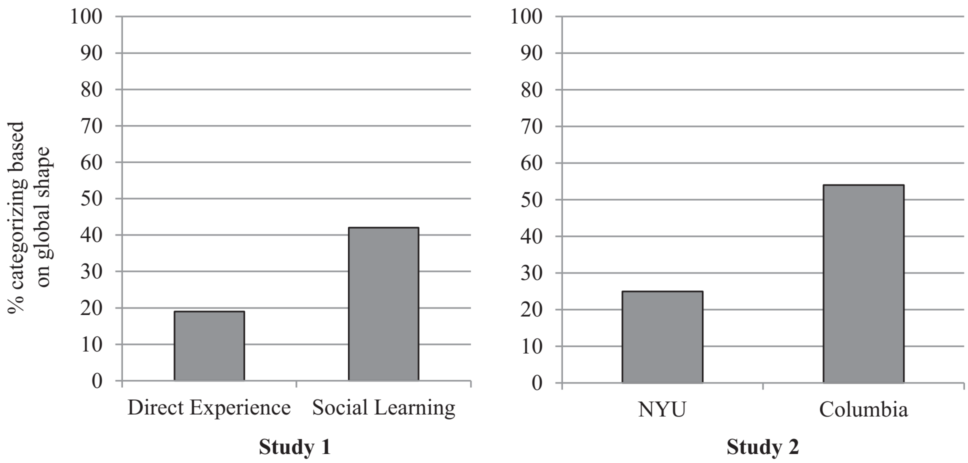


*Figure 2.* Percent of participants within each condition learning the categorization scheme at a high level based on its global features. Left panel (Study 1): A higher percentage of participants learned based on the global features of the shape when the categorization scheme was learned socially than when the categorization scheme was learned through direct experience. Right panel (Study 2): A higher percentage of participants learned based on the global features of the shape when the categorization scheme was learned from a Columbia student (i.e., a psychologically distant model) than when learning from a New York University student (i.e., a psychologically near model).

Group B (see left panel of Figure 1). In total, participants observed the model make 18 such classifications.

At the end of the learning phase of the experiment, participants were shown a summary screen with examples of objects that the model placed into each category. The screen depicted two columns: A and B. In column A, there were three shapes, all of which were global squares made up of local triangles. The three shapes in column B were all global triangles made up of local squares. The purpose of this screen was to make clear to participants the categorization scheme employed by the model.

Following the learning phase, participants proceeded to the test phase, which was the exact same as Study 1. Participants were asked to apply what they had learned from the model to categorize a series of novel test shapes as quickly and accurately as possible. As in Study 1, there were two types of test shapes: global squares that were comprised of local squares and global triangles that were comprised of local triangles (see right panel of Figure 1). Again, these test shapes could be categorized into the two groups defined by the model on the basis of either the global features of the shape or on the basis of the local features of the shape. Participants completed a total of 188 trials during the test phase of the experiment. The first eight trials were practice trials using the same stimuli as in the learning phase. Of the remaining 180 trials, half served as attention checks, and the remaining 90 trials were our critical trials that displayed the novel test shapes that the participant had not seen before.

To assess whether participants were learning the model's behavior at a high or low level, we measured whether participants grouped shapes in the critical trials based on their global shape (i.e., the high-level features) or on their local components (i.e., the low-level features). Our final measure was the percentage of critical trials where the participant categorized the shape on the basis of its global configuration (i.e., high-level features).

## Results

We excluded two participants for failing to classify over 80% of the attention check trials correctly, leaving a final sample of 52 participants. As in Study 1, inspection of the distribution of the dependent measure revealed a severely bimodal distribution for percentage of critical trials classified on the basis of the shape's high-level features. Due to the bimodal nature of the distribution of the data, we split participants based on whether they classified over 80% or under 20% of the test shapes based on their global features to create a binary variable of whether the participant made the vast majority of their categorizations based on the global features of the stimulus or on the local features of the stimulus. Whether a person tended to make global (or high level) categorizations or not constituted the dependent measure used in our analysis.

As shown in Figure 2 (right panel), our analysis supported our main prediction by showing that a greater percentage of participants in the distant condition (54%) categorized the novel shapes according to their high-level, global features than did participants in the near condition (25%) $\chi^2(1) = 4.65$, $p = .03$.

## Discussion

The results of this study support the hypothesis that when learning from psychologically distant models, people are more likely to learn at a high level than when learning from psychologically near models. Presumably, this is the case because when observing a distant model's behavior, people construe the same action at a higher level than when observing a near model. As a result, a distant model's behaviors will be learned and internalized at a higher level and hence emulated and reproduced in line with this higher level representation.

Taken together, Studies 1 and 2 provide evidence that learning from more distant sources leads to higher level learning and application of the learned information. An alternative explanation for these findings, however, may be that presenting participants with more distant models primed them to a high-level mindset, which then led to a focus on the global features in the categorization task. We do not believe that our results can be explained solely by a simple priming account without invoking at least minimal learning processes. Specifically, within both of these studies, the task was presented to participants as a task of learning. Moreover, the task was constrained to be one of learning. Failure to learn would have resulted in an inability to complete the categorization task correctly (the only four participants who failed to learn were filtered out of the analyses). So, while priming a high-level mindset would lead to a focus on the global features of the shapes, learning would still be required to correctly distinguish which global configurations belong in which category. While we do not believe that a simple priming explanation can account for our findings, this potential alternative explanation warrants direct testing. Thus, in Study 3, we sought to directly rule out this alternative explanation.

## Study 3

The purpose of Study 3 was threefold. First, as mentioned earlier, we sought to rule out a simple priming explanation of our results. In the research presented here, we argue that psychological distance between an observer and a model impacts subsequent behavior through learning. A simple priming explanation would predict that the mere introduction of psychological distance between an observer and a target would induce a higher or lower level mindset, which would then carry over to any subsequent decision. In contrast, a social learning account would predict that how psychological distance between an observer and a model impacts behavior will depend on the observer's motivations regarding what they have learned and how to apply it. This prediction has its basis in social learning theory, which proposes that a primary determinant of whether modeled events will impact behavior is whether people are motivated to enact what they learned (Bandura, 1977). So, for example, if people are motivated to bring about the same outcomes or reproduce the same behavior as a model, we would predict that they would emulate the model at a higher level as the model becomes more distant. However, if people were not motivated to reproduce the model's behavior, we would not expect psychological distance to influence emulation behaviors. In this study, we focus on this moderator of motivation to enact what has been learned to help distinguish behavior produced by simple priming from behavior that is the result of principled learning.

Second, we wanted to demonstrate the effect of psychological distance on social learning along another dimension of psychological distance by varying the hypotheticality of the source of learning. Across participants, we manipulated whether the model was psychologically near or distant by describing the model as either a real past participant or a fictional character made up for that study. In terms of hypotheticality, a fictional character is more psychologically distal than is a real person (Bar-Anan, Liberman, & Trope, 2006).

Finally, we sought to generalize the findings from Studies 1 and 2 by using a different paradigm. Hence, in the current study, we explored social learning in the domain of gambling decisions. The gambles used here were defined by two features: the amount of the payoff and the probability of winning that payoff. Within a gambling context, the payoff is a high-level feature as it defines the desirability of the outcome while the probability of winning is a lower level feature as it refers to the likelihood (i.e., feasibility) of obtaining the desired or undesired outcome (Sagristano, Trope, & Liberman, 2002).

In the actual study, participants were exposed to either the real or fictional model who they observed make a series of gambling decisions. All of the model's decisions were ambiguous as to whether they were based on the payoffs or the probabilities of the gambles. As in the previous studies, this confounded the high and low-level aspects of the model's behavior. Following observation of the model's behavior, participants were faced with their own set of gambling decisions that teased apart the high and low-level aspects of the gambles by posing tradeoffs between the payoff and the probability of each gamble. Here, we manipulated participants' motivation to enact behavior that they learned from observing the model by explicitly instructing participants either to emulate a model's decision making or make decisions for themselves. We hypothesized that when participants were emulating the model, they would make decisions more in line with the payoffs of the gambles when the model was fictional (i.e., distant) but would make decisions more in line with the probabilities of the gambles when the model was real (i.e., near). However, when participants were not emulating the model, we predicted that psychological distance would not impact behavior, and instead, participants would act on the basis of their own personal preferences.

### Method

**Participants and design.** Six hundred five participants (315 female; $M_{age}$ = 35.30, $SD$ = 12.78) were recruited online using Amazon's Mechanical Turk (MTurk; see Buhrmester, Kwang, & Gosling, 2011). This study employed a 2 (Distance to the Model: near vs. far) × 2 (Emulation Condition: control vs. emulate) between-subjects design ($n_{near/control}$ = 142, $n_{far/control}$ = 162, $n_{near/emulation}$ = 161, $n_{far/emulation}$ = 140).

**Procedure.**

***Psychological distance manipulation.*** Participants were recruited to complete a survey about people's perceptions of others and decision making. All participants were told that in the survey they would learn about one of two people: a real participant who had completed a similar study or about an imaginary participant that had been made up as a fictional character for that study. On the next screen, participants were, depending on condition, assigned to learn about either the real person or the imaginary participant. Participants in the near (*far*) condition received the following information:

> You have been assigned to learn about an actual past participant (*a fictional character*) named Gary. Gary reported that he (*Imagine that Gary is a man who*) often participates in MTurk studies in his free time. Gary (*Imagine that Gary*) recently participated in a study similar to the one that you are participating in now. Throughout this experiment we will present you with information about how this past participant (*fictional character*), Gary, responded (*would respond*) to various questions and tasks in this survey.

Participants were then instructed to take a moment to think about Gary and really focus on the fact that he is “another actual MTurk participant” (near condition) or “a fictional MTurk participant” (far condition).

Following this introduction to the model, participants were informed that in this study they would be presented with four gambling decisions selected at random from a larger set. In each decision, participants had to make a choice between one of two gambles. They were told (near condition), or asked to imagine (far condition), that the model, Gary, had participated in a survey where he had to respond to questions from the same set and had received a bonus payment that was proportional to how much he won from his gambling decisions. We told participants that they would be shown an example of how Gary responded (near condition), or would respond (far condition), to two of these questions.

***Motivation to emulate manipulation.*** In the emulate condition participants were instructed to pay attention to Gary’s choices and were explicitly told that they were supposed to learn from Gary because they would be asked later to emulate his decision making style. In the control condition, participants were instead told that they would be shown the Gary’s responses to give them an idea of the types of questions they would see and were additionally instructed to pay attention to Gary’s choices because they would later be asked questions related to his decision making style.

The model’s choices were then presented to participants on two consecutive screens. On each screen participants saw the model choose one of two gambles. The examples were presented as two boxes describing the payoffs and probabilities of the two separate gambles respectively. In both examples, participants saw that the model had chosen the gamble that had both a higher payoff and a higher probability of winning (see left panel of Figure 3). Thus, it was ambiguous whether his decisions were based on the gamble’s payoffs or the probability of winning.

Following the observation of the model’s decisions, participants were presented with four decisions of their own and had to decide in each which one of two gambles they would choose. In the emulate condition participants were told to indicate which gamble they would choose if they were emulating the model. In the control condition participants were instructed to indicate which gamble they would choose if the choice was presented to them. Of the four decisions, three were critical trials where one of the gambles had a better payoff but a worse probability of winning while the other gambles had a worse payoff but a better probability of winning (see right panel of Figure 3). In these critical trials the expected value of the two gambles was matched so that participants’ choice was constrained to be based on either only the payoff or only the probability of winning.

***Dependent measure.*** As our dependent variable, we measured whether on the critical trials participants selected the gamble with the better payoff but worse probability of winning (i.e., the superior high-level feature) or the gamble with the better probability of winning but worse payoff (i.e., the superior low-level feature). Our final measure was the number of decisions (out of three) on which the participant chose the gamble that had the better payoff (i.e., the gamble with the superior high-level feature). Finally, participants were asked several manipulation check and attention check questions. As manipulation checks participants were asked to indicate on a 7-point scale how real or fictional did the person they read about feel to them (1 = *very fictional*; 7 = *very real*) and to indicate to what extent they emulated the model in their decision making (1 = *not at all*; 7 = *completely*). As attention checks participants were asked to report the name of the person they were intro-

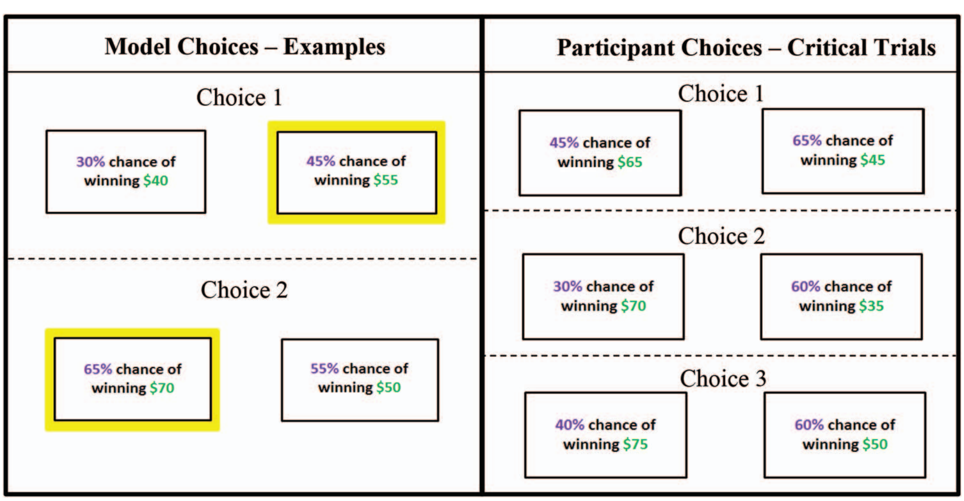


*Figure 3.* Examples of the stimuli used in Study 3. The left panel shows the two decisions that participants observed the model make. The model’s choice is highlighted in yellow. In both decisions, the model selected the higher payoff/higher probability option. The right panel shows the decisions that participants saw. They were asked to respond to each choice either as if they were emulating model or as if they were choosing for themselves. The expected payout of the two gambles was matched within each decision but one option had a higher payoff, while the other had a higher probability of winning. See the online article for the color version of this figure.

duced to and asked whether they were assigned to learn about a real or a fictional person.

## Results

We excluded 29 participants for failing either one of the two attention checks, leaving a final sample of 576 participants. As a check on our manipulation of psychological distance to the model, we conducted an independent samples *t* test to confirm that participants in the near condition felt that the model was more real ($M = 4.48$, $SD = 1.70$) than participants in the far condition ($M = 2.93$, $SD = 1.76$), $t(574) = 10.77$, $p < .001$, $d = .90$. As a check on our manipulation of emulation, we conducted a second independent samples *t* test to confirm that participants in the emulate condition actually did emulate the model ($M = 6.09$, $SD = 1.03$) more than participants in the control condition ($M = 3.74$, $SD = 1.94$), $t(574) = 18.10$, $p < .001$, $d = 1.51$.

We hypothesized that people who were emulating the model would choose the better payoff/lower probability of winning gamble (i.e., the option that had superior high-level features) more often when the model was distant than when the model was near, but that there would be no such effect of psychological distance to the model when participants were not emulating the model's behavior. To test this, we conducted a 2 (Distance to the Model: near vs. far) × 2 (Learning Condition: control vs. emulate) ANOVA on the number of decisions on which participants selected the higher payoff/lower probability gamble. While, we did not detect a main effect of psychological distance to the model, we did find a significant main effect of learning condition such that people chose the gamble with a better payoff more often when emulating the model's behavior ($M = .68$, $SD = 1.08$) than when choosing for themselves ($M = .43$, $SD = .82$), $F(1, 572) = 9.93$, $p < .01$, $\eta_p^2 = .02$. More importantly, as predicted, this main effect was qualified by a significant two way interaction, $F(1, 572) = 7.23$, $p < .01$, $\eta_p^2 = .01$ (see Figure 4).

To explore our specific predictions, we broke down this interaction by testing the simple effect of psychological distance to the model for both the emulate condition and the control condition. Our analysis shows, as predicted, that when participants were emulating the model, they chose the better payoff/worse probability gamble more often when the model was fictional (i.e., distant; $M = .81$, $SD = 1.14$) than when the model was real (i.e., near; $M = .56$, $SD = 1.01$), $F(1, 572) = 4.84$, $p = .03$, $\eta_p^2 = .01$. In the control condition, however, this pattern did not hold and we did not find evidence for an effect of psychological distance on participants' choices, $F(1, 572) = 2.57$, $p = .11$, $\eta_p^2 < .01$.

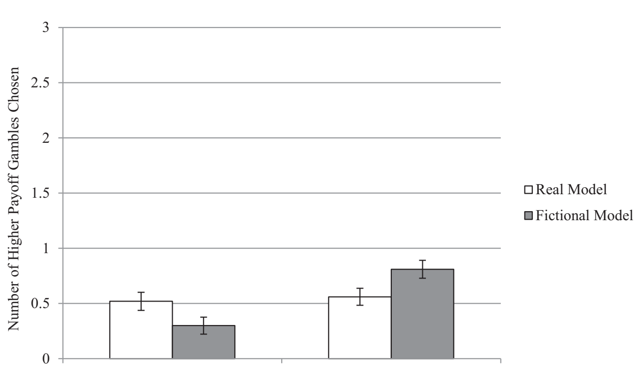


*Figure 4.* Participants' decisions between a higher payoff/lower probability gamble and a lower payoff/higher probability gamble. Prior to these decision participants observed a model choose a higher payoff/higher probability gamble in two consecutive choices. Participants then made choices on the basis of their own preferences or by emulating the model. Higher numbers indicate choosing the higher payoff/lower probability option more times. Error bars represent one standard error above and below the mean (Study 3).

## Discussion

The results of this study provide evidence for the effect of psychological distance impacting learning and behavior in a way that goes beyond mere priming. Overall, we found that when people are motivated to act on what they learned from the model (i.e., are motivated to emulate the model), increased distance to the model results in higher level emulation. That fact that the psychological distance between observers and models did not produce a significant effect in the control condition suggests that, at least in the context of the current study, our findings cannot be attributed solely to a simple priming effect. However, this is not to say that the psychological distance of a model cannot prime construal levels and impact behavior in other ways. Rather, the purpose of this set of studies is just to demonstrate that psychological distance has a greater impact on level of learning when people are motivated to learn and to apply what they have learned from observing others.

Taken together, Studies 1–3 provide evidence in support of the idea that when learning from psychologically distant others, people tend to learn at a higher level than when learning from psychologically proximal others. In each of the three studies we found that when participants enacted what they learned from a given source to novel stimuli (new shapes in Studies 1 and 2, and new gambles in Study 3), they applied the higher level aspects of what they had learned to a greater extent when the source was distant than when the source was near. We argue that this is the case because high-level learning allows people to extract those aspects of a distant model's behavior that are likely to remain stable and applicable to their own potentially very different context. In the remaining studies we investigate the opposite direction of influence and explore how level of learning influences the range of others that people are willing to consider as potential sources of learning.

# Study 4

In this study, we sought to explore whether people will select models differently depending on whether they are seeking to learn and emulate high- or low-level aspects of another person. We explored this by asking people who they would choose to learn from if they were trying to learn and emulate either a specific behavior, or a general trait. Behaviors are low-level constructs as they are singular events that are situationally bound, while traits are high-level constructs as they imply temporal stability and consistency across situations (Nussbaum et al., 2003; Rim, Uleman, & Trope, 2009). We hypothesized that people would favor closer others when selecting a model from whom they would learn about behaviors, but will expand their mental horizons to include more distant others in selecting a model from whom they would learn about general traits.

Importantly, we do not predict that high-level learning *necessarily* leads people to select distant others, but rather we argue that construing the learning content at a higher level expands people's mental horizons to enable learning from *both near and distant targets*. Thus, we expected that while people seeking to learn about traits will *on average* select a more distant model to learn from than people seeking to learn about behaviors, these aggregate differences will be the result of an underlying pattern wherein people learning about traits will choose near *and* distant models to a relatively equal extent, while people learning about behaviors will be more biased by proximity to prefer near others.

## Method

**Participants and design.** One hundred seventy-one volunteers from New York City, New York's, Washington Square Park and surrounding areas were approached and asked to fill out a short survey. Participants were randomly assigned to either the high-level ($n = 85$) or low-level condition ($n = 86$).

**Procedure.** The survey began with the following instructions: "Please think of ten people in your life and list them (just initials) in order of how close you feel to them, from closest to least close." Participants listed the 10 people in spaces provided below the instructions. Depending on condition assignment, participants were asked to think of and list either one common specific behavior or one common general trait that they considered positive. Finally, participants were asked the following question: "If you were to emulate one person from the list above in terms of the (behavior/trait) you listed, who would it be?" In the high-level condition, participants were asked who they would emulate if they were to select a model for the general trait that they listed. In the low-level condition, participants were asked who they would emulate if they were to select a model for the specific behavior that they listed. Participants responded by writing the initials of one of the 10 people they listed for the first question.

The dependent measure was the social distance from the participant to the selected model. The measure itself was the location of the person selected as the model on the participant's list of the 10 people. For example, if a person indicated that they would emulate the person who was the third closest to them they would receive a score of three, whereas if participants indicated that they would emulate the person who was the eighth closest to them, they would receive a score of eight. Higher numbers on this measure indicate the selection of a more socially distant model.

## Results

Seventeen participants were excluded from the analysis for failing to complete the survey or otherwise follow instructions leaving a final sample of 154 participants. We hypothesized that, on average, people would select a more socially distant model when considering emulating high-level characteristics (traits) than when considering emulating low-level characteristics (behaviors; see Appendix for table of the traits/behaviors participants listed). We ran an independent samples *t* test with condition (trait vs. behavior) predicting the ranked closeness of the selected model. Our analysis supported the prediction by showing that, on average, participants reported that they would select a more distant (lower ranked) model when they considered emulating a trait ($M = 4.72$, $SD = 2.79$) than when they considered emulating a specific behavior ($M = 3.61$, $SD = 2.53$), $t(152) = 2.59$, $p = .01$, $d = .42$.

We additionally hypothesized that these average differences would reflect an underlying pattern where participants considering learning at a low level would favor close models, but participants considering learning at a high level would select distant and close models to a more equal extent. To test this, we ran a logistic regression of condition assignment (behavior coded as 1, trait coded as 0) on a dichotomous measure of whether participants reported that they would select a close other (i.e., someone listed as the first through fifth closest person on the participant's list) or a distant other (i.e., someone listed as the sixth through tenth closest person) as a model for emulation. We coded selecting someone proximal (1–5 on the list) as 1 and someone distant (6–10 on the list) as 0.

Our analysis showed that participants in the low-level condition (those who thought about emulating behaviors) were more likely than participants in the high-level condition (those who thought about emulating traits) to report that they would select a close other as a model ($b = .82$, $SE = .35$, Wald $\chi^2 = 5.67$, $p = .02$). Specifically, the probability of selecting a close other over a distant other as a model in the low level, behavior condition was 74%.[4] However, in the high-level trait condition participants were more inclusive and selected near and distant others as models for emulation to a nearly equal extent. Specifically, the probability of selecting a close other over a distant other as a model in the high-level trait condition was 55% which was not significantly different than chance (i.e., 50%), as indicated by the nonsignificant intercept ($b = .21$, $SE = .23$, Wald $\chi^2 = .82$, $p = .37$).

## Discussion

The results of this study showed that people considering learning about a specific behavior reported that they would select a closer other as a model for learning than people considering learning about general traits. We additionally showed that while people considering learning low-level information (specific behaviors) said they would be more likely to select a near model than a distant model, people considering learning high-level information (general traits) were more expansive in their scope as they said they would select distant others as models for learning as often as they said they would select near models.

We propose that these results can be explained by the fact that high-level learning renders increased psychological distance to the model less of a hindrance to learning because high-level constructs (such as traits) are stable and applicable to learners at a greater psychological distance. In this way, high-level learning allows for a more expansive scope in selection of potential models. Low-level constructs (such as behaviors), on the other hand, are more likely to be impacted by circumstances and are more likely to be unstable across psychological distance, making them less likely to be learned from distant others. Hence, low-level learning leads to a

[4] This was significantly higher than chance, as confirmed by the significance of the intercept in a second logistic regression performed where the behavior condition was the reference group coded 0 and the trait condition coded 1; $b = 1.03$, $SE = .26$, Wald's $\chi^2 = 15.62$, $p < .01$.

more contractive scope in the selection of potential models for learning.

A potential limitation of this study is that it may be that the trait/behavior distinction is one that tends to vary with physical proximity. So, while it is easily possible to emulate traits of others without ever needing to directly observe them, imitating specific behaviors may be most easily learned through direct observation, which would necessitate proximity. Thus, it may simply be more practical to learn low-level constructs from near others than from distant others. Although this type of natural covariation between the abstraction level of a construct and its tie to a given situation is consistent with CLT, we wanted to demonstrate that level of construal will influence the range of others that people will consider learning from even when the ease, or practicality, of learning at each level does not vary directly with distance. Thus, the final two studies rely on the overgeneralization of this association between level and distance.

## Study 5

The aim of Study 5 was to demonstrate the effect of level of learning on the range of others that people will consider as potential sources in a situation where near and far models do not differ in terms of their knowledge or their ability to convey either high- or low-level information. Additionally, this study attempts to extend the findings of Study 4 by using temporal distance as yet another operationalization of psychological distance and by exploring a new domain of how people learn from others about health related issues. Within this health domain, we also investigate another aspect of construal level: the distinction between why an action is performed and how to perform it. In general, thinking about *why* corresponds to a high level of construal, as it focuses on the outcome of an action, which is its primary features. Thinking about *how* corresponds to a lower level of construal as it focuses on the process of obtaining an outcome and thus is secondary to the outcome of the action itself (Freitas, Gollwitzer, & Trope, 2004; Trope & Liberman, 2003; Vallacher & Wegner, 1989).

In this study, we measured participants' interest in learning either about how to or why it is important to include antioxidants in their diet, and whether this self-reported interest depended on whether they were told that they could learn about it from a recent or an older online article. We predicted that for participants presented with the article on how to get antioxidants, those who thought the article was more recent would express more interest in learning from it than participants who thought that it was older. For participants who were presented with the article about why antioxidants are important, in contrast, we predicted that those who thought that the article was older would be as interested in learning from the article as those who were told it was more recent.

Importantly, to ensure that participants did not perceive differences in the qualities of the articles as a function of their temporal distance, we explicitly told participants in all conditions that the article they would read provided accurate, understandable, and useful information and was among the best sources of information about antioxidants that our research team could find. This set of instructions was designed to eliminate the possibility that participants could perceive that the article written 2 months ago was less informative than the article written earlier that day or that it would provide more outdated, inaccurate, or unusable information regarding either how to get antioxidants or why they are important.

### Method

**Participants and design.** One hundred sixty-three participants (91 female; $M_{age}$ = 38.12, *SD* = 13.65) were recruited online using Amazon's MTurk. This study employed a 2 (Level of Content: high vs. low) × 2 (Distance to the Source: near vs. far) between-subjects design ($n_{high/near} = 42$, $n_{low/near} = 41$, $n_{high/far} = 40$, $n_{low/far} = 40$).

**Procedure.** This study was presented to participants at the end of an unrelated study. Participants were told that as a part of a new initiative in our lab to provide an opportunity for participants to learn useful information at the end of all of our studies, in the final section of the survey we would give them the opportunity to learn about some health information. They were then told that we had chosen to give them the opportunity to learn about antioxidants. Participants in the high-level condition were told that they would be given the opportunity to read an article about *why it is important* to get antioxidants in your diet. Participants in the low-level condition were told that they would be given the opportunity to read an article about *how to* properly incorporate antioxidants into their diet.

Participants were then told that in order to provide them with information about antioxidants, we had our research team spend the last week searching the Internet to find the best articles about antioxidants, and that from this, we selected the two best articles on why antioxidants are important (high-level condition) or on how to incorporate antioxidants into your diet (low-level condition). They were told that one of the articles was published earlier that day, while the other was published 2 months ago. We told participants that the two articles were selected because they were from reliable websites, written by experts, and provided accurate, understandable, and useful information regarding antioxidants. Participants were told that they had been assigned to read one of the two articles. In the near condition, participants were told that they had been assigned the article published earlier that day. In the far condition, participants were told that they had been assigned the article published 2 months ago.

As our dependent measure, we asked participants how interested they were in learning the given topic from the given source. The question was worded to match participants' condition assignment. For example, in the low level, near source condition, participants were asked how interested they were in learning about how to incorporate antioxidants into their diet from the article published earlier that day. Participants responded using a 7-point scale anchored with 1 = *not at all interested* and 7 = *extremely interested*. Finally, to remain faithful to our stated intent of providing them with the opportunity to learn, participants were presented with an article about antioxidants and were allowed to read it if they wanted to learn about antioxidants.

### Results

We hypothesized that when presented with the opportunity to learn low-level information, people given a near source would be more interested in learning from that source than people given a distant source, but that when learning high-level information, people given a near source and people given a distant source would express a more equal amount of interest in learning from that source. To test this, we conducted a 2 (Level of Content: low vs. high) × 2 (Distance to the Source: near vs. far) ANOVA on self-reported interest in learning from the given article. We did not find evidence for either a main effect of level of content or of distance to the source on self-reported interest in learning from the article. More importantly, however, we did find the predicted interaction between level of content and psychological distance to the source, $F(1, 159) = 4.90$, $p = .03$, $\eta_p^2 = .03$ (see Figure 5).

To explore our specific predictions, we broke down this interaction by testing the simple effect of distance to the article within each type of article. As predicted, when participants were given the opportunity to learn about how to get antioxidants, those who were told that the article was published earlier that day expressed more interest in learning from it ($M = 4.20$, $SD = 2.04$) than participants who were told that it was published 2 months ago ($M = 3.33$, $SD = 1.90$), $F(1, 159) = 3.76$, $p = .05$, $\eta_p^2 = .02$. When participants were given the opportunity to learn about why antioxidants are important, those told that the article was written earlier that day did not express more interest ($M = 3.60$, $SD = 2.18$) in learning from the article than participants who were told that it was written 2 months ago ($M = 4.13$, $SD = 1.94$), $F(1, 159) = 1.41$, $p = .24$, $\eta_p^2 = .01$.

## Discussion

We found that when considering learning about how to get antioxidants, participants who were presented with an article published earlier that day expressed more interest in learning from it than participants who were told that the article was published 2 months ago. When considering learning about why antioxidants are important, participants who were told the article was published earlier that day expressed equal amounts of interest in learning from the article as participants who were told it was published 2 months ago. Importantly, we found these results even when participants were explicitly assured that both sources were useful and informative. These results suggest that people overgeneralize the association between level of learning and psychological distance so that even when distant others are equally useful and valid sources of information, people engaged in low-level learning will still be more interested in learning from a proximal other, while people engaged in high-level learning will expand their mental horizons and be more interested in learning from distant others as well as near others.

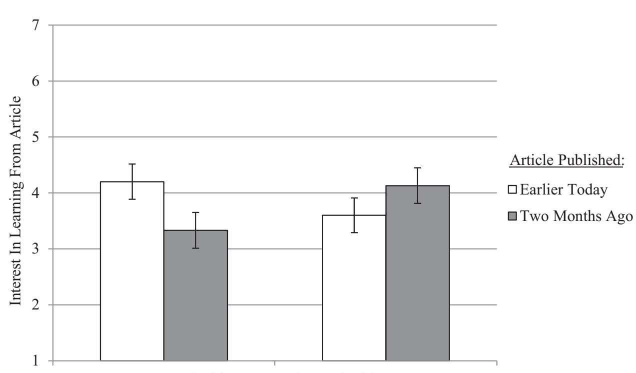


*Figure 5.* Expressed interest in learning about how to get antioxidants (low level) versus why antioxidants are important (high level) when the information is from an article published earlier that day (psychologically proximal source) or an article published 2 months ago (psychologically distant source). Higher numbers indicate greater interest in learning the given content from the given source. Error bars represent one standard error above and below the mean (Study 5).

# Study 6

In the sixth study, we sought to demonstrate the impact of level of learning on actual behavior and decisions of who to select as a model. Study 4 tested the impact of level of learning on hypothetical decisions of who to learn from and emulate, and Study 5 assessed participants' interest in learning from near and distant sources given a high- or low-level topic. In this study, we wanted to see if level of learning would impact from whom participants actually choose to learn. We also wanted to rule out the potential alternative explanation for Studies 4 and 5, that our effects are simply the result of our level manipulation priming associations with psychological distance, which then carries over to subsequent decisions. We propose instead that people's decisions of who to learn from are based on actual consideration of the learning content and level rather than mere carry over effects from priming.

To test this, we again presented participants with the opportunity to learn about antioxidants and health related information. Participants were told that they would learn both about how to get antioxidants and why they are important and that they would learn from a temporally near source and a temporally distant source. Thus, they had to learn about both types of information and from both sources but were given the choice of which source they wanted to learn which information from.

The advantage of this design is that by forcing participants to consider both high and low-level information and near and far targets simultaneously, it is unlikely that one construct or mindset got preferentially activated over another. A simple priming account would therefore be unable to make predictions regarding which option participants chose. In contrast, if participants' decisions are based on actual learning considerations, presenting high and low-level information together should not substantively change the effect of level of learning on selection of models. Based on our proposed learning account, we predicted that participants would choose to learn low-level information from a near source and high-level information from a distant source more often than they would choose to learn low-level information from a distant source and high-level information from a near source.

## Method

**Participants and design.** One-hundred sixty-one participants (86 female; $M_{age} = 34.93$, $SD = 12.18$) were recruited online using Amazon's MTurk.

**Procedure.** The procedure was similar to that of Study 5. Participants were told that the survey was about how people consume health related information. They were informed that they would have the opportunity to learn *both* about why antioxidants are important and how to incorporate antioxidants into their diet. They were told that they would learn this information from two articles that we had selected. The two articles were described the same way as in Study 5. They were given the names of the two articles and told that one of the articles was published earlier that day (i.e., was from a psychologically near other) and that the other was published 2 months ago (i.e., was from a more psychologically distant other). Which name was paired with which publishing date was counterbalanced across participants, as was the order in which the articles were presented. Participants were then told that in order to simplify things, we condensed the two articles and created excerpts from each that focused on how to incorporate antioxidants into their diet (lower level information) and on why it is important to incorporate antioxidants into their diet (higher level information). Whether the "how" excerpt or the "why" excerpt was mentioned first was also counterbalanced across participants.

Participants were told that they would see both articles, but that they would have the choice of which article they would like to read for which topic. So, participants could either read about how to get antioxidants from the article published earlier that day and about why antioxidants are important from the article published 2 months ago, *or* they could read about how to get antioxidants from the article published 2 months ago and why antioxidants are important from the article published earlier that day. Once again, the order of the presentation of these options was counterbalanced across participants. Our measure of interest was whether participants chose the former option or the latter. After participants made their selection, they were given articles to read that corresponded to the choice they had made.

### Results

There were no effects of article name or of order of presentation ($ps > .30$). We hypothesized that people would be more likely to choose to learn low-level information from a near source and high-level information from a more distant source than to learn low-level information from a far source and high-level information from a near source. The design of our survey constrained participants' choice to either be consistent with this prediction or inconsistent with it. A binomial test supported our hypothesis, showing that participants chose to learn about how to get antioxidants from the article published earlier that day and about why antioxidants are important from the article published 2 months ago at a level that is marginally above chance (58%, $p = .06$).

### Discussion

The strength of this study is that it captures actual behavior in participants' choices of who to learn what type of information from. We found that people were more likely to choose to read about how to get antioxidants from the more recent source than from the more distant source (in the current design this is the same as being more likely to choose to read about why antioxidants are important from the more distant source than the more recent source). This effect was found even when participants considered learning at both levels and from both near and far sources. This supports the interpretation that our results are driven by consideration of which model is best to learn each type of information from rather than by simple priming of associations between level and distance. Overall then, these results support the general claim that for low-level learning, people are more likely to select proximal others as sources for learning, but that high-level learning leads to an increased likelihood of selecting more distant others as sources for learning.

## General Discussion

In the research presented above we investigated the processes involved in social learning across psychological distance. Studies 1 through 3 explored the impact of learning from distant versus near sources in terms of how it is construed by the learner and subsequently applied to her own context and to new targets. In Study 1, we showed that when people learn a new task socially through observation, they tend to learn the task at a higher more abstract level than when they learn the task through direct experience. Study 2 showed that even within social learning, when people learn a new categorization scheme from a distant model, they tend to learn and emulate it at a higher level than when they learn it from a near model. Study 3 extended this by showing that psychological distance to a model for learning only affected emulation behaviors when people were actually motivated to emulate the model. In this study, people who were motivated to emulate a distant model in a gambling context did so by emulating at a higher level (copying the model's preference for gambles with good payouts) to a greater extent than people motivated to emulate a near model.

In Studies 4 through 6, we investigated the other direction of influence and explored the factors that expand our mental horizons to promote learning from more distant as opposed to being restricted to learning from near others. Study 4 showed that when people imagine wanting to learn a specific behavior (a low-level feature), they say that they would select more proximal models, but that when people imagine wanting to learn and emulate a general trait (a high-level aspect) of another person, they expand the scope of others that they would consider learning from and report that they would select near and distant models to a relatively equal extent. Study 5 showed that people express greater interest in learning about how to improve health through incorporating antioxidants into their diet (low-level learning) from a near than from a distant source, but that they express an approximately equal interest in learning about why antioxidants improve health (high-level learning) from a distant source as from a near source. Finally, in Study 6, we showed behaviorally that people actually do tend to choose a near model to learn low-level information from and a more distant model to learn higher level information from.

### A Functional Approach to Construal Levels

Our theorizing and interpretation of these results are grounded in a functional approach to construal levels and social learning. In essence we argue that the human capacity for high-level abstract thought allows us to transcend the pull of the ego-centric here-and-now and learn from others beyond the self, and that increasingly high-level construals allow us to learn from increasingly distant others.

When seeking out low-level information or when construing a task at a low level, it makes sense to look to those who are close and within one's immediate surroundings. Low-level construals are by definition highly contextualized (Trope & Liberman, 2010) and therefore would be best learned from proximal others who inhabit psychological worlds that are similar to one's own. In contrast, when seeking out high-level information or when construing a task at a high level, it is more functional to expand the scope of others from whom one is willing to learn. High-level construals are stable decontextualized representations that focus on the central aspects of a target that remain unchanged across its various instantiations. When learning at a high level, the immediate environment and the context in which another is observed is less relevant to what is being learned, as a result observers should be more inclusive of distant others in their search for a model. However, this is not to say that high-level learning is necessarily directed toward distant targets. Rather, the function of high-level thought is to allow people to expand their horizons and broaden their regulatory scope (Ledgerwood et al., in press; Liberman & Trope, 2014). In terms of the present investigation, this means that when people are seeking to learn high-level things or construing what they are to learn at a high level, they should broaden the range of potential models to include *both* near and distant others.

This functional approach follows a similar logic when considering the opposite direction of influence—the impact of psychological distance on the level at which the learning content is construed. When learning from near others, it is feasible to learn low-level information about how to navigate our immediate environment. However, the more psychologically distant a model, the more different her immediate surroundings will be and thus the *less likely* it is that construing her actions at a low level will result in learning information that is applicable to the observer and her own environment. Therefore, if one sought to learn from a distant model, it would be more functional to construe her behaviors at a high level because doing so would result in learning that will be more applicable across a broader array of contexts including those of distant observers. By extracting the central and defining features of another person's behavior, high-level construals allow observers to process information modeled by others in a way that is applicable to learners in potentially very distant and dissimilar contexts.

Implicit to this functional construal level account of social learning is the motivation to learn and to apply what has been learned from others. This argument presupposes that people are even motivated to learn from a model; however, previous research has highlighted a variety of conditions that moderate the propensity for people to learn from and emulate others. For example, people are more likely to look to and emulate models when the model is perceived to possess expertise (Wheeler, 1966), when observers have affiliation goals (Lakin & Chartrand, 2003), when the observer perceives ambiguity in a given situation (Deutsch & Gerard, 1955), and when the content of information that can be learned from the model is attractive or salient (Aarts, Gollwitzer, & Hassin, 2004; Carver, Ganellen, Froming, & Chambers, 1983; Mesoudi, 2009). In only one of our studies did we attempt to explore the role of motivation in the effect of psychological distance on social learning. In this study, we found that the effect of psychological distance on emulation behavior was influenced by motivation to emulate the model.

## Social Learning Compared to Direct Learning

At the most basic level, we argue social learning, in and of itself, requires abstract thought as it necessitates mentally representing another person's behavior, which, by definition, is more psychologically distant than behavior generated by the self (as is the case in learning through direct experience). Thus, in order to learn socially, one would be best served by representing those aspects of another's behavior that would be unchanging across different contexts. Indeed, past research has shown that in learning a new concept, people who learn about the concept socially tend to focus on aspects of the concept that were invariant across different instantiations of the concept to a greater extent than do people who learn from direct experience (Smalley, 1974). Similarly, we argue here that through high-level construals, people are able to abstract from their observations those aspects of another person's behaviors and outcomes that are stable and applicable to their own egocentric world.

For example, consider a child who observes her brother scream in pain from touching a hot pan. As a result of his direct experience, the brother may learn the lesson that if *he* touches *his* hand to the hot pan, *he* will feel pain. In order for the sister to learn from her brother's experience, she would have to construe her brother's hand as an exemplar of the more general category of hands (or body parts) and construe the scream as an example of a reaction to pain. Construing the incident at this more general, higher, level would make it clear to the sister that touching a hot pan with her own hands will lead to pain in the same way that her brother's touching the hot pan led him to experience pain. Hence, through abstraction and high-level construal, the sister can learn that her brother's misfortune is but an example of a more general phenomenon that applies to her context as well.

## The Communicative Function of Construal Levels

Our research and discussion thus far has been focused primarily on the people on the receiving end of a social interaction. However, for every learner, there is a teacher and for every listener there is a speaker. Whereas learners' task is to interpret incoming information in a way that renders it applicable to their own circumstances, communicators' task is to transmit information in manner that is applicable to their audience. This implies that the sender must construct and communicate information that would generalize beyond his or her own immediate experience and be understood by the recipient of the communication. The more different the recipient (or context that the perceiver is in), the higher level the communicated information will have to be to ensure it is applicable to the recipient's context. Just as learners should construe incoming information at a higher level when it is coming from a distant source to render it applicable to their own circumstances, so too should communicators transmit higher level information to distant and dissimilar audiences in order to maximize the functional utility of the communication (Stephan, Liberman, & Trope, 2010).

Supporting this point, research has shown that referential communicators addressing large or diverse audiences use more abstract language and frame their messages in higher level terms than communicators addressing a single person or less diverse audiences (Joshi & Wakslak, 2014). A similar effect occurs when people communicate with more geographically distant message recipients (Joshi, Wakslak, Raj, & Trope, in press). Drawing on the idea that words are higher level representations of objects than are pictures (see Amit, Algom, & Trope, 2009), related research has demonstrated that people prefer to communicate with distant others through verbal mediums and to communicate with near others through pictorial mediums (Amit, Wakslak, & Trope, 2013).

Taken together, the research on construal levels and communication provides evidence for the argument that high-level construals are functional for communicating across increasing psychological distance. In the research presented here, we attempt to build on these findings by showing that just as people use high-level construals to transmit information across increasing psychological distance, they too use high-level construals to receive and interpret information from distant teachers.

## The Value of an Expansive Scope

With the work described here we hope to contribute to research on social relations by exploring when and how people overcome the tendency for a contractive relational scope (see also Ledgerwood et al., in press). Social psychology has long been focused on demonstrating the power of the immediate situation and of proximal social influences (e.g., Asch, 1956; Byrne, 1971; Festinger, 1954; Haney, Banks, & Zimbardo, 1973; Milgram, 1965; Newcomb, 1961; Tajfel & Turner, 1979). However, it is also the case that we interact with more distant others and can learn from and be influenced by people outside of our immediate environment as well. Oftentimes, there is great value in learning from more distant others in that distant and dissimilar others are likely to possess knowledge that is less redundant with our own.

However, learning from distant others also introduces challenges to the application of that learned information to one's own context. Not everything that we learn from distant others can be directly applied to our own context as certain things will be contextually bound. This is precisely the obstacle that high-level learning allows us to overcome. By learning from distant others at a high level, we omit those aspects that are bound to the model's immediate context and hence render the learned content applicable to our own psychological world. Thus, high-level learning allows us to reap the benefits of learning from psychologically distant others while effectively dealing with the challenges of applicability inherent to learning from others in differing contexts.

## Concluding Remarks

The opening example of the paper provides a powerful illustration of the utility of learning both from proximal and distal others. From distant sources such as social theorists and past revolutionaries, leaders and participants in the Arab Spring were able to learn about the ideals that motivated social change, as well as principles of and reasons to engage in collective action and protests. From proximal others—those engaging in political action in the same era, in the same region, and under similar circumstances—activists additionally learned low-level strategies such as using Facebook and Twitter to mobilize support and wearing cardboard or makeshift armor fashioned from plastic bottles underneath clothing to protect against riot police (Kirkpatrick & Sanger, 2011). The protesters involved in the Egyptian Revolution of 2011 and the Arab Spring leveraged their abilities to navigate the social and technological space of our current world to communicate with and learn from others across varying psychological distances about the ideals, goals, and principles behind revolution as well as the strategies that serve such goals.

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# Appendix

## Participant Responses From Study 4

Below is a table of the behaviors/traits participants listed in Study 4. Participants were prompted to list either one specific behavior (low-level condition) or one general trait (high-level condition). They were then asked who from their list of 10 people they would select if they were to emulate them in terms of the trait or behavior they listed.

| Behaviors listed by participants in the low-level condition | | Traits listed by participants in the high-level condition | |
|---|---|---|---|
| A tendency to express emotion more easily than others | Loving | Able to tell me exactly what they feel when it comes to everything | Kind (3×) |
| Adapt quickly | Loyalty (4×) | Adventurous | Listening |
| Being faithful to partner | Making lots of friends | Amiable Assertive | Love (2×) |
| Being humorous | Manage time well | Awesome | Loyal (6×) |
| Being on time | Not being critical of other people | Brave | Mad smart |
| Brave | Not shy to do things that are embarrassing | Candor | Open minded |
| Can cook very well | Organizing well | Caring (2×) | Prudence |
| Can eat anything | ParingPay attention to me and care about me | Cheerful | Punctual |
| Can stay up late without coffee | Plan ahead | Compassion | Reliable |
| Caring (2×) | Play an instrument | Confidence | Respect |
| Communicating well | Powerful | Confidence/sincerity | Self-control |
| Creativity | Practice often | Considerate (2×) | Self-awareness |
| Draw | Randomly smile at people | Critical thinking Cutting other people off mid-sentence to state one's opinion, then recovering and letting the other people finish | Selflessness (2×) |
| Dreamer | Reassurance | Dancer | Sense of humor |
| Dress nicely | Reliability | Daring | Simpleness |
| Drives well | Self-control | Determined | Sincere |
| Eat healthy | Selfless love | Easy to get along with | Sincerity |
| Empathy (2×) | Sense of humor (2×) | Empathy | Smart |
| Encourage others | Straight forward | Faith | Soft-spoken |
| Friendliness | Take charge in a group | Frankness | Spontaneity |
| Friends and family first | Talking about the ideas of life | Friendly | Supportive |
| Generosity (3×) | Talks to everyone | Generosity (3×) | Trust |
| Generosity in conversation | Their ability to put friendship above all else | Good sense of humor | Trustworthy (2×) |
| Getting together every Saturday | Trust Understanding | Happy | Truthful |
| Helpful | Watching weird videos on YouTube | Honest (5×) | Unconditional love |
| Honest (3×) | When they really listen to what you have to say | Honor | Understanding (3×) |
| Honesty, true to themselves | Wild | Intellectual | Wisdom through life experience |
| Humor (2×) | Wonder | Intelligent | |
| Kind hearted | | | |
| Kindness (4×) | | | |
| Laugh a lot | | | |
| Learn languages fast | | | |

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