# Social Learning Theory in the Digital Age: Evaluating Behavioral Effects Generated by New Mediums for Information Transmission

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# SOCIAL LEARNING THEORY IN THE DIGITAL AGE: EVALUATING BEHAVIORAL EFFECTS GENERATED BY NEW MEDIUMS FOR INFORMATION TRANSMISSION

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In a society where social interaction happens constantly, instantly, and simultaneously through regularly evolving forms of digital communication, social learning theory must also be able to reflect these features in an explanation of the collaborative learning process. In this paper, I will be examining the role and impact of digital interaction on our understanding of social learning theory, namely theories proposed by Bandura, Vygotsky, and Rotter. More specifically, the impact of digital interaction on our cognitive capacity for attention division, multitasking, and task-switching, as well as the phenomenological effects of these capabilities on our synchronous perception of the world. I will then entertain possible complications generated by these digitized processes, including attention engineering, excessive task-switching costs, illusory conjunctions, and significant processing lag. Lastly, I will expand upon the social learning theories previously presented in order to better reflect and better account for the increasing popularity of collaborative learning through digital interaction.

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## Introduction

Philosophy, psychology, and other psychosocial sciences have always held shared interest in the exploration of how and why we behave in specific ways when responding to stimuli. The analysis of behavioral patterns and trends has since been at the forefront of academic study and experimental research as we attempt to explain what makes us choose certain actions over others. Prominent theories arising from these scientific fields seem to generally agree that much of our behavior is the result of our interactions with others, enabling us to learn new behaviors and adapt existing behaviors through interpersonal communication and collaboration. These theories, referred to as social learning theories, attempt to illuminate the importance of these interactions in the development of an individual's typical behavior archetype.

However, these social learning theories have recently been met with a challenge unique to the past century: the impact of quickly and continually evolving methods of social interaction through the digital media realm. Consequently, social interaction now happens instantly and constantly not just through face-to-face exchanges, but via simultaneous interaction in a digital domain. The extent of what we consider to be social interaction is evolving alongside our increasing technological capabilities, yet our theories regarding learning through social interaction remain stagnant. Because of this increasing rate of social interaction through an ever advancing digital sphere, the explanatory power of our previous theories lessens with each new technological advancement. So the question remains: how can our outdated theories of social learning accommodate the growing scope of social interaction in a society where social interaction can now happen in simultaneous dimensions?

My ultimate goal is the formulation of a social learning theory that encompasses the strongest aspects of the most prevalent, preexisting social learning theories in order to better accommodate the radical changes to social interaction seen in the past century. I will first begin by analyzing more precisely the changes to social interaction that have occurred, and how these changes have impacted the ways in which we communicate and cooperate with one another. Secondly, I will address our current concept of social learning theory: its origination, its explanatory power, and dominant examples. Thirdly, I will illustrate the precise aspects of current social interaction that seem to be considerably unaccounted for by our social learning theories, demonstrating the need for an updated account. Lastly, I will propose a revised concept of social learning theory better able to accommodate these explanatory gaps.

## Chapter 1: The Significance of Technology in the Creation of a Digital World

### 1.1) The Growing Popularity of Technology

It would be absurd to believe the technological upsurge of the past century could be adequately described within a few short pages; at least, not in a way that truly demonstrates just how quickly and forcefully this transformation took place. It is no secret that the rise of technology has left a substantial impact on every industry across the globe, and no facet of the human experience has been left unaltered by innovations led by technological advancement. In a broader scope, the methods we use for travel, for education, for production and distribution, and for scientific advancement have all been consistently modified to keep up with the new changes in their respective technologies. These advancements through technology create diverse opportunities for society to expand and progress, preventing both deterioration and cultural stagnation. However, there is another dimension to the impact of technology that is equally important to acknowledge. It is this dimension that I will be focusing on for the majority of this paper, one that is concerned with a much narrower scope of technology usage. This perspective includes the ways in which technology influences our daily experiences, from instances of communication and perception to the long-lasting impacts of social learning and behavior adjustment.

Technology has become a staple in our day-to-day tasks, affecting the ways in which we interact with the world and those who reside within it. Since the early 2000s, new technology has seen a dramatic shift from functionality-based exclusivity to recreationally-based with easier accessibility. As of 2018, nearly 92% of all American

households have at least one computer, and smartphones are present in 84% of households, meaning technology is no longer a tool only utilized by the financially and socially privileged. This trend of wide accessibility has continued for decades, with technology becoming not only more compact and physically accessible, but financially affordable as well. Due to mass production, improved production efficiency, and a consumerist culture, more and more individuals across a growing variety of demographics now have access to the newest technologies and the capabilities provided by them. Simply put, technology was longer an instrument, or tool, operated by the financially and intellectually wealthy; you didn't have to be a corporate entity, government institution, or educated technician to operate advanced technology. Instead, any average individual was able to own and operate a piece of the future in their own home.

**1.2) A Digital World in a Global Village**

With substantial amounts of the global population having access to digital technology, the next logical step is the creation of a digital space for them to exist in. The turn of the century introduced the concept of social media to the world, where technology users could meet and socialize through digital avenues, no matter the distance between them. Users were capable of connecting and communicating with other users from around the globe, unrestrained by social class, income, political beliefs, or any other barrier previously encountered. Those who had never formerly experienced other cultures, beliefs, or ideologies were given a glimpse into how others lived, all with the click of a button. This transition from an egocentric perspective into one incorporating

the global community as a whole is a phenomenon known as the global village concept. First coined by Marshall McLuhan in 1962, the global village concept described the interconnection and coexistence of the entire world through media technologies and digital connection.[1] This interconnection results in a global cooperation via transnational commerce, culture, and communication. The events happening in other countries around the world, both positive and negative, are no longer contained within that respective country. Instead, due to instantaneous and uninterrupted communication between users in the digital space, the events are simultaneously broadcasted across the globe in real-time. We can see countless examples of this phenomenon simply by turning on the local news or through a quick search on the Internet. Live feeds and commentary of nearly every global celebration, tragedy, or other noteworthy occurrences can be found relatively quickly to anyone present within the digital realm.

Additionally, this idea of a global village is not a one-way street. Not only are users capable of witnessing these events in real-time, but the digital space also enables users to react and share their thoughts, concerns, and questions with other members of the digital space through a variety of tools. The ability to share, comment, like and dislike, and boost viewership guarantees the maximum number of digital users become involved with the most relevant information at any given time. For the first time in history, users can digitally interact with those who are directly involved with the occurrence despite geographic or demographic barriers.

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[1] McLuhan, *The Gutenberg Galaxy: The Making of a Typographic Man*

**1.3) Social Interaction Evolution**

These exchanges between members of the global village have revolutionized not only the ways in which we actually communicate and share information, but also the ways in which we *expect* to communicate and share information. Even when users are not personally present within the digital realm, their information and corresponding content still exists in digital form. What they have posted, what they have created, and what they invest time into is available to the scrutiny of the public eye. In this way, the digital realm acts as a sort of digital archive, storing and making accessible every user's digital scrapbook for anyone to access. A user's friends, family, coworkers, and even strangers can peruse their digital happenings to learn more about them and stay updated with their real-world life: the places they've been, the people they know, and the things they do. These sorts of interactions have become commonplace in our daily lives, both for practical reasons and for entertainment reasons. Practically, the digital footprint of a technology user can reveal more in-depth information relating to the individual in control of it. For example, consider an individual being hired for a new position at a well-known company. While the face-to-face interview may reveal nothing sinister about the individual, investigating their digital footprint may reveal ties to malicious organizations, shady character traits, or simply an undesirable lifestyle not befitting of the company. Of course, as stated previously, these digital footprints are not the result of technology only utilized by the wealthy at big companies and corporations. Any individual may make use of these investigative techniques when forming judgements or attitudes towards others. You may inspect a user's digital footprint before agreeing to meet for a first date. You may compare the digital footprints of various construction companies before selecting

one to build your home; their digital footprints may expose certain issues that have been cited previously by other users.

However, there are many users that don't always rely on digital footprints for practical reasons. Instead, many users browse digital spaces to find content that entertains them. Funny videos, heartwarming stories, and pop-culture reports are constantly released and shared among users. These instances of digital content are interacted with by large portions of the digital population: liked, disliked, commented on, reported, and shared depending on the individual users' tastes and preferences. Because instances of content are constantly being released, users never run out of new content to interact with. They must consistently divide their attention between all areas of the digital realm as they assess each piece of content, interacting with it and moving on just as quickly as it had appeared. The data stream never ceases or ends, running all hours of the day from every corner of the globe. Consequently, the users too must devote significant time and mental focus to keep up with the demand, or else suffer the expected consequences of not being "caught up" with the digital realm.

# Chapter 2: Defining Social Interaction

## 2.1) The Nature of Social Interaction and its Implications

So far we have discussed technology's role in the construction of a digital realm inhabited by digital users interacting with the constant flow of media content. These users participate in multiple instances of social interaction simultaneously, enabled only by the digital medium in which they are present. However, the concept of social interaction is ambiguous in this sense, and requires further explanation to establish fixed parameters. In fact, the explanation must be twofold, as social interaction in both the real world and the digital world must be explained and differentiated. Since social interaction within the digital realm is a fairly new phenomenon, as the previous chapter suggests, this difference becomes much more difficult to evaluate, as the digital realm is still unfamiliar territory for many of the social sciences. Long-term effects and implications remain inconclusive in this infantile stage of the phenomenon. A better understanding of what we consider to be real world social interaction may best illustrate where digital social interaction deviates from the norm and how greatly it has revolutionized the way we view social interaction. Despite the underwhelming amount of literature related to the implications of digital social interaction, there is much to be learned from the analysis of real world social interaction, a topic heavily studied since the earliest days of the behavioral sciences.

**2.2) Collaborative Learning and the Social Pedagogy**

To begin our analysis of real world social interaction, I first turn to the concept of collaborative learning. The ways in which we develop, learn, and grow as individuals have consistently been linked to our associations with those present around us. Stemming from developmental psychology and behaviorism in the 1940s, most theories attempting to explain individual thoughts and actions contain, or can accommodate for, dimensions of interpersonal interaction.[2] While the most crucial and impactful periods of development are up for debate, there remains a general consensus that a large portion of our self-identity, personal growth, and social circumstance is directly influenced by the figures within our experiential social circles. We see this trend throughout many prevalent developmental theories: Piaget's formal operational stage, Erikson's adolescence-centered identity conflicts, and Freud's infamous psychosexual stages. In all of these theories, the individual in the process of developing is directly impacted by others in such a way that their development is either assisted or inhibited. The thoughts and actions of the developing individual are specifically altered by others, whether they are parental figures, other children, or additional members of society. As we grow older, our inappropriate thoughts and actions are eliminated (theoretically), while appropriate thoughts and actions are reinforced and/or rewarded. Naturally, these are just proposed theories and are not meant to be exhaustive explanations of the human experience of personal development. Nonetheless, I would argue that the impact of interpersonal interaction is clear, and any theory of individual psychology must acknowledge the importance of such interactions.

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[2] Moore, *The Basic Principles of Behaviorism*

This constant transfer of developmental knowledge from person to person, or collaborative learning, forms the backbone of our concept of interpersonal interactions.[3] It is dependent upon the idea that active communication and interaction between members of a community will result in the formation and transmission of knowledge from individual to individual, never stagnating and never stopping. Here we can already see basic parallels between our developmental mechanisms of learning and the ways in which we experience the digital realm; the consistent flow of new information for our cognitive structures to constantly process and accommodate in our thoughts and actions. And, just like content within the digital realm, the new information communicated to and utilized by the receiver comes from a variety of simultaneous sources. We see this concept most prevalently through the idea of a naturalistic social pedagogy, a theory that emphasizes the broadening of developmental information to society as a whole, not just those within our immediate experiences. The concept comes from Jean-Jacques Rousseau's educational philosophy, wherein the only way to combat society's negative influences on the individual was through the moralistic and ethical raising of the newest generations.[4] This idea of a social pedagogy shifts responsibility for the alteration of behavior from an interpersonal level to an intercommunal level. In turn, all members of the community have a moral and societal responsibility to promote appropriate development and to denounce inappropriate development for those most susceptible to corruption, namely children and adolescents. In applying the concept of the social pedagogy to our discussion of collaborative learning, we see that it is not only a product

[3] Simons, *New Learning*
[4] Rousseau, *Emile*

of those within our immediate proximity, but also a product of those within our experiential proximity.

**2.3) Key Similarities Between Real World and Digital Information Transmission**

With the concepts of collaborative learning and social pedagogy in mind, we may begin to compare the content of real world interactions with the content found within digital realm interactions. In terms of similarities, there are some key parallels to be addressed. Firstly, in both cases of shared content, there exists the possibility of altered thoughts or actions in response to the content that was transmitted. Secondly, we have seen that new information flows constantly from source to receiver through a collaborative learning pattern. In both real world interaction and digital interaction, some form of informational content is shared by one and received by another. Thirdly, new informational content can be received from a variety of sources simultaneously. The receiver is not limited to singular instances of information transmission; instead, a receiver may be a constituent of multiple instances of collaborative learning at the same time. Lastly, while the receiver of the content may not always be aware of the ultimate impact on their thoughts and actions, they are aware of the transmission of that information. The individual has awareness, either consciously or subconsciously, that some informational content has been received from an external source. For example, we may be unaware of how reading an article addressing foreign politics impacts our thoughts and behavior, but we are at least aware that we are receiving some sort of new informational content from a source outside of our own cognition. Alternatively, we may be subconsciously aware of this fact, in cases involving transmission akin to subliminal

messaging. While we may not always be aware that an advertisement will lead us to buy a product or think differently about the company selling it, we are aware that the company is transmitting informational content to us through the advertisement.

These four similarities are left purposefully ambiguous at this stage of our analysis, but provide us with enough information about content transmission to better develop a working definition of social interaction. If we incorporate our discussion of commonalities into a singular interpretation, we are left with a definition like this: social interaction must consist of a singular or multiple simultaneous instances of informational content transmission from an external source to a receiver, and the receiver must be either consciously or subconsciously aware of the transmission and the possibility of cognitive or behavioral adjustments that can follow. The last segment of this definition, considering the possibility of cognitive and behavioral adjustments, will be an important piece of the puzzle in determining the differences between interactions in the real world and the digital realm. The previous explanations of collaborative learning and social pedagogy have demonstrated the general mechanism of behavior modification typically at work within social interactions. However, these broad theories say very little about the actual instances of cognitive and behavioral changes that occur in an individual in the post-reception stage of informational content. We see that social interaction allows a receiver to access new informational content through others. But why do these social interactions actually influence us to change? What components of the process are responsible for the application and transformation of new informational content into

altered thoughts and actions? To better understand these internal processes, we must take a closer look at the psychological operations of the individual when presented with these instances of interaction.

## Chapter 3: What Social Learning Theory Tells Us About Behavior

### 3.1) Social Learning Theory: What is it, and Why is it Necessary?

Let's begin with an example. Imagine a new employee at a company where they are responsible for manufacturing product X. While they know what product X is, and have previous experience using the product, the constructive process is entirely foreign to the new employee. How do you come to learn the necessary abilities required for creating product X? In the simple understanding so far presented in this paper, we may predict that the knowledge needed to create product X can be acquired through the transmission of the appropriate informational content from an external source to the receiver, or the employee. After the transfer of this content, the employee is able to cognitively adopt the new information, transforming your inability to create product X into the new ability to create product X.

The problem demonstrated in this example is the absence of explanation for the cognitive and behavioral transformation between pre-transmission and post-transmission states. How does the employee begin with no cognitive or behavioral ability to create product X, and then transition to a state where both these aspects become reflexive behavior? What are the actual processes that occur within an individual that result in authentic learning through the social interaction? This explanatory gap can be filled through the examination of social learning theory. Similar to our previous theories of collaborative learning and social pedagogy, social learning theory views human development and learning through the lens of intrapersonal interaction.[5] While the earliest theories of social learning began as explanations of learned delinquency and law

[5] Moore, *The Basic Principles of Behaviorism*

violation, the concept has broadened to include all instances of learning through inherent social development. While the concept varies slightly from theorist to theorist, we find a few commonalities tying them together: primarily, the idea that individuals adapt their perspectives of the world through the observation and reproduction of the behaviors of those around them as they are responded to by others.[6] We adopt the behaviors that we see others are rewarded for, and we avoid the behaviors that result in punishment, pain, or social ostracism. We also look to others as examples for developing our own personal attributes, such as self-regulation, motivation, and work ethic. We constantly gauge our own standards of these traits against those around us, conforming our actions to fall closer towards the societal "average."

Throughout the rest of this chapter, I will consider three separate theories of social learning and what they can tell us about the mechanisms of social interaction. Each of these three theories will contribute an important component to our understanding of how behavior can be altered through social interaction. Firstly, we will look at Vygotsky's sociocultural theory, focusing on the transmission of the informational content that leads us to new behaviors. Secondly, we will focus on Rotter's expectancy-value formula and the role of probability in determining the potential of new behavior. Lastly, we will explore Bandura's theory of social learning through conditioning and modeling to see how observation plays a role in motivating changes in behavior.

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[6] Slater, *Social Learning: Psychological and Biological Perspectives*

**3.2) Vygotsky and Intrapsychological Learning**

For the case of our new employee, we may choose to refer to Leo Vygotsky's theory of social learning due to its focus on the importance of immediate learning through others in close proximity.[7] According to Vygotsky, the most important factor in the learning of new behaviors is direct interaction with what he refers to as a *More Knowledgeable Other* (MKO.) The MKO is an individual that we perceive to have the authority, knowledge, or influence to properly and accurately transmit specific informational content to another individual. In the case of our new employee, this could be a manager, a boss, or an older employee who has more experience creating product X. As is the case with any instance of interpersonal judgment, an individual making a decision to regard another as an MKO is highly subjective and highly conditional upon observational context. In fact, the requirements for being an MKO depends more so on the context of what information is desired than the perceptions of the individual seeking the information. Although the requirements for being considered an MKO vary immensely, as we will see throughout this section, there are key characteristics conducive to being seen as qualified for the role. These characteristics may be of an academic, intellectual, or scholastic sort, such as considerable knowledge of the topic or extensive study relating to it. As an obvious example, a student may look to a teacher or professor for help with an assignment, even if the teacher or professor isn't directly involved with the respective genre of study. The mere title of professor or teacher can imply some degree of condition fulfillment for an MKO.

There are also cases in which MKO requirements arise from conditions separate from any sort of knowledge-based or scholastic qualifications. Famosity, wealth, and

[7] Vygotsky, *Thought and Language*

affluence may also be grounds for being considered an MKO. Those with higher social positions, economic status, and influential connections may be considered MKOs simply because of their financial or cultural prestige. This can be seen constantly today, with celebrities endorsing unusual products and corporate owners having more say than lawmakers in establishing precedent. For instance, imagine a commercial in which a popular young singer is promoting a brand new hair growth formula. An individual watching the advertisement may be inclined to believe the positive things said about the formula, not because of its effectiveness, but because they consider the singer promoting it to be an MKO for the product.[8]

Why is the MKO position so important in our overall discussion of learning through social interaction? If we look closer at Vygotsky's concept of social learning, another important aspect of the theory resides in the idea of a *zone of proximal development* (ZPD.)[9] The ZPD highlights the difference between what an individual already knows, or has knowledge about, with the things that are still unknown to them. This knowledge base can be represented by a diagram with three concentric rings, with the innermost circle representing the knowledge that the individual has already acquired, or feels competent enough to consider themselves an MKO. The surrounding area outside this inner circle contains the sum of information that the individual has yet to learn.[10] In between these two sections falls the ZPD, containing the information desired and available through MKOs. When our new employee first began the process of creating

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[8] While there are close similarities between examples of this type of MKO and fallacious appeals to false authority, the key difference is found in the degree of the belief. The establishment of an MKO is not a formulation or reaffirmation of a belief due to the presence or endorsement of cultural significance. Instead, it is the subjective belief of the individual that the endorser would be more qualified to transmit information regarding a topic.

[9] Vygotsky, *Mind in Society: The Development ofHigher Psychological Processes*

[10] Unlearned information in this sense refers to a practical sense of knowledge that could possibly be learned by an individual, not an epistemological sense of total knowledge.

product X, the product itself would be contained within the first circle: they knew what the product was, and had previous experience using the product directly. However, they did not yet have the knowledge necessary to create the product themselves, pushing that kind of knowledge to the ZPD. As the employee interacts with an MKO in pursuit of the appropriate knowledge, however, the new employee can receive the knowledge necessary to bring the ability to create product X from the ZPD into the innermost circle of competent knowledge.

### 3.3) Rotter and Behavior Potential

A critical weakness in Vygotsky's concept of social learning is the absence of motivational factors that lead an individual to desire the movement of information from the ZPD to the inner circle of acquired knowledge. However, we can find a compelling explanation for this motive in the work of Julian Rotter. While Vygotsky focused mainly on the acquisition of new information, Rotter's focus centered on why we, as humans, may be inclined to modify our behavior after acquisition of new informational content. Or, in regards to our continual example, why our new employee would be inclined to learn the behaviors necessary to create product X, thus moving it from their ZPD into their circle of competent knowledge.

Much like the theorists aligned with collaborative learning and social pedagogy, Rotter believes that an individual's actions are a direct result of their interactions with their environment and those within it.[11] This means that one's behavior is never stagnant, and is always changing in relation to the interactions that they have with their

[11] Rotter, *Expectations and Actions*

surroundings. According to Rotter, the probability that post-transmission informational content will be acted upon and sustained can be explained in terms of a simple equation:

$$BP = f(E\ x\ RV) + PS$$

Or, simply put, behavior potential (BP) is a function of the interaction between expectancy (E) and reinforcement value (RV), with the additional impact of the individual's psychological situation (PS). Firstly, behavior potential is simply the probability that an individual will act a certain way given a certain situation. Secondly, expectancy is the probability of the intended outcome that the individual wishes to occur post-action. High expectancy means the intended outcome is expected to happen, while low expectancy signifies the outcome is less likely to happen. Thirdly, reinforcement value refers to the desirability of the outcome that is intended; an outcome with high reinforcement value is an outcome with positive results for the individual. Naturally, we want good things to happen to us as a result of our actions. Therefore, actions resulting in positive outcomes from previous instances with similar expectancy variables are much more likely to be acted upon again. Lastly, psychological situation is simply the consideration that these previous variables are subject to the individual's subjective experience of their environment. Two individuals may have different behavior potentials despite being in the same environmental context because of the subjective nature of their perception.

Much like any mathematical function, changing any variable will alter the outcome, which in this case is the probability of a certain behavior. Of course, using mathematical functions to represent subjective data, such as reinforcement value and expectancy, is not a perfect science. Instead, the formula is meant to function more as a

theoretical guideline opposed to exact calculation. As the variables within the function increase, we can expect the potential for the desired behavior to increase as well. In turn, as desirable outcomes come to fruition, further instances of the same action see higher starting levels of reinforcement value and expectancy. For instance, in the case of our new employee, further creation of product X can lead to more consistent occurrences of behavior. Let's suppose our new employee has already received the appropriate transmission of informational content from an MKO, enabling them to create product X without error. The next time our new employee attempts to create product X, both expectancy and reinforcement value will start at a higher level than before, due to the success of the first instance of the behavior. Thus, as expectancy and reinforcement value increase, so does behavior potential. Our new employee is far less likely to change the behaviors involved with their first creation of product X, since the intended outcome did occur, and the outcome occurred successfully, and without blunder. Even further, if the new employee were to make product X a third time, we could predict that the behaviors involved with the first two iterations would remain the same in the third occurrence. This cycle continues, strengthening behavior potential unless impacted by some incident of failure or adversity.

### 3.4) Bandura and the Importance of Observation

So far we have established that new informational content necessary for behavioral change is acquired through an MKO, moving the newly learned behavior from an unlearned classification to one of knowledge competence. We have also seen how initial behavioral changes resulting from MKO-sourced informational content can be

reinforced through increasing levels of expectancy and reinforcement value. Despite these insights, we have yet to see any explanation as to the internal processes of the individual in perceiving, receiving, and acting upon possible behavioral changes. But just as Rotter's value-expectancy formula was able to fill gaps present in Vygotsky's sociocultural theory, we must rely on the work of Albert Bandura to fill the gaps present in Rotter's theory.[12] Although different terminology is used, Bandura's theory contains many of the same components as seen in Vygotsky's and Rotter's theories. Bandura's theory of social learning consists of four chronologically distinct stages: attention, retention, reproduction, and motivation. We see the two former stages present in Vygotsky's theory, in which information is transmitted to an individual and applied immediately to perform specific actions. The latter two are seen within Rotter's theory, in which certain behaviors are prone to repetition in response to specific external stimuli.

Firstly, and most obviously, the individual must observe a particular behavior as it is performed by an external entity.[13] This most commonly occurs through the visual perception of another individual's actions, such as a child watching how their parent acts in a certain social setting. However, as Bandura notes, the same sort of observational perception can occur without this close proximity to the source of the behavior, as well as without any visual perception at all. An individual may receive the same informational content as physically watching a parent from simply watching the particular behavior performed in a TV show or movie, or even performed by characters in a book. The key factor underlying successful observation is the transmission of informational content regarding a particular behavior as it is perceived by the receiver.

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[12] Bandura, *Social Learning Theory*
[13] Bandura, *Model of Causality in Social Learning Theory*

Secondly, once the receiver has perceptually observed a behavior as it is performed by an external entity, they must somehow retain the sensory content regarding the behavior in order to allow its reproduction. If the behavior is observed but the informational content corresponding to it is not stored within the individual's memory, imitation of the behavior is prevented and no social learning can actually take place. Because Bandura's social learning theory is not an immediate process, this stage of the learning process is especially crucial in explaining why we cannot reproduce every behavior that is observed. Consider just how much sensory content we receive throughout our daily lives; we constantly see others performing tasks, participating in activities, and transmitting other instances of physical informational content through derivative channels, such as the news, social media, or through other entertainment mediums. While we actively observe these instances and receive the informational content transmitted through them, we often find that our behavior is not altered in any way because we have not completed the second step of the learning process. This segregation of external stimuli will become increasingly significant as we begin developing a new account of social learning.

At this point in the learning process, an individual has not only seen a particular behavior performed by another, but has also implanted the informational content associated with it within their memory. Because these two steps were completed, the individual is now capable of reproducing, or imitating, the original behavior by themselves. While no direct "teaching" has taken place between the original performer and the new individual, they have learned how to perform the same action nonetheless. This is supported by a study conducted by Bandura himself, famously known as the 1961 Bobo doll experiment.[14] In this study, Bandura showed a selection of young children one

[14] Bandura, *Influence of Models Reinforcement Contingencies on the Acquisition of Imitative Responses*

of two videos: one video depicting adults acting physically and verbally aggressively towards a Bobo doll, while the other video showed adults that mostly ignored the doll, electing to instead play with the other toys that were present in the room. After the children individually viewed one of these videos, they were placed within a room containing an actual Bobo doll and other various toys, and were left to do as they pleased with them. The results of this experiment showed that the children exposed to the videos of aggressively behaving adults acted similarly when presented with their own Bobo doll. Not only did these children perform more aggressive acts when compared with the children not shown the aggressive video, but the aggressive video group also performed aggressive behaviors extremely identical to those shown in the video. The children were observed using the same verbal and physical gestures used by the aggressive model in the video. The children were observed smacking, kicking, and hitting the doll with a plastic mallet, just as they had seen the adults do in the video.

The last stage of Bandura's theory presents an important detail associated with this study, commonly seen as counterevidence to the results seen from the Bobo doll experiment. The imitation of observed behaviors is highly reliant on the subjective, individual motivation for reproduction.[15] In the study, the children's attention was directed towards the Bobo doll, both by the researchers and by the focus placed upon the doll by the video. Many opponents of social learning theory, and behaviorism in general, argue that the most important aspect of our decision to behave a particular way comes from our internal motivations for doing so. We may observe behavior, retain the information corresponding to said behavior, and even have the ability to perfectly imitate

[15] Locke, *Social Foundations of Thought and Action: A Social-Cognitive View*

the behavior, yet choose not to perform the behavior if we have no drive or motivation to do so. In terms of Vygotsky's theory, the behavior potential remains too low for the action to occur because the reinforcement value, expectancy value, or the psychological situation is not conducive for action. As we will see later on, this will be a significant consideration in our discussion concerning real world and digital world social interaction.

## Chapter 4: The Explanatory Deficiencies of Social Learning Theory

### 4.1) Review

With the conclusion of our discussion regarding current social learning theories, we may find a brief summation of previous chapters particularly helpful. In chapter one, we have seen the role of technology in expanding our concept of social interaction into two separate realms: real world interaction and digital interaction. We have seen how these two distinct types of social interaction are contingent upon the transmission and reception of informational content through their respective mediums in order to interact with and learn from others. Then, in chapter two, we compared the similarities of these different classifications in order to generate a working definition of general social interaction: *social interaction must consist of singular or simultaneous instances of informational content transmission from an external source to a receiver, and the receiver must be either consciously or subconsciously aware of the transmission and the possibility of the behavioral adjustments that follow.* With this definition in mind, we transitioned to chapter three to examine the current application of social learning, and the prevalent theories used to explain how social interaction can influence behavior through observation, reinforcement, and motivation. With these crucial pieces of the puzzle now in place, we can truly begin to critique social learning theory and how it fails to account for the new type of social interaction that we have established.

### 4.2) Key Differences Between Real World and Digital Information Transmission

Just as we used the similarities between the two types of interaction to generate a definition of general social interaction, we can also use the differences between them to show where social learning theory is lacking in explanatory power. This chapter will focus on one of two different aspects of social learning theory that diverge depending on which type of social interaction is applied: attention paid to the transmitted content, and the motivation to act upon transmitted content. As we isolate these aspects, we will begin to see instances where social learning theories fail to adequately account for digital world instances of social learning. I will address these aspects in order of increasing importance for my argument against current social learning theory, beginning with the differences in the motivation to act upon transmission.

### 4.3) Differences in Motivation Resulting from Informational Content Transmission

Naturally, an obvious place to begin our discussion of behavior motivation in varying social interactions would be Bandura's theory, in which motivation is a key stage in the process of social learning. As we have discussed, this last stage of the theory is considered to be the weakest, as quantifying an individual's internal drives and motivations for behavior is highly impractical, if not impossible. In the case of the Bobo doll study, it is impossible to determine what degree of influence researchers had on the children's behavior as they shifted focus towards the Bobo doll instead of the other toys. It may be the case that previous experience interacting with a Bobo doll impacted a child's desire to act aggressively towards it. Furthermore, it may not have been direct interaction with an actual Bobo doll that impacted behavior, and instead was previous

experience with something that the child associates with the artwork present on the doll, such as a clown or circus. In cases like these, even the most precise data collection from the researchers cannot measure internal incentives and drives. These concerns bring up an interesting debate amongst behaviorists and their opponents: if measuring the internal motivations for behavior is speculative at best, how is social learning theory useful? What makes any concept of a social learning theory practical for any sort of scientific use if the answers that it provides are nothing more than suppositions regarding internal subjectivity?

In reply to the argument of inconclusive internal motivation, Rotter's proposed theory *is* able to account for subjective inner drives and incentives because of the mathematical design of the theory. When looking at Rotter's theory in formulaic structure:

$$BP = f(E\,x\,RV) + PS$$

the addition of psychological situation is meant to consider the previous experience, personal incentivization, and internal encouragement for action initiation. It is not the sole reason for the action of inaction of a behavior, but its present and interaction with other variables is included and accounted for. For instance, let's assume that a child partaking in Bandura's experiment was actually scared of clowns due to a previous scare at the circus. Before that child is placed in the room containing the Bobo doll, we could use Rotter's formula to narrow our predictions of behavior potential without knowing the exact drives or motivations of the child. Based on the previous bad experience with a clown, we know the reinforcement value of the child is very low: they do not want another encounter with a clown to occur, and will not enact any behaviors that increase

the chance of interaction occurring. Because of this, we also know that the child will try to enact a behavior that keeps them away from clown interaction, and the resulting behavior will be the behavior with the highest expectancy value, such as hiding, running away, or other evasive maneuvers. If we put this all together, without knowing anything about the internal mechanisms at work within the child's mind, we have a pretty good prediction for their behavior when they are finally placed within the room.

If we look at our last remaining social learning theory from Vygotsky, we also see how his concepts of MKOs fit into the bigger picture of behavior alteration and prediction. If we once again look at Rotter's formula, the same sorts of variables can be applied in the MKO learning process. If we refer all the way back to our new employee, we can also predict behavior changes, including selection of an MKO, using Rotter's formula. We know the new employee desires to move the creation of product X from his ZPD to the category of learned information, so his behavior will reflect that. This employee's behavior will have a high desirability level, and a corresponding high expectancy level. These are both impacted by the selection of the MKO: if the informational content the new employee needed to receive was transmitted by someone without MKO status, or someone not qualified to transmit said information content, the new employee would not reciprocate their actual intentions. Simply put, if new information needs to be learned, it would be illogical for an individual to seek to receive the information from someone that does not already have it. Since it would make sense that the new employee does want to be able to create product X (as a result of his alleged application and hiring to the company,) we can predict that his selection of the MKO will correspond to a high desirability level and a high expectancy level.

So how does this relate to our discussion of social learning theory weakness when explaining differing social interaction types? What parts of the motivation for action differ between real world social interaction and digital interaction? Here I will isolate three: preexistence of psychological situation, MKO depreciation, and reinforcement variation.

**4.4) Preexistence of Psychological Situation**

Recall the example of the Bobo doll study participant whose behavior was prematurely impacted by previous interactions with a real clown. These behavioral impacts are a common trend, in which future behavior is already impacted or restricted as a result of meaningful interaction with external stimuli in the present. This, of course, relies on our understanding of all three theories of social learning. Firstly, the initial interaction moves the informational content from the ZPD to learned information, as per Vygotsky's theory. Secondly, according to Bandura, the present interaction must be retained and stored in memory for later reproduction once met with an associated stimuli in the future. Thirdly, through Rotter's formula, once the individual is met with associated stimuli in future scenarios, the retention of previous behavior impacts reinforcement value and expectancy values, further enacting behavioral change. Let's put these together to demonstrate the motivation for behavior adaptation for our participant with a fear of clowns. Firstly, the original interaction with the stimulus, in this case a scary clown, moves the informational content, or the mental depiction of the clown, from the ZPD to learned information. Secondly, the behaviors that were enacted during the original interaction are retained, as well as the results of the particular behavior enacted.

In this case, we could say that the child originally ran from the clown and hid behind his parents. This behavior appeared to work, as further interaction with the clown was inhibited, so the child is further motivated to retain the informational content that running and hiding from clowns is effective. Lastly, after future interaction with associated stimuli, in this case the Bobo doll with a painted clown face, the child is once again motivated to reproduce the behaviors from the first interaction with the stimuli. The first occurrence resulted in success, which consequently increased expectancy and reinforcement values, so the behavior is repeated with the expectation of the same result and success rate.

As we have seen in our previous discussion of evolving technology and interaction, the digital realm has expanded the opportunity for stimuli interaction from just physical experiential informational content to stimuli encounters resulting from interconnection at the global level. Previously, the majority of stimuli encountered and the informational content retained as a result was limited to firsthand experiences. If one was incapable of directly experiencing the stimuli, there was an insignificant probability of establishing and retaining behaviors related to the stimuli. Had our example child never been to the circus, there would not be retained informational content to influence their future behavior during the Bobo doll study. Or, at the very least, the child would not have a preexisting psychological situation variable to motivate the behaviors seen in our example. Now that the digital world can enable the incorporation of informational content from across the globe, there is an increasing amount of foreign stimuli available to those that exist within the digital realm. The medium of the digital realm also increases

the availability and accessibility of these foreign stimuli to users by increasing the speed and range of transmission.

Imagine the case of two biologically and experientially identical individuals A and B. The only difference separating these individuals is their access to the digital realm, where individual A is present in both real world and digital spaces, while individual B is limited to the firsthand experiences of the real world. Both individuals are planning a trip to a new country with which they have no previous experience or knowledge. Individual A, however, has access to stimuli related to and originating from the foregin country, by means of the digital realm, and informational content circulating the digital realm regarding the foreign country can be seen and interpreted by individual A. Before individual A even arrives in the new country, the digital realm has provided them with informational content that influences their psychological situation. Perhaps stories, news accounts, and personal endorsements have transmitted informational content regarding occurrences of rioting, civil war, or other noteworthy events occuring in the country. These interactions, although digital and clearly not firsthand, would certainly impact individual A's psychological situation regarding travel to the country, and thus impact potential for behavior. Meanwhile, individual B has yet to receive any sort of this informational content that would be responsible for any motivation for psychological situation alteration. Although this example is left purposefully vague, it is not hard to conceive of other situations that could more precisely demonstrate this distinction between real world interaction and digital world interaction. The accessibility and instantaneous transmission of informational content regarding foreign stimuli within the

digital realm can clearly impact behavioral potential easier than mere real world interaction.

**4.5) MKO Depreciation**

The second important motivational difference that can be seen between real world interaction and digital interaction is the varying influence of MKOs. Referring back to the previous discussion of Vygotsky's concept of MKOs, an MKO is an individual that we perceive to have the authority, knowledge, or influence to properly and accurately transmit specific informational content to another individual. We have also seen that this is a very subjective notion, with the qualifications of being considered an MKO exceedingly opaque. The rise of the digital realm as a medium for information transmission has certainly blurred the definitions of who can be an MKO, and what qualifications are required. The impersonal method through which users can interact with one another bypasses any need for intimate knowledge of identity or background. Additionally, users can make claims regarding their abilities and expertise without fear of investigation, as opposed to the real world where social interaction in part relies on the awareness of some degree of personal information. The firsthand nature of real world interaction automatically grants participants in the information exchange degrees of informational content, as both parties can attain perceptual information through both physical perception and verbal analysis. This sort of perceptual deduction is easily removed within the digital realm, allowing anyone or anything to purport to be qualified as an MKO regarding any topic, as well as decreasing the qualifications necessary to have in order to be an authentic MKO. Both of these complications can be explained by a

phenomena that I will refer to as MKO depreciation throughout the following section. MKO depreciation is a direct result of the nature of the medium in which the digital realm operates: not only instantaneous and nonstop, but anonymous and spatially unbound. MKO depreciation is characterized by the inherent erosion of value or confidence in an MKO as it is interacted with through a digital medium.

To begin, let's consider a typical real world instance of information transmission between an individual and an MKO. We can once again use our new employee attempting to create product X. As previously discussed, choosing an MKO without proper qualifications would not align with the psychological situation that the new employee possesses, namely the desire to behave in such a way that they perform the job correctly. With this in mind, our new employee is motivated to choose a proper MKO, most likely someone that has previous experience accomplishing the same task given to the new employee. This MKO can directly transmit the informational content necessary to the new employee through guided learning, mentoring, or close supervision until the new employee has fully received the information, retained the behavior, and moved the content from their ZPD to the learned classification. This entire process is done in person, between an individual desiring informational content and an individual with proven ability to perform the desired behavior and transmit the informational content associated with it.

Now, let’s consider this same scenario but as it would take place in a digital realm setting. Assume our new employee is working alone, or without any immediate coworkers in their proximity. The rise of the digital realm has enabled users to interact in the digital space, receiving informational content without the need for physical proximity.

Our new employee can possibly do many things in this situation: use a search engine to research proper instructions for creating product X, watch a video with another individual visually demonstrating the process, or browse public forums where others have also asked the same questions regarding the process. How is this different from the real world scenario, in which a physically present MKO directly influenced the behavior of the new employee? There are a few obvious answers to this, but may not have much impact on the distinctions we are trying to make: hands-on learning versus visual learning, the performance pressure from having an immediate bystander, and the effects of state-dependent learning arising from the location of initial learning. But, in regards to our discussion of motivation and MKOs, the main differences come from the differing source of the information transmission. In the real world, the source of transmission is known to have the proper qualifications for the desired behavior. The new employee can deductively trust this through basic intuition: the MKO works at the exact company responsible for the creation of product X, the MKO is higher in the company hierarchy, and the MKO is aware of the precise knowledge needed to be transmitted because of their prior experience creating product X. In contrast, the information received through the digital realm does not provide the same intuitive guarantees that follow the real world scenario. The new employee can never be quite sure of the exact origin and source of provided information, meaning the use of these sources as an MKO may not result in the accurate or appropriate informational content transmission. Even in cases where the source seems to be MKO qualified, such as the video demonstration, it does not guarantee qualification in the same way real world transmission does.

A second problem related to the depreciation of MKOs is the ease at which one can become, or appear to be, an MKO through a digital medium. This is already partially seen in the previous example, where the source of informational content loses authority because of the inherent nature of the medium. While this is not meant to imply proper MKOs cannot transmit accurate and appropriate knowledge through the digital realm, it does mean that many of the proper MKOs are concealed or suppressed due to both the sheer amount of information being transmitted and by the way the digital realm is structured. Since the digital realm is accessible to so many individuals, each constantly transmitting informational content, the digital realm must function in such a way that the most relevant and compelling information is brought to the surface. Because the digital realm is user-driven and subject to both commercialism and other forms of content bias, the most accessible and popular content does not guarantee accuracy or correctness. Those who are trending and highly influential in the digital realm can easily become MKOs for topics their qualifications don't necessarily correspond to. Instead, their position as an MKO are granted solely through their prominence in the digital space, and the reputation that they have earned from it.

The question still remains: how does MKO depreciation within the digital realm differ from the typical instances of real world MKO transmission, and what does it mean for the motivation of learned behavior? Clearly, real world MKO transmission can suffer from the same flaws as digital transmission in terms of faulty attributions of qualification to undeserving individuals. However, the key difference is found in the structure of the digital realm. As stated previously, the digital realm must organize immense amounts of informational content every single moment, meaning much of the content that is deemed

irrelevant, unpopular, or mundane is not received by individuals in the central hubs of activity, such as social media sites. Instead, only the content that has mass viewership and a large following makes its way to the prominent and populated areas of the digital realm. While there are benefits to this type of organization, such as filtering out inappropriate, illegal, and ethically questionable content, there are also negative impacts that are less noticeable without an understanding of social learning theory. Since the most prominent content is popularity-based as opposed to credibility-based, the content displayed is typically at the discretion of the user providing it. Therefore, the content can contain transmissions of information that are normatively incorrect or inappropriate. And, since the user transmitting the content is at the forefront of the digital realm, they may be considered "qualified" enough to be regarded as an MKO. The reception of incorrect or inappropriate informational content, in combination with a falsely labeled MKO, may result in the receivers of said transmission to retain and replicate the information. Simply put, if a digital user sees a prominent digital figure performing incorrect or inappropriate behavior, their status as an unjustified MKO can be enough to motivate the receiver to perform the same behavior.

**4.6) Reinforcement Variation**

The last difference in motivational effects found between real world and digital realm interaction can be demonstrated best through our understanding of Rotter's formulaic theory of social learning, with a primary focus on reinforcement value and the role it plays in deciding behavior choices. To review, Rotter's concept of reinforcement value is defined as the desirability of a particular behavior's outcome, or to what degree

the individual wants the outcome to happen. With our previous discussion of MKO depreciation, we have seen how even incorrect or inappropriate behaviors can be endorsed and motivated through unjustified MKOs in the digital realm. However, the reinforcement of these misguided replications of behavior are just as important as the unjustified MKO endorsement, if not more so because of the nature of the digital medium.

Before delving further into this difference, let's take a step back and take a look at the bigger picture of social learning theory. As previously discussed, the ultimate consequence of social learning (theoretically) is the alteration of behavior; socially inappropriate or incorrect behaviors are trimmed away through some degree of punishment, pain, or social ostracism, while the behaviors that are socially acceptable are rewarded in some manner. This process is guided by the behaviors of others, and we readjust our own actions as we see others punished or rewarded for the things that they do. At this most basic level, the structure of social learning works. However, what happens when the behaviors that should be punished are actually taken to be rewarded? This is a phenomenon quite common in the digital realm, yet is seen very little in real world social interactions. Furthermore, what happens when behaviors are considered to be wrong in one domain, yet are still rewarded in the other? These questions, while commonplace in our society, are largely unanswered by current social learning theory.

Let's consider the former question first: how and why do normatively wrong behaviors end up being rewarded? This is a question that requires heavy focus on the goal, or intention, of the behavior. In the case of our new employee, the goal of the social learning instance is for the employee to gain the informational content necessary for the

completion of the end goal, specifically the creation of product X. In order to reach this goal, the employee knows they must find an MKO capable and willing to share the necessary informational content, then utilize that information in the enactment of the behaviors that lead to successful creation of product X. Divergence from this larger process could possibly lead to the prevention of reaching the end goal, and thus would decrease the behavior potential of the actions not integral to the acquisition and application of the informational content. So as our employee begins the process, the behavior potential for actions that lead to distraction, interference, or prevention in reaching the end goal would be lowered enough to avoid them. While this process seems technical at first glance, it's an automatic process that happens often without our knowing. With or without awareness of this phenomenon, it would be highly irregular for our new employee to behave in such a way that contradicts advancement towards the end goal. In fact, it would seem extremely foolish if our new employee, after being given the task of creating product X, were to suddenly drive home to perform some other task, like making a pot of coffee or taking out the trash. It would be even more foolish if the new employee were to enact actions entirely avoidant of the goal, such as evading the company entirely or purposefully ignoring MKOs.

However, we see these types of activity in the digital realm constantly, and we are confronted with the second question proposed above: what happens when behaviors are considered to be wrong in one domain, yet are still rewarded in the other? As we have seen, the digital realm is user-driven and subject to cultural bias, so the most accessible and popular content is not always conducive to reaching any particular goal or end point. In our discussion of technological evolution at the beginning of this paper, we saw that

the digital realm is not always dependent upon functionality or productivity. Instead, the entertainment value bestowed upon the prominent figures *has become* the goal in many cases. Both normatively appropriate and inappropriate behaviors can lead to the same result of becoming prevalent in the digital realm, blurring the role of social learning theory to the point of obsoletion. Both good and bad behaviors are socially rewarded in the same ways, with the subject(s) of the spotlight gaining prominence. Because of this, the real world occurrence of behavior modification does not, and cannot, operate in the same way.

## Chapter 5: The Explanatory Deficiencies of Social Learning Theory: Attention

When asked about important aspects of effective social interaction, many would be inclined to suggest that careful and undivided attention is imperative. However, this idea of attention is meaningless without an understanding of what it actually means to have attention, and the fundamental processes necessary to direct it towards particular targets. What do we mean when we "pay attention" to specific people or things, and what degree of attention is necessary for effective focus? Furthermore, can we divide our attention amongst simultaneous targets without losing access to critical informational content from any singular origin? These questions are not only important to our discussion of the different types of social interaction, but to our overall critique of current social learning theory, which depends on effective attentional distribution for social learning. If we cannot sufficiently focus our attention on the object of our interaction, we cannot even begin the process of social learning through observation.[16] In the larger picture of social learning and social interaction, our ability to regulate our attention is the most basic building block for every theory we have discussed thus far. Consequently, our analysis of attention will be decisive in isolating the explanatory deficiencies of current social learning theory and compiling a new theory that better accounts for the differences between real world and digital world interaction.

[16] Vedechkina, *A Review of Evidence on the Role of Digital Technology in Shaping Attention and Cognitive Control in Children*

**5.1) The Role of Attention in Effective Social Interaction**

So what is attention? For our purposes, I will be utilizing an attentional theory proposed by Sebastian Watzl, in which attention is formed through the deliberate construction and focus of streams of consciousness.[17] This theory, which he refers to as attention structuralism, argues that attending to something at the conscious level requires the mental restructuring of one's stream of consciousness so that particular instances of consciousness are more important than others. This theory, according to Watzl, can be applied to any attentional effort, such as attention to one's bodily sensations, sensory perception, and cognitive association of ideas. When these processes are seen as streams of consciousness, they can all be structured in such a way that particular features become more aware than others. For example, as we direct our attention towards a particular sound that was heard, the streams of consciousness most relevant to focusing our attention on the sound are emphasized, such as our auditory perception and the thoughts associated with hearing the sound. Simultaneously, the streams of consciousness that are not necessary for focused attention on the sound are diminished. With the addition of an extended temporal dimension to this idea, where focused attention is held and relevant streams are maintained for longer periods of time, we can consider this to be actively attending to the attentional target.[18]

We see how our conscious experience enables us to focus attention on specific targets through the restructuring of streams of consciousness, but how does this apply to the scenarios that we've seen in previous sections? When we become receivers of informational content through real world or digital instances of social interaction, how do

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[17] Watzl, *Attention as Structuring of the Stream of Consciousness*
[18] Madary, *Visual Phenomenology*

we transition from various streams of consciousness to a singular experience of interaction? When we have a conversation with another, how do the various intensities of streams of consciousness bind together to structure what we consider to be a single "interaction?" The theory of structuralism proposed by Watzl is potentially pivotal in our understanding of the differences between real world interaction and digital realm interaction, as it possibly presents a unique advantage to answering what is known as the binding problem.[19] While the main focus of this paper is not finding a solution to this problem, it does hold a certain relation to our discussion of attention that cannot be ignored.

The binding problem consists of two complementary components, the segregation problem and the combination problem.[20] The former problem asks how concurrent properties of entities are perceived individually, while the latter problem considers how these individual properties are assimilated into the perception of a singular entity. For instance, how is that a red square can be perceived as having the separate characteristics "red" and "square" by two different cortical regions, yet are still seen in conjunction to form the perception of a red square? A possible explanation that aligns with our working definition of attention comes from Treisman's feature-integration theory, in which attention is serially directed to multiple stimuli through the prioritization of focal attention.[21] According to Treisman, "...features are registered early, automatically, and in parallel across the visual field, while objects are identified separately and only at a later stage, which requires focused attention… In order to recombine these separate representations and to ensure the correct synthesis of features for each object in a

[19] Hardcastle, *How We Get There From Here: A Dissolution of the Binding Problem*
[20] Mould, *A Solution to the Binding Problem*
[21] Treisman, *A Feature-Integration Theory of Attention*

complex display, stimulus locations are processed serially with focal attention." Therefore, separate features cannot stand in any relation to each other without proper focal attention, and thus we cannot perceive any entity as a whole unless we are paying focused attention to it. However, this does not mean that features unattended to are merely invisible or viewed as empty space. Instead, these unattended features will exist either as individual features without playing a part in a larger relationship, or they will not be perceived correctly or accurately. In this sense, feature-integration theory is not just a theory on how we compile multiple stimuli into perception, but how we compile multiple stimuli into the most *correct and accurate* perception of an entity.

We find that a similar process occurs in Watzl's attention structuralism, where multiple sources of stimuli are all experienced simultaneously, yet are filtered in terms of priority. Between these two theories of attention, we can now generate a working definition of attention that will be critical in illustrating the differences between attention as it operates in real-world and digital instances of content transmission. Firstly, the most basic levels of perceptual attention automatically absorb a variety of features that are available to perception, and this process is both constant and parallel across the perceptual field. Secondly, these features are organized serially and in order of relevance to establish experiences of whole entities. Lastly, temporal extension through focused attention allows for the restructuring of streams of consciousness that enable the most relevant features of relevant entities to be attended to efficiently and correctly. In summation, our theory of attention is *the constant process of serially filtering all available features in order to focus perceptually and temporally on the most relevant streams of consciousness within the context of interaction*.

**5.2) Differences in Attention Resulting from Informational Content Transmission**

With this new understanding of attention, we can now address the distinction between the reception of informational content resulting from real-world interaction and digital interaction. Since successful interaction with any stimuli requires appropriate attention to the content being transmitted, instances of interaction with the least interference between transmitter and receiver should result in the most efficient and accurate reception.[22] The goal of this section is to demonstrate how digital realm interactions introduce or reinforce additional interruptions within this process, slowing down or blocking proper attention altogether. To do this, I will analyze four different attentional constraints that vary in impact depending on real-world or digital mediums: excessive task-switching costs and processing lag, illusory conjunctions, and attention engineering. While all four of these impediments are present in both forms of information transmission, we will see particular significance resulting from the digital medium.

**5.3) Excessive Task-Switching and Processing Lag**

As we have seen from the last section, the totality of features presented by an environment are constantly and automatically absorbed through perception before any further analysis takes place. Modern cognitive psychology has shown us that proper attention cannot possibly be directed at all features presented due to the high cost of energy expended through neuronal information processing mechanisms.[23] As a result, in order to focus attention on singular occurrences of perception, we must serially prioritize the most vital pieces of informational content over what we consider to be irrelevant or

[22] Luft, *"The Most Beautiful Pearls": Speculative Thoughts on a Phenomenology of Attention*
[23] Selfe, *Technology and Literacy in the Twenty-First Century: The Importance of Paying Attention*

insignificant content. Despite restructuring our streams of consciousness this way, this is clearly not a permanent state, as we are capable of shifting attention to other environmental stimuli quickly and without intention even if our focused attention remains with the original stimuli.[24] This process is commonly referred to as multitasking, and is commonly used in colloquial settings when discussing multiple tasks being performed simultaneously.[25] The prevalence of multitasking in our daily lives combined with the drastic expansion of the digital realm has generated a new subcategory of multitasking often called media multitasking, in which multiple, digital stimuli are attended to simultaneously. While a surface level glance at media multitasking doesn't seem to expose dramatic differences between it and traditional multitasking, what we have discussed previously regarding the nature of technology reveals significant attentional constraints not seen in traditional multitasking.

Our ability to multitask is governed by task-switching costs, or the cognitive ability required to divert attention from one stimulus to another.[26] Since we have already established that attention must be a serial process, we also know that any attentional shift will also have a correlative task-switching cost. As we consistently attempt to divert attention amongst several stimuli simultaneously, the cognitive demand for the increased attention becomes too high, resulting in diminished quality of attention for all stimuli. Simply put, more stimuli requiring attention forces the brain to allocate smaller and smaller degrees of processing power in order to manage each stimuli's origin. This resulting delay is referred to as the psychological refractory period, in which the

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[24] Murphy, *Is There a Link Between Media-Multitasking and the Executive Functions of Filtering and Response Inhibition?*
[25] Aagaard, *Multitasking as Distraction: A Conceptual Analysis of Media Multitasking Research*
[26] Hanin, *Theorizing Digital Distraction*

task-switching costs of attention diversion become unmanageable and result in poor attention being paid to all stimuli.[27] For example, consider a classroom containing two children performing typical classroom tasks. The brain automatically absorbs informational content as it is perceived, receiving information such as height, noise level, shirt color, activity, and other sensory data relevant to seeing the children. However, as a temporal dimension is added and consistent attention is focused on a singular child, the features transmitted by the child's appearance become more focused and are restructured into a stream of consciousness that presents more accurate and more distinct information. The viewer can now attend to more precise informational content like what activity the child is performing, what they seem to be feeling, and other features not included in the original, broad perception of the classroom. Meanwhile, the informational content regarding the second child is not prioritized, and thus remains as individual features and characteristics without being attended to. Now assume attention is shifted from the first child onto the second child. The informational content regarding the first child is now re-prioritized as insignificant, and the stream of consciousness is restructured to include the features presented by the perception of the second child. The task-switch cost involved in diverting attention from the first child to the second is minimal due to the small amount of features presented, and thus the refractory period remains very short. Now consider the same classroom containing thirty children, each performing typical classroom tasks. Not only is there a much larger volume of features to absorb, but focused attention to a singular child dismisses the features associated with the other twenty-nine children. The task-switch costs required to serially attend to each child is impossible to satisfy, thus resulting in significant processing lag and poor attention to the

[27] Imren, *The Relationship Between Media Multitasking, Working Memory, and Sustained Attention*

children overall. Without the time and cognitive power to pay focused attention to each child as attention is consistently diverted between them, precise informational content is rarely, if ever, detected and attended to.

Keeping this classroom example in mind, we can begin to see where real-world and digital realm interactions can vary in regards to task-switching. As we have established a great deal throughout this paper, the digital realm is defined by constant, instant, and simultaneous content transmission. While we are consistently confronted with instances of multitasking in the real-world, the digital realm has amplified the amount of informational data available, relevant or not. While real-world instances of content transmission are limited to those that we are capable of physically experiencing through perceptual and sensory means, the digital realm has created opportunities for simultaneous physical *and* digital reception of information.[28] This added dimension to our attention requirement generates additional and higher task-switching costs for the brain as it attempts to filter and prioritize numerous origins of stimuli within two different dimensions. Our finite attention is now no longer split just between features physically present around us, but between physical features and the features we receive from the digital realm.

This problem associated with multiple dimensions of feature perception resulting from the digital realm is not meant to discount the multitasking involved with features present in the real-world. Oftentimes we generate excessive task-switching costs without even considering any features included in the digital realm.[29] However, the prevalence of the digital medium is not constrained by the same limitations seen by typical multitasking.

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[28] Mancas, *From Human Attention to Computational Attention: A Multidisciplinary Approach*
[29] Mole, *The Role of Attention in Multisensory Integration*

The digital realm has been optimized for quick accessibility and caters to its constant, instant, and simultaneous nature. Alerts, notifications, and alarms ensure the most relevant content transmissions don't go unattended, whether or not we are actively engaged with the digital realm.[30] This fact alone suggests that we are always involved with the digital realm to some degree, whether or not we are actively paying focused attention to it. We may be attending to interactions within the real-world one moment and then immediately pulled into the digital realm by visual or audible cues, automatically diverting our attention away from whatever interaction we were attending to in the real-world.

An easy counterargument to make regarding this assertion is the strict filtering of one of the domains in which features exist. For instance, when interacting in the digital realm, one could argue that physical features become less relevant and prioritized to a lesser degree, or vice versa. If we pay focused attention to the one dimension, we remove the problem of increased task-switching costs arising from the dimension not currently attended to. While this argument does appear legitimate at first, it ultimately fails to recognize the practical purpose of our attention and the ways in which we apply it to experiential life. At its core, this proposal is stating that the removal of stimuli sources reduces task-switching costs, and that the avoidance of feature perception simplifies the cognitive demand necessary for attention, both of which are true statements. However, our ability to prioritize features and generate streams of consciousness for focused attention is a direct result of the fact that we will always be subject to high volumes of stimuli. While removing sources does consequently reduce task-switching costs, it comes at the price of losing instances of interaction within the dimension they exist in. Similar

[30] Ngo, *Media Multitasking and Its Effects on Multisensory Integration*

to a horse wearing a blinder in order to focus on singular tasks without becoming overwhelmed, we too could create societal "blinders" that inhibit large portions of our perception in order to avoid excessive task-switching costs. Imagine driving on the road without signs, symbols, billboards, or other forms of communication; while focusing on the task of driving may become incrementally easier, we lose the interaction between ourselves and those expressions of informational content. Since many of our experiences within the real-world and digital world are contingent upon our ability to focus attention on certain entities, this argument becomes more of a problem than a solution.

**5.4) Illusory Conjunctions**

While feature perception happens automatically and instantly, the subsequent restructuring of consciousness streams through focused attention is still a cognitive process and therefore subject to misinterpretation just like any other sensory data. Even in cases where an entity is originally perceived accurately through focused attention, failure to maintain temporally extended attention can result in features combining incorrectly in memory storage, resulting in unreliable perception or mismatched features. When multiple entities are unattended to simultaneously, their features drift apart and fail to associate as one singular entity. While these features are separated from their counterparts, our inattention can result in their improper combination, wherein two distinct features that don't belong can form an incorrect perception of an absent entity. These illusory conjunctions, as argued by Treisman, occur either as a result of focused attention being interrupted by task-switching or through the absence of temporal extension during focused attention.[31]

[31] Treisman, A Feature-Integration Theory of Attention

Similar to excessive task-switching costs, an added dimension of possible features also creates much more opportunity for illusory conjunctions especially when the added dimension is as fast paced and transitory as the digital realm. The rapid transmission and reception of features through a digital medium both requires and warrants very little focused attention to be paid, and the content shared is highly conducive to this system. Knowing that the content transmitted will not stay the subject of focus for extended periods of time, many features are designed to attract viewership for mere moments before being shadowed by the newest content. Consider how we traverse the digital realm: clicking, scrolling, and tapping our way through mountains of content quickly, taking very little time to interact with the content unless some feature of it captures our attention. Without a direct need for focused attention, these features that we absorb through a digital medium fall back into an unattended state, where they remain as individual features opposed to whole entities. Without temporal extension, no restructuring of consciousness takes place, meaning focused attention can't possibly take place in between transmissions of content. Because of the excessive amount of temporary features experienced through digital media without attentional focus, illusory conjunctions are not just probable, but inevitable.

An argument can be made that illusory conjunctions may occur, but don't actually disadvantage a user because the conjunctions only occur with the features left unattended. Since the features are unattended, we can assume that a digital media user believes the features to be irrelevant or insignificant, and thus don't actually need proper interaction with the content. Not only does the illusory conjunction not directly disadvantage the user, but the content itself would be unattended to originally if seen in other contexts. If

this is the case, attention regulation is still filtering out insignificant content, whether or not it is correct or accurate. This argument seems to have merit, but does not benefit the actual problem as it exists practically. While yes, cases of illusory conjunctions can be filtered out beforehand and the problem is seemingly avoided, these instances do not actually tell us anything we don't already know about feature integration and focused attention. If the illusory conjunction features are insignificant, they are filtered out immediately and become a normal occasion of attention regulation, devoid of any hypothetical illusion. If the features, and thus illusion, are filtered, we never actually have a true illusory conjunction. So, this tells us nothing about cases in which illusory conjunctions happen to relevant features, which according to Treisman, can still happen even after focused attention and consciousness restructuring. Consequently, the problem of illusory conjunctions occurring post-attention is still present, and in combination with the exceptional volume of digital realm features transmitted, becomes an even larger likelihood.

### 5.5) Attention Engineering

The third and final example of differing disruptions or diversions present between real-world and digital realm content is intentional attention engineering, a relatively traditional mechanism that has taken on an increased role in digital content. Simply put, those who transmit any type of content want to direct viewers' attention to specific content or types of content. The most obvious example of this occurring in the real-world is traditional advertising, where a product being sold is transmitted in such a way that the demographics most likely to buy are targeted over those with smaller chances of

purchasing. Specific transmissions of target-related content is not only emphasized, but forced onto those who have increased probability of buying. The popularization of the digital realm has enhanced this system dramatically, not just for consumerism but for nearly every aspect of the lives of digital realm inhabitants. In traditional real-world methods, collecting data regarding the lifestyle choices of individuals was not straightforward, and significant investigation could only provide information to a certain degree. For instance, imagine a highway billboard promoting a new brand of cereal made for children. Market research may look at certain factors that may increase the popularity of the cereal before even building the sign, such as cereal sales in local stores, local population of children, and the area's financial status. If these factors suggest that the area may have a substantial population of children with families with a history of purchasing the cereal, the billboard will aim to grab the attention of these consumers.

However, the typical job of consumerist advertisement has taken on a new role in the digital realm, apart from simple market research. The digital medium is extremely conducive to monitoring information regarding the lives of its users, as the content we interact with, the content we avoid, and the content we endorse all become public domain. Through extended digital realm habitation, these recorded interactions display patterns and trends that clearly display our purchasing habits, family, friends, employment, and political beliefs amongst others.[32] As we perceptually filter out irrelevant content, the content itself also simultaneously begins to filter out expected irrelevant content and emphasizes the content anticipated to be significant based on your digital history. In turn, the line drawn between advertisement and actual content has

[32] Hartman-Caverly, *Human Nature is not a Machine: On Liberty, Attention Engineering, and Learning Analytics*

become extremely blurred, with many instances of advertisement directed towards keenly calculated demographics. Consider the cereal billboard again; while market research has shown that the area may be conducive to increased sales and popularity, the billboard is still seen by the total highway population which contains many individuals not tempted by the advertisement. Now consider a "digital billboard," such as a simple advertisement, placed on a children's website. This new advertisement avoids wasted consumer potential by directly targeting a digital environment where the main demographic is likely to be enticed by the advertisement.

Additionally, this process is not restricted to commercial advertisement, and instead has branched out towards interactions featuring academic, cultural, and societal topics. While access to diverse perspectives and opinions is amplified in the digital realm, through attention engineering, the possibility for confirmation bias also becomes exceedingly high. As our digital footprint becomes solidified through digital content interaction, oftentimes the content interacted with becomes the majority of the transmitted content seen, reassuring our beliefs and further reinforcing our commitment to them. Since the digital realm reflects the concept of a global village, users with similar belief systems and perspectives from around the world can interact and share their common ground, encouraging the assumption that one's perspective is standard.

## Chapter 6: Attentionally Motivated Social Learning

As we enter the last chapter of this paper, we now have all of the pieces necessary for proposing a social learning theory able to account for the newly emerged digital realm. We have seen how increasing accessibility to cheaper yet more advanced technology has led to the creation of the digital realm, and how the transmission of informational content differs between this digital realm and the real-world. We have discussed the impact of these digital realm interactions on behavior and how current social learning theory fails to account for some aspects of the digital interactions that are commonplace today. Thus, the remaining task lies in generating a theory in which attentional and motivational differences between a real-world dimension and a digital dimension can both be accounted for through a singular explanation of behavior. This proposed theory, which I will refer to as attentionally motivated social learning, is dependent on the two factors previously isolated as major differences between real-world and digital information transmission: attention and motivation. I will argue that, while these factors are separable, the cooperation between them is the driving force behind behavioral adjustments resulting from social interaction.

Since feature integration is the primary building block for attention and happens naturally and automatically, it will also act as the beginning of this social learning process. I will once again utilize the theory of attention described earlier, with feature perception leading to consciousness restructuring through focused attention. While similar to Bandura's emphasis on observation, feature perception happens without intentional stimuli and without a specific model to imitate. At the most basic level, feature integration acts as an involuntary response to entities within perceptual range.

Within our discussion, this may either be a physical range, such as the physical environment we exist in, or a digital range, such as the digital environment we have phenomenal access to. This means that at any given time, we are absorbing features from multiple sources simultaneously as long as we are able to perceive in some manner. Following feature perception, we naturally integrate relevant and complementary features into whole entities through temporal extension. In both real-world and digital realm feature perception, the sustained, continuous attention directed towards separate yet related features inevitably consolidates them into a full entity. Consequently, we are left with a whole subject to pay direct attention to. As a result, we begin to structure our streams of consciousness around this target subject, prioritizing its relative features over irrelevant features to create focused attention. The prioritized consciousness stream attempts to avoid illusory conjunctions and other problems associated with simultaneous attention diversion such as excessive task-switching costs and processing lag.

From this stage of attentionally motivated social learning, two important questions arise concerning effectiveness and practicality: why is this stage so important, and where does it diverge from current theory? To answer the former, not only can we not properly learn without focused attention, we also cannot interact properly with any external stimuli in an appropriate fashion. If we are to interact with any entity, in the real-world or the digital realm, we must first ensure that we are experiencing it as accurately and effectively as possible. Our ability to perceive stimuli is firmly rooted in our ability to regulate attention and divert attention away from insignificant stimuli while simultaneously directing it towards the most relevant content. Therefore, without proper focused attention, we simply cannot trust our basic perception to provide accurate

information regarding our external world. In regards to the latter question proposed, current social learning theories do actually contain a dependence on attention, yet they tell us very little about the actual process involved. While Bandura's emphasis on observation comes the closest, the three theories discussed previously all require focused attention to be paid at some point throughout the social learning process, whether it's through analysis of reinforcement value or through the establishment of an MKO. The problem with these theories is the presumption that attention works identically across all ranges of interaction, and thus requires less, if any, explanation or consideration. However, as this paper has aimed to demonstrate, certain mediums of interaction do actually have differing attentional requirements, or demand attention to be regulated in ways that diverge from the typically assumed channels. Not only do current theories overlook modern attentional expectations, their general explanations of attention are also lacking in prevalence.

As we move from the attentional stage of my proposed theory to the motivational stage, we must explain how focused streams of consciousness somehow impact actions and behaviors as a result of interaction. We have already established key areas where current theory has failed to account for digital realm interaction, so I will once again utilize these factors in establishing an improved theory. Since the main areas unaccounted for include the preexistence of psychological situations, MKO depreciation, and reinforcement variation, I will focus on accommodating these aspects in my proposed theory as well as consolidating them into an interdependent formula for behavior.

Despite having focused streams of consciousness directed towards a target entity perceived in an environment, this attention does not operate independently of other

cognitive processes. While the combined features of the subject are prioritized over other perceived features, this prioritization is restricted to the absorption of features and features alone. This means that other internal catalysts like motivation and reason are also impactful on how we process the subject of our consciousness stream. Similar to Rotter's concept of psychological situation, there are also subjective features that impact the ways in which we cognitively assess our interaction with an environment. Because of this, the attentional and motivational stages of my theory become intertwined, with both relying on the other stage for proper interaction. Parallel to the differences between interactions I have previously demonstrated, I will suggest three correlational factors most important to the motivational stage of my proposed theory.

Firstly, streams of consciousness can be influenced by a preexisting knowledge base generated by past interaction with identical or similar perceptual experiences. As we restructure our consciousness streams into whole entities, the individual features become cognitively associated within specific groupings. While the lack of temporal extension or attention diversion can deconstruct an entity into individual features again, those individual features remain grouped as possible combinations in our memory, allowing for quicker combinations in future interactions with similar feature perception. For instance, consider a police lineup in which an individual attempts to select a previously encountered perpetrator out of a group of individuals with similar features. Feature integration theory would propose that selecting the correct individual may be difficult due to the original moment of integration being followed by loss of temporal extension or attention disruption. However, despite not maintaining focused attention, the original integration cognitively grouped the associated features involved with the interaction as

being linked to the subject, and thus re-integrate more efficiently compared to a brand new instance of integration. With each successive integration of features for identical subjects, the knowledge base grows and accelerates the efficiency at which the whole entity can be wholly perceived. Furthermore, if an interaction is able to surpass mere integration and result in the restructuring of consciousness streams, additional interactions with associated entities will also result in expedited perceptual ability. If we frame our interactions with features in this lens, it is capable of accounting for both real-world and digital realm instances of rapid successions of associated features. While proper focused attention and restructured consciousness streams are the ultimate goal for accurate and reliable perception, this theory can still account for situations in which brief instances of feature integration are still able to produce true interaction through associated features present in a preexisting knowledge base. When confronting the manner in which we interact with the digital realm, this ability to explain interaction without full attention is more advantageous when compared to current social learning theories.

The second aspect involved with behavior that current theory doesn't seem to account for comes from Vygotsky's concept of an MKO, in which MKO depreciation causes the provocation of behavior that isn't reciprocal to what is normatively expected. Once again we must rely on our understanding of perceptual attention to account for this phenomenon. While Vygotsky attempts to link the establishment of an MKO to desired behavior, the lack of consideration for perceptual features creates an explanatory gap between cause and effect. While it is argued that an MKO is essential for the acquisition of new informational content that results in altered behavior, the theory overlooks the

cognitive processes involved in determining an entity as an MKO. Through the motivational stage of attentionally motivated social learning, the establishment of an MKO is a cognition-based process as opposed to a goal-based process, wherein the MKO is a result of expectation instead of authentic qualification. Contingent upon both the focused perception of a possible MKO and the preexisting knowledge base including similar features, the establishment of an MKO becomes much more subjective to internal processes than external factors that may lead an entity to become an objective authority. If an individual perceives an entity to possess features associated with being an MKO, that entity itself can be associated with MKO status within the knowledge base. This would explain why normatively incorrect behaviors are still produced even if endorsed by those that would not typically be considered authorities in the particular context. This perceived MKO, despite having no actual authority, transmits certain features that are associated with actual authority. When combined with focused attention and a supporting knowledge base, this perception of MKO status projected onto an unqualified entity acts in the same way as an actual MKO, despite not transmitting the actual informational content desired.

The transition from actual MKOs to perceived MKOs as a result of knowledge based associations is a crucial factor in accounting for current theories' explanatory gap. In a digital realm occupied by millions of practically anonymous users, qualifications for goal-based MKO establishment are sparse, or at the very least, difficult to identify and verify. However, our perceptual interactions with others through this digital medium are guaranteed, thus creating a need for a distinctive explanation as to why we award MKO status to some and not others, independent of qualification. Without the need for

normative requirements for MKO status, behaviors resulting from ill-advised or inappropriate inspirations can still be accounted for and explained.

As we transition to the third and final aspect of attentionally motivated social learning, we find a similar problem to MKO depreciation occurring in reinforcement. According to Rotter, reinforcement value is the probability of an action to result in a desired outcome. Simply, if we want a certain outcome, we will typically enact certain behaviors most likely to lead to the outcome. The problem previously identified with this concept is a result of normatively incorrect actions being sought after due to its prioritization in one dimension and not the other. With the addition of a digital dimension existing separate from the real-world, the social norms governing each have also separated, resulting in two different sets of norms regulating behavior. Because of this, behaviors or actions enacted in the real-world may have contrasting effects in the digital world, or vice versa. While the simplest solution is to take this answer, two separate governing norms, as an explanation, the goal of this theory is to have one singular explanation for behavior potential in both dimensions. So how is one to explain actions being reinforced in one dimension while simultaneously being discouraged in another?

To explain this, I will expand on an idea proposed by Rotter, namely the concept of a minimal goal. The minimal goal is the least amount of reinforcement that still results in a positive value when factored into the behavior potential formula. While this idea, in Rotter's formulation, is only applicable to real-world instances of interaction, it can be expanded and developed to account for variations in reinforcement between the two dimensions discussed in this paper. Much like perceived MKOs were treated as expected MKOs in the previous section, the minimal goal can also be treated as expected minimal

goals as opposed to objective minimal goals. Instead of an individual considering reinforcement values against a singular dimension and internally calculating behavior potential, as proposed by Rotter, attentionally motivated interaction is the result of the same calculation that includes not one dimension, but two. While one dimension may seemingly result in smaller probabilities of reinforcement, the expected results of the second dimension may outweigh the first dimension's low reinforcement value. While the end result, namely the action or inaction of a particular behavior, may remain the same, it is a result of a two-fold analysis as opposed to consideration of a singular dimension. For instance, consider an individual who wishes to express discontent regarding a meal at a certain local restaurant. A desirable outcome of this expression would be one in which a substantial audience is reached and informed, and adjustments regarding the restaurant's popularity and reputation are impacted. In the real-world dimension, this desired outcome has a significantly lower reinforcement value as the expression can only reach as far as one could realistically transmit it, most likely through word of mouth, which in turn may dissuade the individual from attempting to reach the desired outcome. However, with the addition of the analysis of a digital dimension that maximizes the outreach of the expression, the reinforcement value is increased and the act of expressing the discontent is much more likely to result in the desired outcome.

With these three components of the motivational stage in place, we can begin to see the bigger picture of how they fit together with the attentional stage. While the attentional stage provides basic streams of consciousness through feature perception, the entities they combine to form are dependent on motivational factors present within subjective experience for behavior enaction. As we automatically perceive features in our

corresponding dimensions, our personal reception of them impacts the ways in which we respond to them despite the dimensional differences. While focused attention can be directed to any entity within our environment, it would be faulty to assume that our behavior is solely dependent upon the things we perceive for the explanation of resulting behavior. Conversely, it is impossible to consider any behavioral impact without first addressing the perceptual stimuli that initiate such changes. Therefore, attention and motivation must collaborate to truly enact any behavioral changes. Without one of the two components, interaction cannot result in behavioral change.

## Chapter 7: Advantages of Attentionally Motivated Social Learning

When considering the previously discussed theories of social learning, an attentionally motivated theory seems to have a significant advantage in accounting for the added dimension of the digital realm. The utilization of the interdependent nature of attention and motivation to explain behavior alterations in social interaction can account for issues previously ignored or discounted by other theories, while still maintaining equivalent explanatory power for all instances of interaction. While other theories refrain from comprehensively explaining the role of attention in social learning, this proposed theory adopts not just the significance of attention in social interaction, but the function of it as it pertains to traditional interaction as well as unique forms of interaction. This is not to say that previous theories are unreliable or incorrect, as the components included in each are fundamental in the establishment of new theory. The behavioral sciences have never been an exact science, and many of the theories concerning its topics are highly relative to the circumstantial evidence of the time. For this reason, it is especially critical that the theories we have to explain behaviorism adapt to new behavioral trends as quickly as the trends themselves evolve.

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