

The Role of Social Reasoning in the Development of Self and Social Regulation

by

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Abstract

In this dissertation I consider young children's developing understanding of their own and other people's social conduct, an understanding that involves a refined attunement to the social activity of the people with whom they interact. Following a relational approach to development, and integrating the philosophy of G.H. Mead with the philosophy of action inspired by Wittgenstein and Anscombe, I will argue that young children's reasoning about self and others is social reasoning; viz., reasoning about the circumstances in which people are acting, the typical conduct of people acting in such circumstances, and the antecedent circumstances of individuals involved in a particular situation.

I argue against the theory that young children develop a "theory of mind" through which they learn to reason about the minds of self and other. Infants do not possess innate cognitive or neural mechanisms that facilitate access to the inner, unobservable minds of others. Infants and toddlers possess neither innate nor theoretically developed access to the mental causes of human action. Simply put, mental causes do not exist in the understanding of infants and toddlers.

I argue for a relational theory of development. A child's understanding of, and explanation for, the acts of others are socially constituted. Talking or thinking about mind, along with the intentions, desires, likes, and beliefs that occupy our minds, is not a distinct form of talking or thinking that merits a distinct form of psychological analysis and a special role in explaining development. Rather, children learn to anticipate, talk about, and explain a broad, and at times, subtle array of social activities. Children acquire an understanding of what people typically do in particular circumstances and what a particular person typically does in a particular circumstance.

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Introduction

In this dissertation I will consider young children's developing understanding of their own and other people's social conduct, an understanding that involves a refined attunement to the social activity of the people with whom they interact. Following a relational approach to development (Carpendale & Lewis, 2006; Martin, 2006, Martin & Gillespie, 2010; Sugarman, 2006), and integrating the philosophy of G.H. Mead (1932, 1934, 1938) with the philosophy of action inspired by Wittgenstein (1953) and Anscombe (1957), I will argue that young children's reasoning about self and others is social reasoning; viz., reasoning about the circumstances in which people are acting, the typical conduct of people acting in such circumstances, and the antecedent circumstances of individuals involved in a particular situation.

Contra Gopnik and Wellman (2012), I will argue that young children do not develop a "theory of mind" through which they learn to reason about the minds of self and other, nor do they possess innate cognitive or neural mechanisms that facilitate access to the inner, unobservable minds of others as asserted by Baillargeon, Scott, and He (2010). Infants and toddlers do not understand mother's *intention* to make a bottle of milk or brother's *belief* that the toy is under the bed as the *mental cause* of mother's or brother's actions. To be specific, if a purported cause of human action can be characterized as a mental, psychological, or neural state that (1) is temporally and conceptually distinct from, and yet in constant relation with, an occurrence of human behavior (Tanney, 2008) and (2) occurs in the unobserved mind of an individual (Searle,

1983) then infants and toddlers do not understand mental causes. Infants and toddlers possess neither innate nor theoretically developed access to the mental causes of human action. Simply put, mental causes do not exist in the understanding of infants and toddlers.

Certainly, by the time most children enter kindergarten they have a rich understanding of what people do, what they want to do, and why they want to do what they want to do. Many kindergarten children are able to talk about an inner psychological world of “wanting,” “believing,” “liking,” and “fearing,” a world of reasons that explain the actions of self and others (Carpendale & Lewis, 2006). Since infancy, children have gradually become self-aware as they interact and cooperate with others (Reddy, 2003). They have come to attune to their own roles as actors acting in coordination with others (Mead, 1934, 1938). As children coordinate and interact with others, they encounter others talking about some particular action, talk that often involves reasons for that action and talk about a particular intention, belief, or thought that accompanied the action. Children (1) become aware of their own roles in social activity and (2) learn the descriptions people use to talk about or explain social activity. Children are shown and gradually learn to reflect on their reasons for action and also the somatic and affective sensations that accompany their embodied orientation to action. Such reasoning has accompanied countless instances of social interaction and constituted an (often sequential) explanation for their own and other people’s acts. Children learn to attune to their own momentary incipient readiness to engage in a situation. They have learned to anticipate, talk about, and reason about their own acts as others have talked with them about the acts

of self and others. They have learned to adopt and attune to the perspectives required to coordinate their engagement in social acts.

Crucially, a child's understanding of, and explanation for, the acts of others are socially constituted. Talking or thinking about mind, along with the intentions, desires, likes, and beliefs that occupy our minds, is not a distinct form of talking or thinking that merits a distinct form of psychological analysis and a special role in explaining development. Rather, children learn to anticipate, talk about, and explain a broad, and at times, subtle array of social activities. Children acquire an understanding of what people typically do in particular circumstances and what a particular person typically does in a particular circumstance. A child can anticipate that her friend will play with the train because that is what her friend usually plays with. The child can anticipate that her friend will look for the train in the blue box because that is where she usually puts it or that is where she put it last. A child can also anticipate that her friend will appear from the bathroom wearing clean clothes after falling in the mud even though she did not see her friend get dressed. There is no distinction to be made between reasoning about doing (e.g., getting dressed) and reasoning about thinking (e.g., wanting to play with the train or believing where the train is). Both are explanations of what people will do (or have done) that are constituted by the way we talk about our social circumstances.

This thesis has important implications as to how we understand self-regulation in preschool and elementary children. In the broadest of brush strokes, self-regulation in early educational contexts assumes (1) that a child is able to attune to and coordinate with social norms, norms typically established by teachers, and (2) that a child is able to

choose a (typically socially sanctioned) course of action even though she may be inclined to act otherwise (see, for example, Flynn, 2010; Giesbrecht, Müller & Miller, 2010; Whitebread, Bingham, Grau, Pasternak, & Sangster, 2007). Although self-regulation no doubt involves a child's ability to inhibit impulsive behavior, attend to salient activity, switch between different perspectives, and, at times, to deliberate, plan, and strategize (contra Posner & Rothbart, 2000), I will argue that self-regulation cannot be characterized as an innate ability or as a neural or cognitive function for inhibiting or regulating behavior. The account I will defend asserts that self-regulation is a developmental achievement that requires an understanding of social practices and an agentive ability to engage with these practices. Rather than being an inner cognitive function or mechanism, self-regulation is a form of social understanding and social action. I will argue that self-regulation develops as a child learns about the patterns of social activity within which she engages others, learns the descriptions that accompany social activity, and learns the reasoning through which a particular course of action is chosen.

Chapter One: Premises and the Developmental Context to which the Thesis will be Applied

On the Constitution of a Sound Premise

As I set forth the three premises on which I will develop this thesis, I will present warrants for the soundness of these premises. For the purposes of this dissertation warrants for a premise will involve at least one of the three following characteristics. The first characteristic is that the premise involves a feature of human experience that is indubitable (Taylor, 1978). Any person that experiences *this* experience, intuitively the experience is an experience of *this* without reflection, knows that she is experiencing *this* when she does reflect, and could not doubt that the experience is occurring or has occurred.

The second characteristic of a premise that might warrant its use in this thesis is that the premise is widely believed to be the case. It would be insufficient warrant for a premise if only I experience this premise, even if my experience is indubitable. While we can certainly allow some leeway in how individuals may describe a premise, the premise itself should be broadly accepted. Individuals may argue, for example, about how best reflective thought should be characterized. Few, however, would argue that humans are incapable of reflective thought or that they do not experience reflective thought. That humans engage in reflective thought could constitute a premise for an argument.

The third possible characteristic of a premise is that there should be reasonable grounds for agreeing that the premise is warranted. Such grounds may be logical. Such grounds may involve experience and the shared knowledge derived from experience, including understandings derived from the empirical investigations that contribute to knowledge building in the social sciences. At the same time, such grounds will always at the same time be conceptual. By way of illustration, most would agree that there is clear evidence for people's (or animals') visual attention. That people attend to the world around them or that people attend preferentially to particular aspects of their world is an empirical issue. We can observe, count, and analyze instants of visually attending. We can only do so, however, if we already possess a concept of attending and understand how attending may be distinguished from seeing or looking. We need first to agree what counts as attending—a conceptual issue—before engaging in empirical investigation. Only when the conceptual work is done might we support a claim about this concept that can subsequently constitute a premise.

In short, a premise must involve reasonable grounds whether logical or experiential for believing in the premise. In addition, there needs to be a broad consensus that this premise is the case and a shared conceptual understanding of what is the case when we say that we believe in this premise.

The First Premise: Social Acts

The first premise of this thesis is that the world of human action is a world of social acts. Examples of social acts include standing in a supermarket checkout line up,

attending a lecture, buying a coffee, or taking part in a family meal. We can conceptualize social acts as involving a number of people interacting in a mutually understood manner towards a mutually anticipated outcome. The performance of a social act and the outcome of the act are structured by a group of people cohering with a mutual and normative understanding of that act (Mead, 1925, 1934). Engaging in social acts involves people coordinating their activity, assuming different roles in a social act and, at times, exchanging roles (Gillespie, 2005).

Social acts are a feature of our experience that is “indubitable and beyond cavil” (Taylor, 1978, p. 151) for ourselves and for very young children. Any person who lives among and is able to socially engage with other people will, on a day-to-day and perhaps moment to moment basis, experience social acts such as meal times, shopping, or just idle chatting.

It needs to be emphasized, however, that the premise set forth here is that social acts exist and *not* that people *experience* social acts. As I will discuss next, people do experience social acts. We experience social acts because social acts are part of the world in which we live.¹ There is a distinction between the existence of social acts and our experience of social acts. This distinction matters because the thesis set forth herein pertains to the development of social understanding. A developmental account must take

¹ This claim involves another premise, viz., that we experience the world because there is a world to experience. The arguments set forth herein, however, do not address the arguments of solipsism or strong skepticism. Moreover, to my knowledge, there is no such thing as a solipsistic or skeptical account of human development, so addressing such issues seems moot.

account of the world that is already there and into which the child grows. Of course, social acts could not exist if there were no people experiencing them. At the same time, if a few people were unable to experience social acts, perhaps because they had been born just an hour ago, social acts would still exist. That these acts exist in the world into which the neonate is born is a premise of this thesis. It is a premise that highlights a key feature of the world into which the child is born.

The Second Premise: Individuals Attune to and Engage with Social Acts

The second premise is that individuals attune to and engage with social acts (Mead, 1925, 1938; Stone, Carpendale, Sugarman, & Martin, 2012). There is a sense in which this second premise is logically entailed by the first. If people did not attune to and engage with social acts, there would be no social acts. Clearly then, individuals are able to coordinate with others and assume a role that facilitates the shared performance of a social act.

Rather than presupposing what attuning and engaging involve, it will be helpful to articulate what I mean by attuning and engaging. For this task, I will turn to the work of George Herbert Mead.

The life project of the philosopher and psychologist George Herbert Mead (1863–1931) was to account for the emergence of the human form of life. In the broadest of brush strokes, Mead's philosophy can be characterized as a pragmatist philosophy in which an understanding of the world emerges through practical dealings with everyday situations. Throughout his career, Mead keenly followed developments in psychology,

biology, evolutionary theory, and the physical sciences. He sought to account for how an embodied, biologically evolved human creature could emerge into a world of socially constituted symbolic meanings. Mead's thought will play a key role in developing the thesis of this dissertation.

Attuning, engaging, and perspectives. People attune to the world. Attuning is not a passive absorption of the environment, nor is it a reflective or deliberative cognitive process, but rather, it is an active sensing of the surroundings that involves incipient responses to what is sensed (Merleau-Ponty, 2002; Rosenthal & Bourgeois, 1991). Mead (1910, 1912) referred to these incipient responses as "attitudes." An attitude is a "readiness" to engage (Mead, 1934, p. 12) which may or may not result in an overt response. An attitude is "an organization of the various parts of the nervous system" (Mead, 1934, p. 11) that does not simply sense what is taking place, but also what is going to take place or what can take place.

There are, of course, situations that call out multiple responses (Mead, 1934). Often an array of attitudes—a collection of alternative possible responses—arises in a moment of attuning. The arrays of attitudes that arise in a moment of attuning constitute a perspective (Martin, 2006); namely the totality of possible responses available to an individual within a particular and momentary situation. To the extent that any organism attunes to, and interacts with, its surroundings, it occupies a perspective. People occupy perspectives that arise through their moment to moment attuning to both their surroundings and their own attitudes, perspectives through which they orient to, and interact with, their immediate concerns, whether imaginatively or through overt acts

(Martin et al., 2008). Because a perspective involves both a revealing of a particular situation and an anticipatory readiness to engage within the situation, perspectives are intentional in the philosophical sense of the word; that is, a perspective constitutes the orienting (or, in philosophical terms, directedness) of the agent within the world.

Perspectival engagement involves orienting within a world of functionally adaptive agentic activity, rather than a world of neutral physical facts (Mead, 1926). For people, the agentic activities to which we typically attune are the social acts—the checkout line ups, family meals, and office meetings—that occupy much of our lives.

That we attune to social acts is indubitable. Moreover, once we have conceptualized what a social act is, attuning to social acts is amenable to empirical investigation. One well known example of an empirical investigation into children's attuning to social acts is Rogoff's studies of Mayan children (Rogoff, 2003; Rogoff, Mosier, Mistry, & Göncü, 1993; Rogoff, Paradise, Arauz, Correa-Chavez, & Angelillo, 2003). Lave and Wenger (1991) offer another well known study. In these studies, the researchers found that children attuned to social acts and how they were performed and gradually, through such observations, learned to participate in the social acts of their society. In short, the premise that we attune to social acts is warranted both as an indubitable feature of our own experience and also through empirical investigation.

The Third Premise: A Neonate is a Biological Organism

A neonate is a biological organism. What a biological organism is and what a biological organism does, however, can be conceptualized in a number of ways. Such

conceptions range from a complex biological structure reducible to its constituent physical particles, on the one hand (e.g., Kim, 1998, 2005; Weinberg, 1995, 2004; Wilson, 1978), to an emergent conception of interactive, self-maintaining processes, on the other (e.g., Bickhard, 2002; Bickhard & Campbell, 2003; Kauffman, 1995; Polanyi, 1968).

As discussed earlier, a sound premise should be non-controversial. Whether a biological organism is best conceived as reducible to or emergent from particles of matter is highly controversial. To the extent that this dissertation will argue for a more emergent conception of biology, this conception needs to be supported with evidence and theory rather than posited as a premise. At the same time, there are certain facts about biological organisms that are empirically warranted, and can constitute broadly acceptable premises.

A biological organism requires an external source of energy in order to sustain itself. Biological organisms are able to orient towards and detect sources of energy in the environment and, in many cases, move towards these energy sources (Barham, 1996; Kauffman, 1995). What energy source a biological organism orients towards depends on the evolutionary history of that organism. The evolutionary history of an organism is manifest in its molecular constitution, in particular its genetic constitution. An organism's molecular constitution has a determining role in shaping how it orients towards and engages with its environment. With many organisms, the ontogenetic history is also manifest in its molecular constitution and has a role in shaping how an organism orients towards and engages with its environment (LeDoux, 2003). Organisms are able to learn.

The molecular constitution of an organism has been shaped through interaction with the environment over evolutionary and ontogenetic time spans. At the same time, the molecular constitution of the organism determines how an organism orients towards and engages with the environment. When we talk of a biological organism, we are talking of an organism that is able to orient towards and engage with its environment and, in interacting with its environment, it changes itself. A biological organism can be explained by (1) the dynamics of its environment, (2) its interactions with its environment, and (3) its own physical constitution. At the moment of birth, a neonate is a biological organism that can be understood in these terms.

I start this dissertation with the premise that human infants are biological organisms that are born into and learn to attune to a world of social acts. The thesis offers an account of how such biological organisms born into a world of varied but fairly routine social acts become people who are able to understand and reflect on their own and other people's actions. I will argue that children's and adult's reasoning about self and others is social reasoning, reasoning about the social acts to which they attune and their roles in social acts.

Chapter Two: Social Understanding in Experimental and Social Contexts

Before developing the thesis of this dissertation, namely, that children's reasoning about self and others is social reasoning, it will be helpful to consider the contexts in which the thesis applies, that is, what might this thesis help to explain? Clearly, as specified in the premises, the contexts pertain to infant and early childhood development. These contexts involve a child's growing into a world in which social interaction is profoundly salient to the child's sustenance and in which a child's social interactions involve an increasingly sophisticated ability to anticipate the perspectives of others, an ability we can refer to as social understanding.

Social Understanding.

The concept of social understanding requires some elaboration. Carpendale and Lewis (2006) provide examples of interactions that involve social understanding. One example was presented as follows:

[O]ne day, just before Max's first birthday, he had just woken up and he was a bit grumpy. I (JC) said, "Would you like to read a book?" He smiled and laughed, and pointed to some of his books that were on the shelf. (p. 2)²

² JC refers to Jeremy Carpendale.

As the authors note, Max understood the word “book” and enjoyed the emotional salience of the interaction. Max also attended to and pointed towards the book and, in so doing, perhaps anticipated the attention of his interlocutor (his father) towards a particular book.

Another example, provided by Carpendale and Lewis is as follows:

“I’ll hold his hand so that he won’t be scared when we go over a bump,” said Hannah (2 years, 9 months) as she was sitting in the car beside her little brother, Max (3 months) (both in their car seats). (p. 2)

Here, Hannah is talking about emotions and understands that certain events or happenings cause people to feel sad. Beyond such descriptions of social interactions, characterizing social understanding becomes complex. Does Hannah know what Max feels? Does Hannah have access to the emotional states of her little brother? Did Max understand his father’s intention to read a book? Did Max know what his father was thinking, or did he know about his father’s “mental state” of “intending to read a book?” These are complex and controversial questions, questions I will address throughout this dissertation.

To establish some common theoretical ground with a broad array of potential readers, I propose the following characterization of social understanding (influenced by the work of Martin, 2006, 2007; Mead, 1925, 1934; and Carpendale & Lewis, 2006), stipulating some of the enabling conditions for being able to interact with others as we engage in the numerous social acts that constitute our day-to-day lives.

Social understanding involves an awareness of one's own perspective, an ability to take the perspectives of others, and an ability to coordinate among perspectives and so coordinate anticipated action sequences and their outcomes with others. Recall, a perspective involves a readiness to engage in a situation, or, we might say, an anticipation of what is about to occur. Being aware of one's own perspective facilitates an ability to adjust one's own perspective as circumstances—often social circumstances—demand. Understanding the perspective of another involves anticipating what another person is anticipating. Understanding the perspective of another enables an ability to engage and coordinate with another as that other anticipates, or perhaps as a third person anticipates (as might have been the case when Hannah told her father she would hold Max's hand). It is these anticipatory abilities that enable our participation in social acts ranging from picking out and reading a book (anticipated by Max, aged one) to engaging in a seminar discussion on *The Brothers Karamazov*.

I am not suggesting that this characterization of social understanding is complete. As adults, we can think about social occurrences in the distant past and reflect on the thoughts and feelings of those involved. Such an act of social understanding does not involve anticipation of future events. I will argue, however, that social understanding characterized in this manner will account for what young children are learning to do as they engage with others.

This thesis will focus on two areas of research in which the development of social understanding is emphasized. The first area of research is commonly referred to as the

development of “theory of mind.” The second area of research is commonly referred to as “self-regulation.”

An Experimental Context: “Theory of Mind” and False Belief Tasks

“Theory of Mind” research focuses on a child’s developing ability to anticipate the perspective of another person, that is, the ability to anticipate what another person will do or say. Typically, this ability is characterized as an insight into the minds of others, an understanding of other people’s intentions, desires, and beliefs (see, for example, Gopnik & Wellman, 1992). This developing ability has been investigated through a series of developmental psychology experiments that utilize a false belief paradigm developed some three decades ago.

In 1978, Premack and Woodruff posited that an individual has a “theory of mind” “if he imputes mental states to himself and others” (p. 515). Premack and Woodruff claimed that a system of inferences based on imputing mental states could be viewed as a theory because mental states were not directly observable, but the system of inferences about mental states could be used to make predictions about an individual’s actions. They sought to investigate whether chimpanzees have such a “theory of mind.” In a commentary on Premack and Woodruff, Dennett (1978) argued that convincing evidence of such understanding would require predicting action based on another’s false belief. This suggestion was followed up by Wimmer and Perner (1983) with a false belief task for young children in which a child observed a simple puppet show performed as follows: Maxi put chocolate in the blue cupboard. While he was out playing, Maxi’s mother

moved the chocolate to the green cupboard. When Maxi returned for his chocolate, the child was asked, “Where will Maxi look for the chocolate?” (p. 109). In this study, none of the 3- to 4-year-olds could answer correctly (that Maxi would look in the blue cupboard, where he still believed the chocolate would be) whereas more than half the 4- to 6-year-olds could.

In another task designed to assess false belief understanding, Gopnik and Astington (1988) showed children a box clearly labeled as a well-known brand of candy. The children opened the box and found pencils inside. When the children were asked what they thought had been in the box when they first saw it, more than half the 3-year-olds said that they had thought pencils had been in the box (even if they had said “candy!” when they first saw it). More than two thirds of the 5-year-olds answered that they had thought candy was in the box. Moreover, most 3-year-olds said that friends who had not opened the box would think that pencils were in the box, whereas most 5-year-olds said that their friends would think that candy was in the box. The findings of this experiment suggested that children were not only unable to distinguish between the perspectives of themselves and their friends (conventionally referred to as an inability to understand another’s false belief) but were also unable to demonstrate an understanding that their own perspective had changed from an understanding that there was candy in the box (conventionally referred to as an inability to understand “representational change” when the contents of the box were not as the child had expected).

Research with the tasks just discussed (which we will refer to henceforth as verbal, elicited, false belief tasks) were criticized as a “one miracle” view because the single

watershed insight of false belief understanding had been assumed to divide social cognitive development into a pre and post false belief watershed (Chandler & Hala, 1994, p. 403). Over the last two decades, substantive doubts have arisen as to whether false belief understanding is a singular ability. It appears that passing a false belief task depends on the circumstances in which the task is performed. For example, Chandler and Hala (1994) found that many children as young as three were successfully able to perform a false belief task if the circumstances of the task involved their actively hiding an object rather than simply being a passive observer of the situation.

As well as task circumstances influencing the age at which children pass a false belief task, the manner in which the experimenter structured the observation of false belief understanding also influenced the age at which false belief understanding could be inferred. Clements and Perner (1994) presented a puppet show with a similar storyline to the Maxi story, in which a mouse's cheese is moved while he is asleep. The narrator prompts, "I wonder where he is going to look?" Eighty percent of children as young as two years and eleven months followed this prompt by correctly looking at the place where the mouse had initially left the cheese. However, after a verbal inquiry by the experimenter, most of these children incorrectly claimed that the mouse would look in the place to which they had seen the cheese moved. Clements and Perner construed the child's initial gaze as evidence of "implicit" false belief understanding (p. 377) that preceded explicit false belief understanding by about one year.

Notwithstanding differences in performance that depend on the requirements and circumstances of particular false belief tasks, it has been argued that there is a trajectory

of developing social understandings leading towards successful performance in false belief tasks (Wellman & Liu, 2004). Wellman and Liu conducted a cross-sectional study in which groups of 3-, 4-, and 5-year-old children were tested on a number of different perspective taking abilities. The authors found that the North American children in their study were able first to express an understanding of people's desires and subsequently express an understanding of their beliefs. Moreover, the authors reported that children were typically first able to express that people had different desires about the same object. Subsequently, children were able to express that people had different beliefs about the same object, an object about which the child did not know the true state of affairs. Children were then able to express a distinction between a person's knowledge or ignorance about an object, and subsequently children were able to express that a person had a false belief about an object, an object about which the child knew the true state of affairs. A replication of Wellman and Liu's study in China (Wellman, Fang, Liu, Zhu, & Liu, 2006) found a similar developmental trajectory for performance in these tasks, but with one difference. In China, children were more likely to express a person's ignorance or knowledge about an object before they were able to express that people held diverse beliefs about an object.

Recently, evidence has arisen that in some circumstances, toddlers as young as 15 months (or perhaps even younger, see Kovács, Téglás, & Endress, 2010) may anticipate people's actions that are premised on a false belief long before they are able to express this understanding verbally. Onishi and Baillargeon (2005) presented a simplified false belief task to 15-month-old infants. Using the violation of expectation paradigm, in which

infants' expectations are interpreted as violated when infants gaze longer at an object or scene, the investigators presented a scene in which an adult saw an item placed in a green box. In one condition, the item was then moved to a yellow box during the adult's absence. The adult returned and retrieved the item from the yellow box without looking first in the green box (where the adult had seen the item placed). The 15-month-old infants gazed longer at the two boxes in this condition than in conditions in which the adult's action was predictable by what she had previously seen; for example, when the adult saw the item placed in the green box and returned to look for the item in the green box.

Following Onishi and Baillargeon's (2005) study, Buttelman et al., (2009) found that 18-month-old children anticipated actions that were premised on a false belief and were able to provide help that appeared to demonstrate some awareness of the other's false belief. In this study, children saw a toy transferred from one box to another. In the true belief condition the adult saw the switch; in the false belief condition the adult did not see the switch. The adult then attempted to open the box the toy had originally been in. In the false belief condition, toddlers tended to help the adult open the box where the toy was now placed. If the adult had seen the switch, however, the toddler tended to help open the original, and now empty, box.

A distinction between the verbal, elicited false belief tasks and the false belief tasks utilized to study infants and toddlers is that the latter tasks do not require an elicited response from the child, but rather rely on the child's spontaneous engagement with the

circumstances constructed in the experimental situation. Consequently, infant false belief tasks are often referred to as being spontaneous as opposed to elicited false belief tasks.

In sum, children are able to perform verbal, elicited false belief tasks at around the age of four years old. Infants and toddlers appear to perform spontaneous false belief tasks by around 15 months, if not before. The experimental results are non-controversial to the extent that when infants or young children are placed in one of these experimental contexts, the likelihood of the children responding in a particular manner can be predicted at a higher than chance level. The interpretation of these results, however, is controversial with the majority of developmental psychology researchers holding that children and even infants have access to inner mental states of others (e.g., Behne et al., 2008; Gopnik & Wellman, 2012; Mar, 2011) while a significant minority of researchers argue that infants, toddlers, and, even 4-year-old children are able to anticipate the perspectives of others without recourse to an understanding of inner, unobservable, mental states (Carpendale & Lewis, 2006; Sharrock & Coulter, 2009; Zahavi, 2011).³ I will return to this debate in Chapters 4, 5, and 6. The discussion of false belief tasks set forth here serves to provide a practical question to which the thesis can provide a possible solution. This dissertation will attempt to explain why infants are capable of passing a non-verbal, spontaneous false belief task, why 3-year-olds do not pass verbal, elicited false belief tasks, and how 4-year-olds learn to pass verbal, elicited false belief tasks.

³ It is also important to note that probabilities derived from group results do not warrant individual specific predictions (Lamiell, 2003).

Social Understanding in Social Contexts.

Self-regulation. Clearly, a child's social understanding not only is manifest in experimental contexts such as the false belief task experimental paradigm. Social understanding is also manifest in a child's day-to-day social interactions. In interacting with others, a child is learning to engage in the conventions, patterns, and routines of social activity. Social understanding is manifest not only in the child's response to a particular individual, but in her anticipation of how certain patterns of activity play out, activities such as putting on shoes, sitting in circle time, or preparing dinner. Engaging in cooperative social activity often involves a child avoiding distractions that may draw her focus from the task at hand and also controlling impulses that may confuse her engagement in a coordinated social activity. The ability to maintain a focus on and engage within social acts is often discussed in terms of self-regulation (e.g., Kopp 1982; Posner & Rothbart, 2000; Whitebread et al., 2007).

In Chapter 7, I will consider some of the approaches to studying self-regulation. As Martin and Failow (2010) discuss, researchers have attributed children's self-regulation to a range of abilities. A child's self-regulation requires an ability to attend to salient aspects of a situation and inhibit impulses that may distract the child from these aspects of the situation. A child's self-regulation also involves being able to keep possibilities for action in mind, choose and plan a course of action, and then to carry out that plan. Often these abilities have been associated with cognitive functions and localized neural processes (Posner & Rothbart, 2000). The cognitive and neural processes involved in self-regulation have been aggregated in the concept of executive function, a

concept that often isolates cognitive processes from the social interactions involved in self-regulation. The concept of executive function, however, entails a diverse range of abilities including those we share with most mammals, such as inhibitory control to complex, linguistic processes involved in strategy development (Brocki & Bohlin, 2004).⁴

While self-regulation is a relevant aspect of social understanding, a discussion of cognitive mechanisms and neural processes presumed to underlie self-regulation will not begin to exhaust a discussion of social understanding, especially one based on social participation and exchange. In order to characterize social understanding, we need to consider how children gradually learn to guide their own actions as they grow into their social world.

Guided participation. Rogoff (2003) investigated how toddlers and young children learn the social practices of their communities. As well as observing toddlers and their families in North American communities, Rogoff also observed children in other cultural communities, most famously, perhaps, an agrarian Mayan community in Guatemala (Rogoff et al., 2003). Rogoff framed her investigations in terms of guided participation. Toddlers, Rogoff suggested, are guided by caregivers and peers in the

⁴ The following is Brocki and Bohlin's single sentence characterization of executive function: "Neuropsychologically, executive functions have been linked to the prefrontal cortex of the brain and supporting subcortical loops (Stuss & Alexander, 2000), and encompass abilities needed for goal-directed behavior such as inhibition, planning, strategy development, persistence, and flexibility of action" (Brocki & Bohlin, p. 572).

cultural practices of their communities not simply by explicit instruction, but also through active participation with others in widely practiced patterns of activity. The concept of guided participation characterizes toddlers as deeply involved in patterns of social activity, activity discussed herein with the Meadian term of “social acts.” Participation in social acts can be distal at first as toddlers first observe and then gradually become more involved in an activity (see also Lave & Wenger, 1991). Participation may also be taught explicitly, especially in cultures where the child’s world is kept distant from that of the adults and children have less access to learning by observation. The emphasis of Rogoff’s investigations has been on the structure of interactions through which a child learns to participate in social acts and also the cultural patterns of activity with which children are learning to engage.

Rogoff’s emphasis on tacit and routine forms of communication and on arrangements of children’s activities and companions facilitates an examination of children’s development in the context of routine activities of the early years in distinct cultural communities. This dissertation shares Rogoff’s focus on development in the contexts of routine activities. Consider the following two examples discussed by Rogoff et al. (1993). In the first, Rogoff discusses how Mayan toddlers participate as their mothers make tortillas. As a toddler watches and perhaps reaches for the dough, the mother might give the child a small ball of dough and start to flatten the dough. The toddler takes over the process and the toddler’s tortilla is cooked and eaten along with all the others. In this example, the mother takes the perspective of the toddler in anticipating the toddler’s readiness to engage with the dough. After participation in tortilla making on

several occasions, the toddler will have learned to take the mother's perspective; the toddler anticipates that they are flattening the dough (as opposed to, say, making sausage or ball shapes) and anticipates that the dough will be put in the oven. The toddler anticipates the social act of making tortillas and in so doing regulates her own conduct so that she too is making tortillas (as opposed to, say, making balls of dough to throw on the floor). Rogoff herself does not dwell on "regulation." Nonetheless, Rogoff's work clearly centers on a very young child's ability to attune to and agentively select courses of action that facilitate cooperation with others. It is this agentive selection of socially sanctioned and often cooperative activity that research into self-regulation seeks to explain (see, for example, Posner & Rothbart, 2000). It is important to point out here, however, that conceptions of self-regulation and "theory of mind" are intertwined. Not only are both conceptions very much involved in social understanding, but it is impossible to explain one without assuming the other. For example, in making tortillas with mother, the toddler is taking the perspective of mother and in taking the perspective of mother, we might say the toddler understands what mother intends to do when she reaches for the flour or moves towards the oven.

The second example from Rogoff et al. (1993) describes an interaction between a mother and her child in Utah:

The mother handed the doll to the toddler, saying, "What is it? Is that a baby? Can you take care of the baby?" with baby talk intonation. The toddler explored the doll and pointed to the eye, commenting, "Eye." His mother confirmed, "eye," and he asked "What dat?" as he pointed at the doll's face. The mother clarified

and answered his question: “What’s that? Her mouth.” After some further interaction, the mother chirped “Where’s her belly button?” When he pointed to the doll’s belly button, the mother evaluated his response, “All right!” in the classic question-response-evaluation sequence that Mehan (1979) has documented as teacher-student discourse in the classroom. (p. 238)

In this example, the mother takes the toddler’s perspective in anticipating the toddler’s attending both to the doll and also to his mother’s words and gestures. The mother anticipated that the child would respond to mother’s gestures and words with words and gestures of his own. The mother anticipated a conversation with her child. The toddler likewise anticipated his mother’s perspective. Most likely through many months of reading books and playing with toys together with mother, the toddler anticipated that he was involved in a naming game (Canfield, 2007). The toddler anticipated that he would name an aspect or feature of play objects and mother would respond with praise, or he would ask and mother would respond. The naming game had become a social act in which a pattern of asking and naming emerged in interaction. The toddler regulated his activity so that he was not talking over his mother and so that his attention followed that of his mother (or perhaps checked back to see if his mother was following him).

The two examples discussed above were presented by Rogoff et al. (1993) to illustrate different styles of guided participation in different cultures. In the Mayan example, the mother offered no instruction whatsoever, but simply set an example and expected the child to follow. In agrarian Mayan communities where formal education is very limited, direct instruction of children is extremely rare (Gaskins, 1999). Rogoff’s

central argument was that a child's developing social understanding does not only emerge from the explicit instruction and coordinated acts of joint attention and conversation that were illustrated in the example from Utah, but also in less didactic involvement in day to day social acts where toddlers observe and participate from the periphery of the adults' practical world. Nonetheless, in both examples the toddlers were developing social understanding through shared engagement. In both examples, the toddlers attuned to and took the perspectives of their mothers and participated in the social activities that were already familiar to their caregivers and with which the toddlers were becoming steadily more familiar.

Regulation and guided participation in classroom contexts. In classroom contexts, self-regulation is often investigated in terms of a child's developing new abilities and skills. The focus tends towards how children regulate their conduct when performing new tasks. Whitebread et al. (2007) observed children aged 3 to 5 years old in English preschools where a broad spectrum of social interactions ranging from explicit adult guidance to children's interactions with each other were observed. Following a research framework used to study older elementary school children (Iiskala, Vauras, & Lehtinen, 2004), Whitebread et al. observed young children's abilities to engage in other-regulation, shared-regulation, and self-regulation. Other-regulation referred to situations in which the child's conduct was guided by others. Such regulation involves one member of a group seeking to explicitly influence the conduct of another person in the group "because the second is not doing well in the task or is not behaving properly in order to carry out the activity (e.g., disengaged from the task, inactive, disruptive)" (Whitebread

et al., 2007, p. 438). Other regulation, then, whether led by an adult or another child, involves an effort on the part of one person to ensure the development of a shared perspective so that two or more people can coordinate their conduct and engage in the same social act.

Shared-regulation occurs when a group of children work together in the planning, monitoring, and regulation of a joint activity (Whitebread et al., 2007). In shared-regulation, talk tends to be towards everyone in the group and tends to be in the plural (e.g., “we should do this”). In shared-regulation, then, children are anticipating that there is already a shared perspective, a shared anticipation of what is being done and what the social act is. They are working together in a mutually understood pattern of activity.

According to Whitebread et al. (2007), self-regulation refers to “regulation processes directed mainly to regulate children’s own processes, with no apparent intentions to influence other children’s cognitions” (p. 439). Self-verbalizations and non-verbal activity appear to help a child regulate her own conduct and guide her in what she is doing or is going to do. The role of self-talk and private speech in self-regulation is well documented (e.g., Harris 1990; Vygotsky, 1978). The role of self-talk in a child’s self-regulating activity, however, also needs to account for social acts. It is through engaging in social acts that a child appropriates (Vygotsky, 1978) patterns of social activity and learns to mediate her action through private speech (i.e., thought). Of equal importance, it is the patterns, routines, and conventions of social acts that constitute the fabric of our thought and the means through which we self-regulate. When a child says, “‘I am going to make a big circle’ or ‘I can count backwards’” (Whitebread et al., 2007),

the child already occupies a perspective in which drawing a circle or counting backwards is possible. Such a possibility involves an understanding of the kinds of action that a child can do. In the next chapter, I will discuss action understanding in some depth.

Social Understanding in Experimental False Belief Tasks, Self-Regulation, and Guided Participation

At this point, however, a question arises. Is it prudent to explain diverse aspects of social understanding such as experimental false belief tasks, self-regulation, and guided participation with a singular thesis? The short answer to this question is that this dissertation develops an over-arching conception of what social understanding is. Discussions of experimental false belief tasks, self-regulation, and guided participation only make sense as aspects of our ability to understand the social world. Here I will provide a rationale as to how these diverse aspects of social understanding are inter-related.

Earlier, I characterized social understanding as anticipating what another person is anticipating. Social understanding is the ability to take the perspective of another and hence engage and coordinate with others. In taking the perspective of and coordinating with others, a child is anticipating what will happen based on what has happened in similar situations. The child's anticipations are based on her experience.⁵ In Mead's (1934) terms, the child takes the role of a "generalized other" (p.154), the child

⁵ It has been argued that such anticipations are not learned but depend on an innate "theory of mind" module. I will address and argue against this argument in Chapter Five.

anticipates what is typically done in a particular circumstance, what her role in that typical pattern of activity is, and what the role of the other typically is. This ability is central to a child's functioning in all the social contexts discussed herein.

Consider first a child engaging in an elicited false belief task. The key question the child answers is, "Where will Maxi look for the chocolate" (Wimmer & Perner, 1983, p. 109)? This question is probing the child's ability to anticipate what another person will do. To answer the question as an adult would answer, the child has to understand that people retrieve items from where they left them. The child has to anticipate that Maxi will retrieve the item in the same manner as other people do (that is, from where he left the item). The spontaneous false belief task developed by Onishi and Baillargeon (2005) utilizes a "violation of expectation" design that actually relies on a toddler's ability to anticipate what another person will do based on her familiarity with patterns of social activity. Admittedly, many developmental psychologists hold that a child's social understanding involves more than anticipating particular routines and patterns of social activity (e.g., Gopnik & Wellman, 2012; Southgate, van Maanen, & Csibra, 2007). Social understanding, many hold, involves insight into other people's mental states, an understanding of what others know, intend, and believe. I will address these issues in depth in Chapters 4, 5, and 6. The point I am asserting here is that no matter how we characterize social understanding, the characterization either involves or presupposes our anticipating what others are anticipating. That children learn to anticipate what others are anticipating, in itself, follows directly from the second premise of this dissertation, namely, that individuals attune to and engage with social acts.

In order to consider social understanding as manifest in guided participation, it will help to consider an example (YouTube, 2010). A 23-month-old child is standing on a chair by a table. On the table is a tray with flattened pizza dough spread with tomato source. There is a small pile of sliced mushrooms by the pizza base. A woman (probably his mother) is standing beside him holding a video camera. A man (probably his father) is standing on the other side of him. The child turns away from the table and stares towards a corner of the room. The man taps the child on his shoulder and the woman says “Ethan, Ethan, focus.” The man simultaneously says, “Ethan, come on, put mushrooms on it.” Ethan turns, and without looking up at the man, attends to the man’s hand which is touching the mushrooms in a pointing gesture. The man taps his finger lightly on the mushroom as Ethan attends and then puts a mushroom slice on the pizza. Ethan watches as the man places the mushroom slice. The man then pushes the mushrooms into a tighter pile and pushes them towards Ethan. Ethan takes a mushroom and so does the man. They both place their mushrooms on the pizza. They continue this task together. As the child places each mushroom slice on the pizza, he utters the same sound “eeeeyup,” a sound which is uttered with the same intonation as an adult might say “...and here.....and here.” When there is just one mushroom slice on the side, Ethan inserts his finger directly into the pizza dough. The woman issues a somewhat stern “Uh uh” and the man says “that’s not putting mushrooms on.” Ethan puts his finger in his mouth, says “mmmmm” and nods with a look of satisfaction and approval. Ethan looks directly at the woman as he nods. The man and woman both laugh. Ethan then places the last mushroom on the pizza, looks directly at his mother, smiles, says “Yay!” and claps his hands.

Consider the moment at which the man draws Ethan's attention to the pile of sliced mushrooms. The man taps his finger on Ethan's shoulder and then next to the mushrooms in a pointing gesture. The first tap breaks Ethan's attention away from the corner of the room. Ethan turns and looks at the man's hand. To the extent that Ethan anticipates that the man is anticipating that Ethan will place mushrooms on the pizza, Ethan is taking the perspective of the man. Admittedly, in this particular instance, it is not clear that Ethan is taking the perspective of the man. Ethan may simply be imitating what the man is doing without anticipating that there is a mutually anticipated activity taking place. However, as the activity continues, Ethan's awareness that he is engaging in an activity with others becomes increasingly manifest. The expression of approval Ethan shows when he tastes the tomato sauce is without a doubt the look of a cook who is tasting and appraising a dish which is nearing completion. He looks directly towards the woman. This suggests that Ethan has taken the role of the "generalized other," he is taking part in the wider social act of preparing food and he is taking part alongside others. A moment later Ethan realizes he has placed the last mushroom and cheers, again looking at the woman. Ethan again shows that he is recognizing a typical pattern of activity, in this case that we cheer when we have completed a task (a routine that is very common in North American interactions with toddlers). These latter two instances suggest that Ethan has taken the perspective of the man and woman to the extent that he anticipates the activity of preparing food and anticipates that his companions are engaged in the act of preparing food with him. Moreover, Ethan anticipates that his companions are attending to Ethan's own role in this activity, hence his histrionic appreciation of tomato paste. I will discuss toddler's perspective taking in more depth in Chapter 5. The emphasis here is

on how this example of guided participation highlights both perspective taking and a toddler's ability to anticipate what will happen based on a familiarity with similar social routines.

In both the performance of false belief tasks and in this example of (quite explicit) guided participation, children are attuning to social acts and relying on their experience with similar, familiar acts or interactive sequences in order to coordinate their conduct with others.

Are children coordinating with others when engaged in self-regulation? I will first consider a situation in which a toddler appears to be self-regulating with no external support. (YouTube, 2011). A toddler is standing behind a coffee table. On the coffee table are two age appropriate wooden puzzles. One involves the placing of three animals in a barn. The other involves placing six vehicles in a street scene. The boy is aware of the presence of a person filming him. However, that person does not attempt to talk or interact with the toddler.

The toddler picks up a yellow vehicle and places it in the wrong spot. He says "mmm no!" He then moves the vehicle saying "dzz errg," and places it in the correct spot while saying "eeess" (yes). He picks up a blue vehicle, places it in the wrong place and says "mmm no!" He moves the vehicle to another spot in the puzzle while saying "djer dou" and places the piece in its correct spot without saying anything. The child places the next vehicle correctly first time without speaking. He picks up a sheep and places that in the barn puzzle. His first placement is incorrect. He then moves it to the correct spot

without speaking. He sees the cow picture in the barn and says “moo.” He then reaches for the cow puzzle piece, says “dog” and places the cow piece in the puzzle. He says “moo” again, looking directly at the person behind the camera. He then reaches for the horse, says “it’s a dog” (probably his generic term for animal) and places the piece in its correct location. He then takes a red vehicle, places it in the wrong location, says “mmm no!” and then places the piece in the correct location while saying “eeess.”

The toddler appears to be using self-directed speech (Luria, 1959). According to Luria, toddlers use speech as a feedback mechanism through which a motor response is adjusted by the utterance of words. A toddler’s words allow him to control and adjust his actions. In this case, the words “mmm no” and “eess” were directing the toddler to the next step in the task at hand. Each utterance of these words coincided with a shift in attention and the setting of a new sub-task. It has been argued by Vygotsky (1978, 1986), Luria (1959), and contemporary theorists (e.g., Harris, 1990) that a child gradually learns to internalize such self-directed speech so that words function as inner-speech or thought that mediates between a situation (say, a puzzle piece on the table) and an action (say, placing the piece in the correct spot).

At the same time, it is clear that, in the illustrative situation just provided, the toddler was not interacting or coordinating with others. He only looked momentarily towards the camera four times, twice at the beginning of his activity, once when saying “moo,” and once after finishing both puzzles. It might appear to some as though this act involving self-regulation through self-directed speech was an act of cognitive control rather than an act of social understanding. It is important to note that both Luria and

Vygotsky would have agreed that moments of self-directed speech are acts of cognitive control. Self-directed speech functions as a process that inhibits impulsive responses and organizes the child's actions into a more coherent, flexible, and extended activity.

Crucially, however, the child's cognitive control is essentially determined by the child's engagement in the task. What the child is doing, determines the child's self-directed speech and the moments at which that speech arises. Hence, even in the solitary act of a toddler with his puzzles, there is a familiar pattern of activity that is guiding the child. How social, though, is this pattern of activity?

It is possible to imagine that a toddler could learn to do puzzles without any guidance and without even witnessing other people doing puzzles. The affordances of the puzzle itself—the handles on the wooden pieces and the matching shape in board and piece—may be enough to engage the toddler's interest. This, however, assumes the child has some understanding of such affordances and it is hard to imagine a child that recognizes such affordances if he had not been exposed to them in other social situations. It is also hard to imagine that the toddler would understand that there is a goal state for the puzzle if he had not been involved in situations in which that state had been achieved. In addition, the child's self-directed “yes” and “no” could not have emerged through immaculate conception. The child must not only have heard these words before, but have learned how these words are used to mediate and control action. Hence, even in the most solitary of possible learning processes, the act of completing a puzzle involves much that has been socially learned.

It is perhaps more likely that a toddler learned to complete puzzles by participating in the social act of completing a puzzle. Possibly the toddler participated peripherally with other children. It is also possible (and, in many North American communities, likely) that the toddler learned to complete puzzles through previous participation in quite explicit acts of guided participation.

Consider the following example of a toddler who is already very proficient in the act of completing puzzles and does so together with his mother (YouTube, 2008). The toddler is completing a wooden puzzle with all the letters in the alphabet. A woman (probably the mother) says, “Can you show me where is ‘tie’” (as in “T” for tie). The toddler says “tie” picks up the “T” and places it in the correct spot. The woman says, “tie, neck tie, Yes!” The child then picks up “C” and puts it in the “D” position. “It’s carrot,” the mother says. The toddler moves the “C” to the correct position, but turns it upside down so it doesn’t fit in the slot. The toddler says “No.” The woman says, “Yes, that one is carrot, Upside down.” The toddler adjusts the position of the piece and it goes into the slot. “Yes, you’ve got it.” The toddler then picks up the “F.” “And this is ‘fish,’” says the woman. The toddler places the “F” into the correct spot at first attempt.

In this illustration, the woman and toddler are engaged in the act of completing a puzzle. The toddler takes the perspective of the mother. He anticipates that they are completing the puzzle together and he anticipates the woman’s attuning to his own actions. At times the woman suggests which piece to put in the puzzle. At times the toddler picks a piece of the puzzle and the woman talks about it. It is also interesting to note that much of the mother’s speech in this illustration takes the form of shared

regulation (Whitebread et al., 2007) rather than other regulation. Rather than telling the toddler what to do, she simply talks about what they are doing together, such as when she says “And this is ‘fish.’” It is much more likely that self-regulation emerges in collaborative contexts such as this (see Flynn, 2010), contexts in which a toddler is engaged with others in increasingly familiar patterns of activity. Such contexts involve attuning to and engaging with social acts and taking the perspective of others in order to complete routine acts together.

In this chapter, I have sought to develop a preliminary characterization of what social understanding is and I have discussed how social understanding is manifest in diverse activities ranging from experimental false belief tasks to pizza making and completing puzzles. The question I will address now is how infants and young children understand social acts. In order to consider this question we need to consider both the philosophy of action of Wittgenstein (1953) and Anscombe (1957, 1979) and also the perspectival philosophy of G.H. Mead (1932, 1934).

Chapter Three: Intentional Social Acts

It is generally agreed that by the middle of the second year of life, infants understand intentional action (e.g., Meltzoff & Moore, 1995; Tomasello, Carpenter, Call, Behne, & Moll, 2005). Toddlers understand that people's actions have purposeful outcomes and they are able to anticipate what these outcomes might be. The degree to which infants understand intentional action in the first year of life is less clear. Some hold that infant understanding of intentional action is manifest in some contexts at around six months of age (e.g., Woodward, Sommerville, & Guajardo, 2001; Wellman & Phillips, 2001). Others argue that neonates are born with an innate intention tracking system (Baron-Cohen, 1996) or neonates "are innately equipped with a teleological action representation and interpretation system" (Gergely, 2010, p. 79) that interprets the goals of actions. I will discuss the possibility of innate mechanisms for understanding intention or teleological action in Chapter 5. The question I will address in this chapter is how toddlers understand intentional action. This question, however, cannot be addressed in the absence of an adequate conception of intentional action. For this I will turn first to Anscombe's (1957) monograph, *Intention*.

Anscombe's Intention

According to Anscombe (1957), not all action is intentional. Adjusting the extraocular muscles of the eye, a reflex kick when a doctor taps one's knee, or jumping at a loud sound are all actions, but not intentional actions. Anscombe provided an explanation of what constitutes an intentional action.

Anscombe's criteria for intentional action. Anscombe set out a number of criteria by which intentional actions can be discerned. Some key criteria are as follows. First, a person only can be engaged in an intentional action to the extent that she knows she is acting. If a person were asked, "why are you standing on a hose pipe?" and answered, "I didn't know I was doing that," then standing on a hose pipe was not an intentional action. A second criterion for intentional action is that an intentional action is known without observation. Here Anscombe is referring to our agentic understanding of what we are doing, an understanding that does not require our checking or detecting the processes involved in completing the action. I know, for example, that I am kicking a ball without the need to check what I am doing. In kicking a ball, I may also be adjusting the pupil of my eye to focus on a distant goal. I do not know I am adjusting my pupil without first studying anatomy and then closely monitoring my eye. Kicking a ball is an intentional action, adjusting my pupil is not.⁶ Third, intentional action is action under a description. If a person were asked, "why are you throwing away your son's homework" and answered by saying "I didn't know it was his homework," then throwing away the homework was not an intentional action, although throwing away scrap paper probably was. An intentional action is action under a particular description.

⁶ Of course, a professional soccer player may indeed study videos of how he kicks a ball and discover many unnecessary or unbalanced motions that need to be corrected. He would say, however, that these motions were unintentional, and, in seeking to correct them, he knows he is trying to adjust his game without an additional video being provided to show him that he is trying to correct his game. Trying to correct his game would be intentional.

For Anscombe (1957), an intentional action is an action that involves a reason for acting, a reason that is known by the protagonist. Anscombe's criteria for intentional action were an attempt to demarcate the kinds of reasons for action that are intentional (e.g., tidying the room) from those that are not (e.g., jumping at a loud sound and thus knocking over a tea cup). One reason for intentional action suggested by Anscombe is the action's anticipated outcome. A person may move her fingers in a particular way when reaching for a hammer. These movements may be known without observation and are involved in reaching for the hammer. Moreover, the movement involved in reaching for the hammer may be no more than the physiological (and, by extension, neuro-physiological) mechanisms such as the contracting of muscles involved in reaching for the hammer. The distinctions between reaching for a hammer, reaching for a screwdriver, or reaching for a cup, however, are distinctions in the current circumstances and anticipated outcomes. Anscombe argued that the reason for an intentional action is not something extra that accompanies the physiological mechanisms, but rather the reason, that is, the anticipated outcome of the action, constitutes the intention through which that action was anticipated and performed.

Possible Objections to Anscombe's Characterization of Intentional Action

From a "theory of mind" perspective, a developmental theorist may raise several objections. First, infants clearly cannot say why they are doing something. An infant reaching for a toy offers no explicit, verbal description of her action. Although the toddler

may appear keenly focused on what she is doing, she lacks the ability to describe her actions.

Anscombe (1957) noted that we can ask what *further* an agent is doing *in* doing something. What further, for example, is a cat doing in crouching and slinking? The cat is stalking a bird. Both asking this question and posing an answer involve a verbal description. If intentional action is action under a verbal description, then the cat does not understand intentional action even though the human observer can ascribe intentional action to the cat. Likewise, a toddler would not understand intentional action even though a parent (or a developmental psychologist) ascribes intentional action to the toddler.

In a subsequent response to critics, however, Anscombe (1979) was explicit that animals engage in intentional action, action that is constituted by their attuning to what is happening and anticipating the outcome of that action. Anscombe wrote:

Animals that have no language can have intentions too: how then, it is asked, can it be right to say that an intention is always 'under a description'? (cf. Bennet, {4}.) Again I found the objection puzzling: another non-reason. But I suppose that one who offers it must be taking 'it was intentional under this description, not that' to imply that the first description is in some sense written into something inside the agent. And the form of expression I have used ... might perhaps suggest something of the sort: it sounds as if the agent had a thought about a description.

But now let's suppose that a bird is landing on a twig so as to peck at bird-seed, but also that the twig is smeared with bird-lime. The bird wanted to land on the

twig all right, but it did not want to land on a twig smeared with bird-lime. If it landed on the twig in order to peck at the bird-seed, can't we say it took landing on the twig to be a way of getting into a position to peck at the bird seed? We can, if we can say that a bird thinks it can escape into the open by flying towards the daylight that comes through a glass barrier. This way of talking does not presuppose that the bird has any thoughts about descriptions. If there is a difficulty, it concerns ascribing those other thoughts to the bird; it is about passing from the bird's intentions or aims, to the ascription of belief to it. But someone who says the bird's action was intentional (or voluntary) under one description, not under the other, need not enter into that dispute at all. He is giving a rather round-about way of saying that e.g. the bird meant (wanted) to land on the twig, but not to land on the bird-lime. Landing on the twig was landing on bird-lime—we aren't considering two different landings. So if we form definite descriptions "the action (then) of landing on the twig", "the action (then) of landing on a twig with bird-lime on it" we must say they are definite descriptions satisfied by the same occurrence, which was something that the bird did, but under the one description it was intentional, under the other unintentional. That the bird is not a language-user has no bearing on this. (p. 221)

Admittedly, Anscombe's argument alters the day-to-day meaning of the word "description," perhaps beyond a reasonable usage of that word. According to the *Oxford English Dictionary*, (n.d.) a description is a "spoken or written account of a person, object, or event" and, as Anscombe readily admits, the bird possesses no such account. It is

important to remember, however, that Anscombe was a student of Wittgenstein.

Following Wittgenstein (1951), understanding an action does not depend on verbal descriptions, but rather on the “form of life” in which that action makes sense. I will return to this issue when we turn to Mead’s approach to social understanding in the final section of this chapter.

For Anscombe, then, an action understanding needn’t be verbal but simply an anticipation of what will happen. Crucially, however, the arguments presented herein do not depend on whether or not it is apt to talk of animals or toddlers as acting under a “description.” At the very least, when talking about early childhood the word “description” is both unhelpful and unnecessary. In addition, this thesis does not depend on the degree to which animals understand their actions (although this issue will be touched upon in the next chapter). Where this thesis follows Anscombe (1957, 1979) is in delineating the criteria for intentional action and in holding that intentional action involves attuning to a situation and anticipating the outcome of an act. Where this thesis *diverges* from Anscombe is in Anscombe’s assertion that attuning to a situation and anticipating the outcome of one’s act can be referred to in all cases as “acting under a description.” Perhaps, (but without attempting to coin a phrase) intentional action in toddlers can be characterized as acting with an anticipatory understanding of the situation. To the extent that a toddler understands what further she is doing in reaching for a toy, this action is intentional. Following Anscombe, understanding intentional action is not confined to verbal descriptions, but rather involves anticipating what further an agent is doing in doing something.

A second objection might be that there is a lacuna between Anscombe's philosophy of action and its application as an explanation for the development of social understanding. Anscombe did not directly address the issue of whether infants understand the intentional action of others. Nonetheless, it is the understanding of others' actions that constitutes social understanding.

It is true that Anscombe's discussion tended to focus on a person's understanding of her own actions. However, Anscombe's argument was also about understanding action. To understand that I am pumping water, for example, assumes that I understand the action of pumping water. Social understanding involves an understanding of action, often the shared social acts that constitute much human activity, and the roles of self and other in that action. Who is doing the action is not irrelevant. But irrespective of whoever performs an action, engaged participants nonetheless understand what that action is and that understanding involves anticipating the outcome. Moreover, infants do learn what *further* a person is doing *in*, say, reaching for the milk bottle (i.e., preparing for feeding) or what further someone is doing in pulling at two ends of a toy (i.e., taking apart the toy, Meltzoff, 1995). To the extent that infants anticipate the outcome of an activity, they are anticipating intentional action.

From a "theory of mind" perspective, a third objection might be expressed as follows. That intentional action is action under a description is not at issue here. Indeed, most philosophers of action accept that intentional action is action under a description (e.g., Anscombe, 1957; Davidson, 1963; Searle, 1990:). The issue is how infants or toddlers understand the causes of action. Moreover, it appears that infants are able to

discern what a person is about to do and, without asking why, they are able to discern that a person is acting thus and so. Infants seem to construe what is going on inside another person's mind. Many developmental psychologists hold that infants and toddlers understand the inner, mental, causes of action.

I will argue in Chapters 5 and 6 that this third objection is an assumption that is not supported by extant evidence. Infants learn what *further* someone is doing in doing something. Infants experience the meaningful and somewhat regular social interactions that sustain them and involve them in the human world. Infants learn to anticipate such interactions rather than the workings of an invisible mind.

Philosophical Objections to Anscombe

Behind the objections that might be raised by a developmental theorist are some philosophical arguments pertaining to the ontology of action and intention. In this section I will briefly outline some of the key objections to Anscombe's philosophy and how these objections relate to the thesis of this dissertation.

Over the last half century, Anscombe's (1957) philosophy of intention and action have been on the back foot. In *Actions, Reasons, and Causes*, Davidson (1963) agreed with Anscombe that an action can be understood under multiple descriptions. According to Davidson, moving the hand, flipping a switch, turning on the light, and illuminating the room are the same action under different descriptions. These descriptions are reasons for the action. In addition, however, illuminating the room might also have alerted a prowler in the bushes outside to the fact that someone had entered the room. The

description of alerting the prowler was utilized by Davidson to highlight a key distinction between his and Anscombe's philosophy of action. For Davidson, alerting the prowler was not an intentional action of the protagonist, the protagonist did not act under the description of alerting the prowler (whether that description be a presupposed anticipation or explicit proposition). For Davidson then, the distinction between turning on the light and alerting the prowler was a distinction between what was happening on the one hand, and what was intended in the mind of the protagonist on the other. The protagonist had intended to flip the switch or turn on the light and this was the cause of his moving his hand, whereas alerting the prowler was not an intention that caused the action. The intention to turn on the light was, in turn, reducible to "pro attitudes" (p. 686) such as urges, desires, or goals that motivate action on the one hand and a belief that an action under this particular description will fulfill the pro attitude on the other.⁷ To act for a reason, Davidson argued, is to act rationally. To act rationally is to act (1) according to what one desires and (2) with a belief that one's action will fulfill one's desire. This reasoning occurs in the mind of the rational agent not in the contexts in which the action takes place. For Davidson, then, intentions should be understood as mental states, mental

⁷ Davidson admits that the term pro attitude "does yeoman service" (p. 686) for an array of agentic orientations to action including "desires, wantings, urges, promptings, and a great variety of moral views, aesthetic principles, economic prejudices, social conventions, and public and private goals and values in so far as these can be interpreted as attitudes of an agent directed toward actions of a certain kind" (p. 686). It is beyond the scope of this Chapter to critique the range of orientations or perspectives he has categorized as pro attitudes. In *Actions, Reasons, and Causes* (1963), Davidson tends to focus on one kind of pro attitude, namely desires, and suggests that all other pro attitudes may be species of desire.

states which are the causes of action. These mental states, in turn, were held to be reducible to the physical causal chain that led up to and caused the action.

Subsequently, Davidson (1978) adjusted his position on the reductive nature of intentions. One might intend, for example, to build a squirrel house, but never buy the materials, pick up a tool, or take any other action towards building a squirrel house. This would be a case of “pure intending” (p. 40) in which an intention existed that was not reducible to a pro attitude and so the pro attitude could not be a cause of action. In this case, there was no action to which a cause can be attributed. Even so, according to Davidson, intentions, while not reducible to pro attitudes and beliefs, and while not necessarily causal, share a common characteristic: intentions are mental states and these mental states may cause action. This characterization of intentions as mental states has been held by a great many philosophers over the last half century including Bratman (1987), Searle (1983, 1990, 2006), and Fodor (1983).

Whether or not one follows Davidson in accepting intentions as the mental causes of action, there is a distinct question of whether or not infants and toddlers understand these mental causes. It is this latter question that is a focus of debate in developmental psychology, a question that I will address in Chapter 5.

In philosophy of action, the debate tends to remain centered around the Davidson treatise that intentions are mental states. Anscombe (1957) did not consider an intention to be a mental state or a mental cause of an action (see Hacker, 2008; Tanney, 2008 for

discussion). At the same time, Anscombe did not deny that there were mental causes of action:

A mental cause is what someone would describe if he were asked the specific question: what produced this action or thought or feeling on your part, what did you see or hear or feel, or what ideas or images cropped up in your mind, and led up to it? I have isolated this notion of a mental cause because there is such a thing as this question with this sort of answer, and because I want to distinguish it from the ordinary senses of 'motive' and 'intention', rather than because it is in itself of very great importance; for I believe that it is of very little. (Anscombe, 1957, pp. 17-18)

Admittedly, Anscombe did not elaborate on what might count as a mental cause in an answer to such a question and whether in answering that question by stating a desire or an urge (i.e., as Davidson's, 1963, pro attitudes) one is referring to a mental state that causes an action.

Crucially, however, the question I will address is not whether there is such a thing as a mental cause or a mental state that may be causal, nor is it whether or not an intention is a mental state (for these questions have already been debated extensively for the past half century). The question I will address is not whether mental states may be mental causes of action. It is, rather, whether intentions *qua* mental causes are substantive or meaningful explanations of intentional action, that is, explanations of why we do what we do or explanations of what caused us to do what we do. To what degree can reference

to a mental cause explain what people do when they act? This is not an epistemological question of whether we can know and explain the causal chain of events between mental events and actions (as Davidson, 1963, had assumed), but rather, it is a question of what cause of action can possibly be generated in the mind of an individual when the social determinants of action are already taken into account. In short, the question of whether or not an intention is a mental state is not at issue here. What is at issue is what can be explained by an intention *qua* mental state when the social acts and their circumstances are already understood. I will address this in Chapter 9.

Finally, the thesis herein is a thesis on the development of social understanding. As will be clear in what follows, how we talk (and philosophize) about intentions and other supposed “mental states” emerges from our shared perspectives on human action, a perspective that develops through our social interactions with others. A philosophical account of intention and action must be informed by the contexts in which we come to understand that we have intentions and learn to reflect on our intentions. This dissertation will focus on this developmental account.

A Meadian Approach to the Development of Social Understanding

As discussed earlier, Anscombe (1979) argued explicitly that cats and birds (and so, by extension, infants) act intentionally to the extent that they anticipate the outcomes of their actions. As discussed above, Anscombe also held that intentional action is constituted by the physical activity of the action along with its anticipated outcome. Utilizing the thought of G. H. Mead, I will argue here that preverbal infants or toddlers

learn about regular patterns of activity and learn to anticipate the outcomes of such activity. In learning sequential patterns of activity, an infant is learning reasons for action. An infant learns that “in putting on my shoes, mother is getting ready to take me outside.” Going outside is the reason for putting on the shoes. These reasons may not be verbally expressed, but nonetheless involve social interaction and a social act. Following Anscombe, acting for a reason is a form of action under a description.

A similarity between the thought of Wittgenstein and Anscombe on the one hand and Mead on the other is the primacy all three gave to a world of shared and mutually understood social activity, activity that is often understood without recourse to verbal expression. For Mead (1925, 1934) our world is a world of social acts such as meal times, birthday parties, lessons, supermarket checkout line-ups, and other recognizable, functional social acts. Engaging in social acts involves people anticipating the outcome of other people’s intentional acts (say, asking the price of an item in a market) and coordinating one’s own activity with others to achieve the anticipated outcome (say, giving the price and perhaps closing a sale). Following Mead, an account of development articulates the conditions that enable a child to participate in this social world, a world of interactivity into which the child is born and within which the child grows (see also Martin & Gillespie, 2010, for discussion).

In Chapter 1, Mead’s discussion of perspective was set forth. People orient to and are ready to engage with their surroundings. A person’s understanding of his surroundings is constituted by the attitudes—incipient readiness to engage—that arises as she attunes to her surroundings. This momentary readiness to engage with a situation

(or, in adults, with our own thoughts) constitutes a person's perspective in any particular moment.

Infants occupy a perspective. Infants orient to and engage with the activity of those around them (Carpendale & Carpendale, 2010; Hobson, 2004; Murray & Trevarthen, 1985; Trevarthen & Aitken, 2001). The nascent social interactions upon which an infant's perspective and perspective taking ability gradually develop is illustrated in a canonical study by Murray and Trevarthen (1985). The authors observed that when a mother's interaction with a 2 month old occurred through a live video link, the infant tended to respond with tonguing, open mouth, and smiling of her own, forming a reciprocal pattern of interaction with her mother. However, when a one minute section of the mother's communicative activity was replayed to the infant, the infant's responses to the mother's recorded, and, hence, no longer receptive or contingent, communicative utterances, broke down. The infant tended to frown, finger her own clothes more frequently, and look at the mother for much shorter periods compared to the live video link. This suggests that infants anticipate a reciprocal pattern of activity that was no longer present in the video replay condition. To the extent that the infant anticipated the mother's responding in reciprocal patterns of activity, we can say that the infant was taking the perspective of the mother. Of course, anticipating the mother's actions or even anticipating that the mother is ready to respond to the infant's actions is, from a developmental point of view, a nascent form of perspective taking. There is no reason to assume the infant anticipated her own actions or that the infant anticipated the mother's perspective as involving the infant as an actor in the situation. Such an increasingly

sophisticated understanding of others' perspectives develops over many years. I will discuss this developmental trajectory in the following three chapters. Nonetheless, it is from back and forth rhythmic interactions such as those highlighted in Murray and Trevarthen's (1985) study that human forms of perspective taking begin to emerge.

As infants participate actively in the social world, they learn more about the patterns of activity with which they engage, and they anticipate with increasing discernment the outcome of the social acts that constitute their social world. Infants anticipate what will happen, they anticipate the affordances that facilitate what will happen, and they anticipate what others will do. By the second year of life, children's continual interaction with caregivers, along with their developing mobility, facilitates shared engagement in social activity (Carpendale & Lewis, 2004, 2006; Tomasello et al., 2005). As we saw in previous illustrations of toddlers making pizza and completing puzzles, toddlers anticipate how a social act will unfold and can assume a role towards the completion of that act. This is also seen in studies of everyday helping (Warneken & Tomasello, 2006, 2007) where toddlers recognize and assist adults in familiar activities such as putting books away in a cupboard.

A central aspect both of Mead's thought (1922, 1934, 1938) and the current thesis pertains to the significant communication involved in mundane social acts. From the gentle motherese of infant-parent interactions to the gestures and words that facilitate the gathering for meals and the sharing of food, social acts are inherently acts of coordination and communication. The movement of the spoon towards the child's mouth and the mother's gentle cooing of "one more mouthful" are not distinguished by the toddler as an

act and an accompanying communicative utterance. Rather, there is one act of being fed, an act that involves the toddler attending to and interacting with his mother. By engaging in shared social activity, a child is, at the same time, learning about the gestures and words that accompany such activity. As a toddler engages in such social activity, she is (1) anticipating how a social activity is unfolding, (2) anticipating that the other is attending to the same aspect of the activity as she is, and (3) anticipating what the other is attending to and what the other is about to do including the gestures and words that accompany what she is doing (Mead, 1934).

Understanding intentional action. Eventually, children learn to talk about what they do. It is possible to ask a 3-year-old what she is doing and why she is doing it and it is quite possible that the child will be able to answer both questions. She will have provided a verbal description of her intentional action. In Chapter 6, the role of spoken language in social understanding will be discussed in more depth. The focus here is on a toddler's understanding of the social acts with which she is involved, an understanding that may not involve any spoken descriptions.

In cooperating and interacting with others, a toddler anticipates how others will respond to her. Her acts assume similar normative patterns to those around her as she learns the purpose of affordances such as crayons and spoons and learns the conventions of farewells, requests, and exchanges. As discussed in Chapter 2, a toddler takes the perspective of others. To be precise, a toddler attunes to a situation and is ready to engage. In attuning to a situation, she attunes to what others in that situation are attuning to and

anticipates what the other is anticipating. The toddler's anticipatory attuning and incipient readiness to engage involves the anticipations of others in the situation.

For Mead, our language is constituted by our anticipations of the social activity we share with others along with anticipations of our own role in such activity. There is no clear line we can draw between anticipating an activity and a verbal anticipation of an activity. The latter emerges from the former. Infants and toddlers are anticipating what will happen long before they express such anticipation. In this sense, the philosophy of Mead is very similar to that of Wittgenstein (1951) and his student Anscombe (1957). All three held that underlying our verbal expressions is an understanding of the somewhat regular patterns of activity and foreseeable outcomes that constitute our world. Language is not simply what we say, but rather, is already embedded in the conventions and norms of what we do. Understanding is constituted by participatory experience in a social world and the anticipation it yields (see Blattner, 2000). To the extent that an infant anticipates what another person is doing in doing something, the infant understands the intentional action. To the extent that an infant knows without observation what she is doing in doing something, then to that extent, she is an agent engaged in intentional action.

Consider the following illustration of a toddler understanding intentional action (YouTube, 2012). A toddler is sitting on his grandmother's knee. Grandmother is reading a popup book to the toddler. The toddler is holding a toy truck in his hand but attending to the book. The toddler reaches for the flap, but his hand is first wrestled off the flap by Grandmother who pulls the flap for him. After Grandmother pulls the flap, the toddler reaches for the flap and then looks towards the cut-out mouse that will move when the

flap is pulled. In moving to pull the flap, the toddler anticipates that the mouse will move. The toddler knows without observation that he is reaching for the flap and anticipates the outcome of pulling the flap. The toddler possesses an anticipatory understanding of the situation and what he can do in this situation.

As the toddler reaches for the flap in the pop up book, he relinquishes his grip on his toy truck, which remains unguarded on his knee. A moment after pulling the flap, the toy car falls off his knee onto the floor. The toddler looks down but is restrained from retrieving the toy by Grandmother's hand. The father (who was videoing the interaction with Grandma) says "Daddy 拿" (transliterated as "Daddy na" and translated as Daddy will get it) and reaches down to pick up the toy truck. The toddler says, "Daddy 拿" and immediately sits back in Grandmother's lap (but perhaps pulled back by a Grandmother who is eager to continue reading). The father reaches out the hand holding the truck and at the same time says "给 Leo" (transliterated as "gei Leo" and translated either as "give it to Leo" or "here you are, Leo"). The toddler saw his father reach out his hand and at that moment reached out his hand to receive the toy truck, saying "gei Leo."

The toddler understood that in reaching out the hand that held the truck, the father was offering the truck to him. In this case, the action was accompanied by a verbal expression, "gei Leo." The verbal expression was part of the act of giving. "Gei Leo," then, was not so much a description of the action, but rather, was part of the action. To the extent that the toddler anticipated the outcome of the action, the toddler understood

the action as an intentional action, where the action involved a spoken utterance but the action was understood in terms of the anticipated outcome.

To clarify and emphasize, verbal expressions are first and foremost part of what we do. As toddlers engage with verbal expressions they engage with them as an inseparable part of what is happening and what is about to happen. Toddlers do understand intentional action and they understand intentional action as action that fits into regular, recognizable patterns of action and interaction. Father's action was an action anticipated by the words "gei Leo," by the reaching out of the hand, and, perhaps above all, by the context of the toddler dropping a toy and the pattern of picking up and returning objects that no doubt was familiar both to father and son.

As the reader proceeds through this dissertation, it is important to keep this concept of language as practical interaction in mind. Of course, an understanding of action can become verbal descriptions such as "pumping water" or "turning on the light," and, as Davidson (1978) pointed out, there is such a thing as intending to, say, build a squirrel's house but never taking any action that constitutes even the beginning of this project (Davidson referred to this as "pure intending," p. 40). However, a verbal description of "pumping water," "turning on the light," or "building a squirrel's house" always at the same time involves an anticipation of what that practical activity is. There is no such thing as a verbal description of intentional action that is not at the same time embedded in an understanding of practical and, to some degree, conventional patterns of people doing things. Moreover, as illustrated by Leo and his father, understanding a

verbal description of action entails experience with practical, conventional patterns of action, patterns out of which verbal descriptions may emerge.

Given that a verbal description of intentional action, almost by definition, entails experience with practical action, the preceding paragraph may appear to be a redundant statement of the obvious. Developmental psychologists, however, often misunderstand this simple, practical, characteristic of language and its involvement in intentional action. Instead they place language as a representative system in the brain of an individual and grant toddlers (at roughly the age of Leo in this video) the ability to access and understand “a speaker’s internal representations” (Southgate, Chevallier, & Csibra, 2010, p. 911). I will return to this issue in Chapter 5.

In sum, through the course of development, children not only learn to anticipate the outcome of a broad array of social acts, but also learn how we talk about such acts; how we explain the outcomes of acts and the reasons for acting. Our descriptions become verbal descriptions that are nonetheless deeply embedded in our experience with and anticipation of what people do. These descriptions facilitate (and are an enabling condition for) our ability to cooperate with others. Such descriptions constitute our reasons for acting in a socially comprehensible manner (whether acting alone or in coordination with others).

As language using older children and adults, the reasons people give for acting in a particular situation are often provided in terms of a particular belief, intention, desire or feeling, that is, in terms of an intentional motive that many people assume to be an inner

mental or emotional state. In Chapter 6, I will discuss how such reasons for action emerge, reasons that developmental psychologists might refer to as mentalist reasons. First, however, I need to consider the early developmental account of intentional action understanding. I have claimed that infants and toddlers acquire an ability to participate in the social acts that constitute the human form of life. I have argued that this ability necessarily involves an ability to understand possible descriptions of human action.⁸ It seems that human infants are particularly adept at developing a shared understanding of human social acts. The question then arises as to what are the enabling conditions that facilitate an ability to learn about social acts.

⁸ Of course, it is quite possible to engage in a social act without knowing under which description one is acting. It is also possible to engage in a social act without possessing any description of that act at all. However, a person who, in most day-to-day situations, did not understand the descriptions under which she was acting would probably not be considered a full person and would almost certainly not be considered a person that is able to self-regulate.

Chapter Four: The Enabling Conditions for a Toddler's Social Understanding

One premise set forth in the first chapter is that the human world is a world of social acts. For people, the world we experience is such a world. Our experience of social acts is constituted by engagement in social interactions with others in which are embedded the descriptions of such acts. To be clear, I am not claiming that a person always knows with which particular social act she is engaging. It is possible, for example, for a Chinese or Anglo-Canadian to encounter an Indian game of kabbadi in a local park and make very little sense of what is going on. Moreover, people can be manipulated into acts about which they understand little or nothing (say, pumping poisoned water or alerting prowlers). It is also possible that two people engage in the same social act but they are doing so under quite distinct descriptions. One person may participate in organizing a Remembrance Day ceremony as an act of sharing memories of the fallen, another may participate in the same activity as a cynical act of glorifying imperial aggression. The two people may engage together in the same social acts but with distinct intentions.

The claim that shared social acts are an indubitable feature of experience is justified as follows. First, to the extent that a person intentionally engages in a social act, she anticipates an outcome. To the extent that she is able to anticipate the outcome of a cooperative act, her anticipation of the outcome must be shared with other participants in the social act. Second, people do engage intentionally in social acts. The claim follows

from any discussion of intentional action (and hence shared intentional action) that recognizes that intentional action is action under a description and accepts that people are capable of cooperating in shared acts.

Toddlers experience social acts. Experience need not be reflective. If a toddler anticipates what is about to happen (as Leo appeared to do when he pulled the pop up book tab in the previous chapter), then the toddler is attending to what is happening and appears to be making sense of what is about to happen in terms of what is happening and has happened. A toddler could not anticipate what is about to happen if he had not attended to and learned from previous analogous situations. The toddler, then, anticipated what will happen based on experiences of previous, similar social acts. The experience of social acts is an indubitable feature not only of my experience, but also of young children and even toddlers' experiences of the social world.

The question I will now address is what the enabling conditions for a toddler to engage with others in social acts might be. In this section I will consider not only the ability to engage with others, but also the toddler's ability to distinguish between her own and another's perspective, a distinction that is highlighted by the experiment of Onishi and Baillargeon (2005) discussed in Chapter 2 above. In the following chapter, I will turn to the question of "theory of mind." I will consider whether or not the conditions set forth in this chapter are sufficient to explain a toddler's social understanding or alternatively, as proponents of "theory of mind" argue, whether toddlers are able to (perhaps need to) understand the mental states that can cause a person to act.

The Enabling Conditions

The following is a discussion of some key enabling conditions for a toddler to engage in and experience social acts. As will become apparent, not all these conditions are unique to human infants. Indeed, it is unlikely that any particular condition set forth here is uniquely human. As I will discuss shortly, we also need to consider the human world into which the child grows.

Engaging in agentive activity. In a minimal form, single cell organisms engage in agentive activity (Bickhard, 2002; Kauffman & Clayton, 2006). Single cell organisms orient to their surroundings. In encountering particular molecules in the surroundings, organisms react and engage with their surroundings adjusting both their own constitution and that of their surroundings. Agentive activity involves an attuning to the environment, the co-occurring incipient responses that arise, and the differential engagement with the environment facilitated through this orientation.

A world of agentive activity. Few organisms exist without interaction with other organisms. The perspective occupied by even some of the most primitive organisms depends on an engagement in a world of agentive activity.

Occupying a perspective. Occupying a perspective is inherent in even the most primitive agentive activity (Mead, 1926, 1932). As noted earlier, in a moment of attuning, attitudes arise. Arrays of attitudes constitute perspectives. Following Mead (1932), to the extent that an organism is ready to respond to its surroundings, that organism is occupying a perspective.

Taking the perspective of another. Where occupying a perspective involves attuning to the overt activity and incipient attitudes of con-specifics, predators or prey, perspectives are shaped from moment to moment by engagement within a world of agentive activity (Mead, 1926, 1932). To the extent that one agent anticipates the attitudes of another when engaging within a situation, the agent is taking the attitude of the other. Because a perspective is constituted by arrays of attitudes, to the extent that an agent assumes the attitudes of another within its own perspective, that agent is taking the perspective of another. To clarify and set limits to this claim, it is important to note that perspective taking need not involve a perspectival understanding of oneself as an actor in the perspective of the other. By illustration, as two dogs circle each other and growl when competing for food, one dog needn't be conscious of itself as an actor in the conscious awareness of the other dog (Mead, 1934).

Intentional activity. According to Anscombe (1957), intentional activity involves an act in which it is understood what further an agent “is doing in doing something” (p. 86). For example, what further is a cat doing in slinking and crouching? The cat is stalking a bird. Stalking a bird is intentional activity. As noted earlier, to the extent that any momentary perspective involves a coherent anticipation of possible outcomes, the perspective constitutes an understanding of the situation. Crucially, understanding here refers to a pre-reflective, anticipatory orientation that is intrinsic to the intentional activity. To the extent that the array of attitudes that arises when a cat crouches and slinks involves a readiness to approach and catch the bird, the cat's perspective involves an

understanding of approaching and catching the bird. Approaching and catching the bird is an intentional act.

According to Anscombe, the agent understands its own activity without need to observe its own activity (see also Merleau-Ponty, 2002). It should be noted, however, that not all agentive activity is intentional activity. The perspective of the bee performing a waggle dance need not involve an understanding of what it is doing in doing something. There is no need to assume that the perspective of the bee involves a readiness to give directions at all (Riley, Greggers, Smith, Reynolds, & Menzel, 2005; Steffan-Dewenter & Kuhn, 2003). It is possible to provide an account for this waggle dance without assuming bees anticipate any outcome for this activity.

Attuning to intentional activity. Attuning to intentional activity of others involves an agent taking the perspective of another to the extent that it anticipates what the other is doing in doing something. In the illustration provided in Chapter 3, Leo understood that in stooping and reaching for the fallen toy, Daddy was returning the toy to Leo.

Learning. Learning depends on a number of underlying conditions. Limited space precludes even the most rudimentary attempt to discuss all of the social, bio-physical, ontogenetic, and phylogenetic conditions for learning to occur. However, a point relevant to the development of social understanding is that understanding intentional activity in others depends on learning. This can be explicated when selective

attuning, a further enabling condition for performing a non-verbal false belief task, is taken into account.

Selective attuning. A pig, on repeated occasions, may have attuned to the activity of other pigs while foraging (Held, Mendl, Devereux, & Byrne, 2002). The pig attunes to, and learns about the activity of other foraging pigs. In order to account for the ontogenetic emergence of perspective taking in any species, it is necessary to account for the agent's selective attuning to particular features of action and the environment. Many organisms selectively attune from birth to particular features of an environment (e.g., Bourgeois, Gilot-Fromont, Viallefont, Boussamba, & Deem, 2009; Johnson, Dziurawiec, Ellis, & Morton, 1991; Mondloch, Le Grand, & Maurer, 2009). However, selective attuning to particular features of the environment need not in itself involve anticipation of possible outcomes and hence is not an attuning to intentional activity. Rather, selective attuning to particular features of the environment initiates a perception-action cycle (Müller, 2009) in which a directing of attention (Elsabbagh et al., 2009; Farroni, Csibra, Simion, & Johnson, 2002; Johnson et al., 1991) leads to fixed action patterns (Jensen, 2009) or reflexive responses (Piaget, 1954) that facilitate particular modes of engagement that lead, in turn, to particular outcomes that are adaptive to the agent in a particular situation (Smith, 2009). These outcomes may be intrinsically rewarding and hence facilitate learning about these outcomes.⁹ Through continued engagement with aspects of

⁹ In human infants, the development of intentional action from hereditary reflexive responses was originally studied by Piaget (1954). Evidence that intentional activity in animals develops through selective attuning to particular stimuli and that patterns of reflexive responses develop into functional agentive

its environment to which it has attuned, the agent learns about varying patterns of action and learns to understand intentional acts.

One might object here that if learning is no more than behavioral conditioning, then no matter how complex that conditioning, the agent is not understanding, even pre-reflectively, the act of the other. Recall, however, that, as discussed herein, understanding involves a coherent anticipation of possible outcomes. Of course, there are degrees of understanding and degrees of understanding the intentional acts of others. The precise delineation of a minimal understanding of intentional activity is not at issue because there is no delineation, only gradation. What is at issue is that toddlers have an understanding of intentional activity. The claims here are that understanding the intentional activity of others is a condition for understanding the perspective of another (and hence performing the spontaneous, non-verbal false belief task), and that learning is a condition for understanding the intentional activity of others. Equally important to the argument is that a nascent understanding of intentional activity is not uniquely human and is not, in itself, a sufficient condition for performing a non-verbal false belief task.

Perspectival distinctions. When performing a non-verbal false belief task, there is a distinction between the situation and circumstances engaged with from differing

activity through repeated engagement in similar situations can be found in the ethological study of fixed action patterns. Fixed action patterns develop into dysfunctional activity in caged animals (Harlander-Matauschek, Baes, & Bessei, 2006; Jensen, 2009) or when there is a dysfunction in the dopamine system (Berridge, Aldridge, Houchard, & Zhuang, 2005).

perspectives. In a spontaneous, non-verbal false belief task, the distinction is between circumstances attuned to from the toddler's and another's perspective.

Such a distinction does not necessarily involve intentional activity or attuning to the intentional activity of others. For example, an Indo-Malayan octopus attunes to specific environmental features (features associated through phylogenesis with predators) and proceeds to mimic a sea snake (Norman, Finn, & Tregenza, 2001). The distinction between the perspective of the predator and the octopus is inherent in the agentic activity of the octopus even though the activity involves minimal conscious awareness. Even when an agent engages in an intentional activity where two actors occupy distinct perspectives on a situation, the perspective needn't involve a conscious awareness on the part of either actor that the other is attuning to a different set of circumstances. By illustration, it has been argued that the piping plover's injury feigning is an intentional activity (Liska, 1997; Ristau, 1996); that is, in dragging its wing, it is guiding the predator away from the nest. Moreover, the piping plover is attuning to the intentional activity of the predator; the piping plover anticipates that, in moving, the predator is following the plover. However, the perspective occupied by the piping plover need not—and most likely does not—involve the predator's implicit presupposition that it is pursuing an injured bird. The piping plover does not assume itself to be an actor in the perspective of the predator. Hence the piping plover cannot occupy a perspective in which the predator's conscious awareness of itself exists and, following Mead, (1934), one might argue further that the piping plover cannot be aware of its own existence (see Chapter 6 for discussion of self awareness).

Are there any cases in which a non-linguistic agent is consciously aware of the distinction in circumstances between its own and the other's perspective? In most cases of tactical deceit, whether in birds or primates, the same argument as provided in the case of the piping plover applies. Moreover, the act of "deception" often involves anticipating the intentional act of another only by attuning to the present situation. That is, based on what the agent is attuning to now, the agent anticipates what another will do next. In Byrne and Whiten's (1990) collection of observations on primate deception, for example, there do not appear to be any instances of an agent anticipating the intentional act of another based on an immediately preceding sequence of acts. Within a fleeting, anticipatory perspective, an agent only attunes to an aspect of a situation that another is now attuning to, and anticipates what the other will do next. In order to perform a non-verbal false belief task, the toddler anticipates what an adult will do based on what the adult has previously done or seen.

Anticipation from antecedent intentional activity. In a spontaneous, non-verbal false belief task, there is a perspectival distinction between toddlers and adult actors. The toddler anticipates that the actor will reach into one box to retrieve an object (as highlighted in Onishi & Baillargeon, 2005). At the same time, the toddler anticipates that the object is, in fact, in another box (as highlighted in Buttelman, Carpenter, & Tomasello, 2009). For the toddler to know this, the toddler not only anticipates where the object is, but also where the adult actor will look. The ability to anticipate where the adult actor will look requires an ability to anticipate a person's intentional action based on her previous actions (i.e., where she had put something, looked for something, or reached for

something). It is not clear the extent to which other species are able to anticipate what another will do based on the other's preceding sequence of intentional acts. There is some evidence for this ability in chimpanzees (Hare, Call, & Tomasello, 2006); in other species the evidence is not so clear. It may be that anticipating from antecedent intentional activity is an ability possessed by only a few social animals. This question, however, is not a central focus of this chapter. The key issue at hand here is that anticipating an intentional act from antecedent intentional activity is a requirement for distinguishing between one's own and another's perspective towards typical social acts. Anticipating what another will do based on the other's preceding sequence of intentional acts is an enabling condition for performing a non-verbal false belief task. To perform this task, the toddler does not anticipate activity based on what she is seeing now. Rather, the toddler anticipates a person will act in a particular way based on her previous interactivity with that person, including what she previously has seen the person do or attune to. If the other person does not act as anticipated, then the toddler's anticipation will be "violated" and the toddler will have passed Onishi and Baillargeon's (2005) non-verbal false belief task, a task where the toddler observed an adult's actions.

Routine experiences of routine acts. Anticipating what another person will do based on what they have done (as opposed to simply what they are doing now or what the toddler would do to attain a particular outcome such as retrieving an object) involves learning about intentional actions of a particular kind, namely actions that involve a fairly regular pattern of activity. In short, toddlers have learned about the social acts of their world.

Completing acts. As well as anticipating the act of another based on preceding activity, the Buttelman et al. (2009) non-verbal false belief task depends on an enabling condition that was absent from the Onishi and Baillargeon (2005) task in which the toddler simply observed an adult's activity. Namely, in the Buttelman et al. task the toddler not only anticipated acts based on preceding activity but was also ready to engage in the act. Such participation is a nascent form of role taking, which involves the toddler attuning to a sequence of activity and being ready to coordinate with others and engage actively in the completion of that activity.

I hold that the conditions outlined above are the key enabling conditions for performing a non-verbal false belief task.¹⁰ In short, a toddler selectively attunes to the

¹⁰ Of course, the enabling conditions discussed herein are not sufficient conditions for performing a non-verbal false belief task. The child must be able to breathe and, for Onishi and Baillargeon's (2005) experimental design, the child must have eyes and be able to see. The conditions discussed herein are those that I believe are most relevant to a useful explanation of how infants are able to engage with such a task. It is also important to acknowledge that the abilities discussed in this chapter have not been presented as constituent components. The abilities discussed above are abilities that have emerged over phylogenetic time spans. Many of these abilities are common to many forms of living agents. If such abilities had not emerged, it is hard to imagine an agent that was able to engage with the spontaneous false belief task as a human toddler typically does. These abilities are enabling conditions for engaging with such a task. However, these abilities are not constituent components. First, an ability is not a component. An ability is manifest in action and conceptually abstracted from action for the sake of characterizing what people might do or explaining why they do what they do. Second, in this section, we are simply discussing toddlers' tendency to look a little longer at a scene under a particular circumstance. Breaking this ability down into discrete "components" assumes that what toddlers do in the moments that they are performing a false belief task can be captured and broken down into components. This is a very different claim to the claim that, over phylogenetic and ontogenetic timespans, the enabling conditions for acting thus and so have emerged.

intentional activity of another and anticipates the outcome of another's activity based on a previous sequence of activity. The infant has attuned to and learned about the patterns of activity involved in placing and retrieving objects and anticipates that an individual will act in accordance with a preceding sequence of acts (see Carpendale & Lewis, 2006, for a discussion of indexicality; that is, pointing to spatio-temporal locations and positions within patterns of activity and also see Wootten, 2006).

Having highlighted the key enabling conditions for performing a non-verbal false belief task, I will very briefly note some conditions that are not required for this task. Although an infant's awareness that she is an actor to which others attune gradually emerges from the first year of life (Reddy, 2003), a toddler does not need to be aware of herself as an actor in the conscious awareness of the other in order to perform a non-verbal false belief task. Following from this, a toddler does not need to, and, as shall be discussed in the next two chapters, is most likely unable to, engage in reflective thought about either her own, or another's, thoughts, beliefs, or intentions. Also a toddler does not need a conscious awareness that the adult actor in the spontaneous, non-verbal false belief task is attuning to a distinct set of circumstances (although the child will, of course, become increasingly aware of this as she grows into the social world).

Selectively attuning to features of the environment, especially to the movements and expressions of others, may be a precondition for learning to anticipate intentional acts.

I will side step the question of whether such a constituent component is conceptually coherent, and simply note that the preceding sections are conceptually distinct from such an analysis.

If, as the “theory of mind” framework assumes, minds are unobservable (e.g., Premack & Woodruff, 1978) then minds would not be a feature of the environment. Selective attuning to, and anticipation based on, patterns of activity could not, then, be attuning to the unobservable, internal mind. Within a Meadian framework, anticipating the acts of others based on antecedent intentional activity in itself constitutes a nascent understanding of mind (see also Racine, 2011, for related discussion). A nascent understanding of mind may be no more than a temporal shift in the frame of attention to include preceding activity. Moreover, contra Tomasello and colleagues (e.g., Tomasello et al., 2005), the discussion presented so far suggests that anticipating intentional acts from preceding acts does not require an insight into (hypothesized) psychological states, only a requisite mixture of direct and indirect experience involving participation in and observation of routine sequences of action and interaction.

The Toddler’s World

In the preceding section, I sought to identify some key enabling conditions for a toddler to engage in social acts. Through this discussion, the abilities of other species were considered alongside the abilities of human toddlers. I suggested that a toddler’s ability to follow and anticipate social acts may be related to a temporal shift in the span of attention that facilitates an ability to anticipate what will happen based on what has happened. It may be tempting to cite this ability as the defining feature of human social cognition, perhaps even argue that it is an innate ability. Such claims would be conceptually misguided or, at least, gross exaggerations of what makes human social understanding distinct from other species. It is important that I add a caveat to the focus

in the preceding sections of this chapter by focusing a little more on the social world into which children grow.

As psychological investigators, we occupy a perspective within which we share knowledge about, and seek to explain further, who we are as people and how we function. The discipline of developmental psychology generally accepts the formative role of the social world in our becoming people, a role often described in terms of nurture, culture, history, and language. And yet, most developmental psychologists feel that explanations of a child's development and her emerging social understanding solely in terms of the social world are unsatisfactory (e.g., Gopnik, 2003; Tomasello, 2008; Tomasello & Rakoczy, 2003; Wellman, Cross, & Watson, 2001). Crucially, only human neonates are capable of joining the human form of life, a life replete with coordinated social acts, language, history, and conceptual knowledge. The investigations of developmental psychology keep a sharp focus on characterizing distinctions between the human infant and other species (e.g., Hare, Call, & Tomasello, 2006; Hauser, Chomsky, & Fitch, 2002) either through explicit comparison or by seeking to identify distinctive features of human development such as "theory of mind." The starting point of most theorizing about social development is to seek the distinguishing features of the human infant.

From a Meadian standpoint, seeking such distinctions is a coherent starting point for an investigation. Infants develop language, social understanding, and an ability to engage as people within the social world, that no other apes or canines have. There appears to be a need to develop an account for this distinction as I attempted to do above.

In making such a distinction, however, presuppositions about the human world are already being made. I wish to make these presuppositions explicit.

First, we are seeking to explain something that is already there and already profoundly understood, namely an infant. This may seem to be a trivial and well-accepted assertion. However, it is an assertion that has important implications. The infant exists because the world is already there, a world of sustenance, care, social support, shelter, and communication. The baby can only be understood as existing within the human world.

One might object that the biophysical infant must be the object under investigation, not the world. We should seek to make clear distinctions between the biophysical constitution of an infant and, say, a chimpanzee because these distinctions constitute the explanatory factor of the investigation. The world that the infant is able to negotiate but the chimpanzee is not, becomes the variable (or series of variables) that biophysical constitution can explain. And yet, if a biophysical distinction (or a series of distinctions) was to be discovered that accounted for the infant's ability to engage in the human world, this distinction could still only be understood to the extent that it was understood as serving the child. The discovery of biophysical and psychological objects cannot be understood at an objective distance. They can only exist in their serving our activity in the world that is already there and already understood.

A second presupposition for an investigation into the emergence of social understanding in young children is that we know what is important about our world. We

know what makes our world the human world. Consider, for example, investigations of the distinctions between humans and apes. Developmental and animal psychologists have found a large number of distinctions including genetic distinctions (e.g., Chimpanzee Sequencing and Analysis Consortium, 2005; MacDermot et al., 2005), neurological distinctions (e.g., Dunbar, 1998), and behavioral distinctions (e.g., Hare, Call, & Tomasello, 2006; Tomasello, Call, & Hare, 2003). The question is which of these distinctions matter and why. We need to develop a rich understanding of the world within which the child functions and for which we are biologically constituted before we can answer this question. There is no shortage of distinctions between apes and humans. The question is which distinctions we care about. This is a question that depends on our understanding of the world in which we are already engaged.

A third assumption is that the baby is growing into the world. An investigation cannot seek to understand the growing infant on the one hand and the world on the other as two objects to be distinguished and analyzed autonomously. The world is that within which the child grows. An investigation into the emergence of social understanding is an investigation of a process in which child and world are inter-twined and mutually formative. This is not to say that one cannot talk of a child or of a person as an agentive being. To the extent that we—as people or as infants—are agentive beings, however, we are agentive within a social world (Mead, 1932; Heidegger 1962; Martin, Sugarman, & Thompson, 2003; Wittgenstein, 1953). I will address this issue in Chapters 8 and 9.

Chapter Five: Do Infants Understand Mental Causes?

The thesis of this dissertation is that young children's reasoning about self and others is social reasoning; viz., reasoning about the circumstances in which people are acting, the typical conduct of people acting in such circumstances, and the antecedent circumstances of individuals involved in a particular situation.

In the first chapter, key premises upon which the thesis would be founded were set forth, namely, infants are biological organisms that are born into and attune to a world of social acts. In the second chapter, some of the areas of research that focus on the development of social understanding were briefly introduced and a preliminary characterization of social understanding was developed. A developing social understanding, it was argued, involves an understanding of the familiar routines in which a child engages and also an ability to take the perspective of others, that is, to anticipate how others will engage in these routines. This led to a discussion in the third chapter about how shared, intentional social acts are understood. Following and extending Anscombe (1957), it was argued that social acts are intentional acts and, as such, are acts that occur under a description. The description, however, is not simply constituted by a verbal description of what one is doing. Rather, the description of an intentional act is the anticipated outcome of that act. The question then arises as to why toddlers are able to learn about the social acts of their world, what are the key enabling conditions that facilitate a developing human social understanding? A number of key enabling conditions were discussed, including the ability to take the perspective of others and the ability to

anticipate what another will do based on a series of antecedent happenings. The chapter concluded with a caveat that how we determine *which* enabling conditions matter to our account of social development depends on our understanding of the social world. It is only when the social world is already understood that we can begin to develop an account of an infant's emergence into that world.

Somewhat more boldly, in this chapter I will argue that the enabling conditions specified in the previous chapter are sufficient to provide a plausible account of the development of social understanding. I am not suggesting that there is nothing left to say about social development, but rather that there is no need to attribute to a toddler an additional ability to understand mental causes in order to explain how children develop social understanding. In making this case, however, it is important to account for the increasing number of experiments in developmental psychology that many hold to be evidence for an additional enabling condition for the development of social understanding, namely the ability to understand the mental causes of another person's behavior.

Following a Humean characterization of causation which involves two temporally distinguishable yet related events (Tanney, 2008), we can say that infants attune to and learn about causal relations. Infants recognize particular events and anticipate particular outcomes from such events. Infants also recognize the role of human action in events and outcomes. When mother reaches for the door knob, for example, the infant anticipates that the door will open and mother will walk through the door. Whether infants and young children understand the *mental* causes of another person's conduct is more

controversial. In this chapter, I will argue against the view that infants understand, at least “implicitly” (e.g., Caron, 2009; Clements & Perner, 1994; Luo, 2011; Onishi & Baillargeon, 2005), that (1) others possess unobservable, inner, mental states and (2) these mental states cause a person’s visible behavior. Infants, I will argue, do not understand or even presuppose a mental cause that is temporally, logically, or conceptually distinct from human action.

Admittedly, this is a negative thesis, a statement of what infants are not doing. However, considering the growing number of experiments that infer infants’ and toddlers’ ability to understand mental causes (e.g., Luo, 2011; Onishi & Baillargeon, 2005; Surian et al., 2007), it is important to explain why such experiments, although often innovative and informative, do not provide any evidence for the understanding of mental causes. Positively put, I will argue that before any inferences to understanding mental causes can be drawn from such experiments, it is necessary first to accept that infants orient towards and become familiar with the social activity going on around them. Moreover, once this necessarily prior inference has been made, infants’ and toddlers’ performance in such experiments can be explained without the need to further infer an understanding of mental causes.

Within many causal frameworks ranging from physical causation (Armstrong, 1997) to counter-factual reasoning (Lewis, 1973), mental causes can be construed as determining influences on overt conduct. Moreover, as discussed in Chapter 3, the predominant position in the philosophy of mind and action is that mental causes constitute an important factor in explaining what people do (e.g., Davidson, 1963; Searle,

1983). The purpose of this is not to question these philosophical positions, but rather to argue that whether or not mental causes are an explanatory factor in understanding action, such causes do not exist for infants and toddlers.¹¹ Infants and toddlers, I argue, learn about what we do by engaging with us in meaningful and fairly regular patterns of social activity.

Traditionally, the focus of developmental psychology has been on mental causes. A person's ability to understand the mental causes of another's actions is held to be an ability that, in its sophistication, distinguishes the human form of life. People understand other people in terms of their 'inner' intentions, desires, and beliefs. The "goal" of another person's behavior is frequently attributed to a mental cause, "an internal entity that guides the person's behavior" (Tomasello, Carpenter, Call, Behne, & Moll, 2005, p. 676). According to "theory of mind" views of development (e.g., Apperly & Butterfill, 2009; Baillargeon, Scott, & He, 2010; Gopnik & Wellman, 1992; Tomasello et al., 2005; Wellman & Liu, 2004), pre-linguistic children understand such mental causes of another person's acts.

Developmental psychology's focus on mental causes is particularly apparent in studies of false belief understanding. Since Onishi and Baillargeon (2005) published the

¹¹ I am not seeking to obfuscate my opinion that mental causes tend to be over-emphasized and misconstrued in many developmental psychology research programs. However, the argument provided in this chapter does not, in itself, preclude an argument that mental causes are important and discernable once a person has acquired the language with which such discernments can be made. I will address this matter further in Chapter 9.

results of their experiment which suggested that 15-month-old infants had understood an adult's false belief, that is, the infants understood that the cause of the adult's action was an unobservable mental state, a number of "theory of mind" explanations have been put forward for the infant's nascent "mindreading" ability, explanations that assume the infant is attuning to the mental causes of another's actions. Such explanations range from innate neural modules (Baillargeon, Scott, & He, 2010), to simulation models (Gallese, 2007), to belief tracking cognitive systems (Apperly & Butterfill, 2009; Kovács et al., 2010). Within a "theory of mind" interpretation of infant false belief understanding, the degree to which infants are conscious of their own mind reading ability is still very much an open question. Typically though, infant false belief understanding is considered "implicit" in the infant's pre-lingual reasoning or neural processing (Caron, 2009; Clements & Perner, 1994; Luo, 2011; Onishi & Baillargeon, 2005).

"Theory of Mind" and Infant False Belief

In this section I will briefly critique two proposals that seek to explain toddlers' performance of spontaneous, non-verbal false belief tasks in terms of mental causes.

Baillargeon, Scott, and He (2010) proposed a resolution for the seeming paradox in which toddlers understand false beliefs whereas 3-year-old children are unable to express such an understanding. Baillargeon, Scott, and He argued that infants are "born with a psychological-reasoning system" (p. 111) and that this system involves two subsystems. The first sub-system "enables them to attribute at least two kinds of mental states to the agent: *motivational states*, which specify the agent's motivation in the scene

(e.g., goals, dispositions) and *reality-congruent informational states*” (p. 111, italics in original). The second system “enables infants to attribute to agents *reality incongruent informational states*; these include false beliefs as well as pretense” (p. 111, italics in original). Both systems are “online” (p. 111) by the middle of the second year of life. When answering an elicited false belief question in the third year of life, a “response-inhibition process” (p. 115) is required to inhibit the child’s own knowledge. It is hypothesized that either because the neural connections between the three systems are underdeveloped or because the child’s cognitive resources are overwhelmed by the three systems simultaneous activation, the child fails the elicited response task.

Apperly and Butterfill (2009) offer an alternative solution. They propose agents encounter objects in the environment. The agent has an efficient but inflexible cognitive system that “registers” (p. 967) objects in the environment that have been encountered. Registration involves holding an object in mind that has been encountered even when that object is not currently being perceived. Registrations enable an organism to act on past perceptions. By encountering and registering the actions of other agents, an organism is able to predict how another agent will act.

Further, registration also can be understood as determining which location an individual will direct their actions to when attempting to act on that object. This more sophisticated understanding (which requires the notion of an unsuccessful action) enables one to predict actions on the basis of incorrect registrations and so approximate belief reasoning to such a great extent as to pass some false-belief tasks (e.g., Onishi & Baillargeon, 2005). (Apperly & Butterfill, 2009, p. 962)

According to Apperly and Butterfill (2009), then, all that is required is a cognitive ability to register the perceptions of self and other so as to anticipate how the other will act. Crucially, this sophisticated and yet cognitively efficient system involves construing an individual's "belief-like states" (p. 962). Apperly and Butterfill argue that without construing individuals' belief-like states, a toddler would be unable to distinguish between interpersonal differences in belief. Moreover, they state, understanding the facts of what has happened is insufficient to anticipate what will happen. A theory that "merely shift[s] from mental states to factual states does not remove the obstacles to cognitive efficiency" (p. 961) as both forms of reasoning depend on abducting over multiple instances of normative activity. As Apperly and Butterfill emphasize, "our point is that identifying facts *as potentially explanatory of action* fails to remove some of the cognitively costly problems involved in reasoning about beliefs as such" (p. 961, italics in original).

For Apperly and Butterfill then, a cognitively efficient system capable of construing belief-like states and also predicting action explains spontaneous false belief understanding in toddlers and also, in many instances, in children and adults as well. Subsequently, a distinct system develops that is more cognitively costly, but much more flexible. This latter system involves understanding complex causal structures, abductive reasoning, normative understanding, and propositional content and facilitates performance in elicited false belief tasks where children are asked to talk about another's false belief.

The proposals of both Baillargeon, Scott, and He (2010) and Apperly and Butterfill (2009) assert that toddlers understand the mental causes of another person's actions. Both proposals, then, are entrenched within a "theory of mind" paradigm. Baillargeon, Scott, and He simply commence with this premise and hold that it is a product of innate psychological function; that is, infants are born with a cognitive system that (after some time for biological maturation) construes unobserved mental causes of another person's acts. Apperly and Butterfill seek to justify their assertion of mental state reasoning in terms of parsimony (as do Onishi & Baillargeon, 2005). However, both proposals are necessarily less parsimonious than an account that explains toddler understanding in terms of the social world into which they are growing. As I will discuss, the violation of expectation design that is utilized in many infant false belief designs presupposes that the infant already understands patterns of social activity. Apperly and Butterfill's efficient cognitive system is founded on an understanding of such patterns. Consequently, both are subject to Povinelli and Vonk's (2003) argument that if an agent understands a particular activity, that agent does not need to understand the mental state reasoning of an agent involved in that activity.

The two proposals also assume the problem that needs solving is how infants, toddlers and young children understand false beliefs and why this singular understanding manifests distinctly in spontaneous and elicited experimental conditions. This may be a false assumption. As I will discuss in this chapter and in Chapter 6, it is quite possible that the first task focuses primarily on anticipating the typical social patterns involved in

placing and retrieving objects. There is no evidence showing that infants are reasoning about beliefs.

I agree that toddlers (and to some degree infants in the first year of life, see Kovács et al., 2010) anticipate what will happen based on preceding patterns of activity. Indeed, the temporal span of attention that facilitates such an understanding may play a key role in explaining the development of social understanding in humans (as discussed in Chapter 4). I also agree that infants learn to distinguish between particular individuals based on what a particular individual has done or looked at. Apperly and Butterfill (2009) (and also Davidson, 1963) ask, why shift from a mental to factual theoretical account? And yet, we could just as reasonably ask why shift from understanding human activity to understanding what has occurred plus separate mental states? It does not follow that it is more parsimonious to assert an understanding of beliefs over an understanding of social activity. Rather, since the efficient cognitive system already requires an understanding of day-to-day social activity in order to understand beliefs, invoking an understanding of belief-like states is an additional and unneeded element in the explanation.¹²

Prima facie, the preceding critique of “theory of mind” approaches to the infant and toddler false belief paradox may appear to situate the relational approach within a behavioral rule approach (e.g., Perner & Ruffman, 2005) or a teleological approach akin

¹² See, also Allen and Bickhard, 2013; Carpendale and Müller, 2012 for discussion of additional presuppositions shared by Baillargeon, Scott, and He (2010) and Apperly and Butterfill (2009) that are problematic at multiple levels from biology to knowledge and meaning.

to that of Gergely (2010). However, the relational approach is distinct from teleological approaches (as well as behavioral approaches) in that the relational approach emphasizes interactive and salient social activities. Infants learn about how these activities affect her and her surroundings and, as particular kinds of activity become more salient, she will attend more to these activities. Moreover, contra Gergely (2010), the relational approach does not presuppose an innate, rational processing system for understanding social action and goals. Rather social actions and goals become salient to a child as she grows into a world in which social activity sustains her and matters to her. An infant learns to follow and anticipate particular patterns of activity and the roles of individuals within that activity (see Carpendale & Müller, 2012, for discussion).

In addition, the behavioral rules approach distinguishes cognition from behavior. Understanding a behavioral rule does not require an understanding of intentional, meaningful action. The relational approach, on the other hand, emphasizes that social action is meaningful and intentional. A child, even an infant, understands, for example, that mother is preparing a bottle or getting ready to go out and she anticipates the practical and affective implications of these social acts.

From the relational perspective presented herein, an infant understands that the people surrounding her are engaging in purposive action with anticipated outcomes. Her developing ability to anticipate what will happen based on antecedent occurrences allows her to anticipate regularities in patterns of action (Piaget, 1954; Stone et al., 2012). Her developing ability to attend to the acts of others (Perra & Gattis, 2012) facilitates an ability to anticipate the roles of individuals in social acts. No doubt, from very early in

life infants understand the people around them as agentive, intentional beings. It is, however, unnecessary to assume that infants understand separate, inner, mental states as causes of action. Rather, human activity embedded in temporally extended, regular, purposive, and anticipated patterns of social action is already intentional and meaningful.

Interpreting Results of Experimental Studies

Considering the growing number of recent experiments (e.g., Luo, 2011; Onishi & Baillargeon, 2005; Surian et al., 2007) that attribute mental state understanding to infants and toddlers, it is necessary to consider some particular experiments and how they might be interpreted other than by an infant's ability to attribute others' actions to the mental causes of those actions.

Onishi and Baillargeon's Seminal Experiment on Infant False Belief Understanding

I will start with the seminal study by Onishi and Baillargeon (2005). In this experiment, toddlers observed an activity in which an adult actor placed a toy in a green box. In one condition, the toy was moved from the green box to the yellow box during the actor's absence. Upon return, the actor reached for the toy in the yellow box rather than the green box where the actor placed the toy. Many 15-month-old infants looked longer in this condition than in conditions in which the actor saw the item placed in the green box and returned to reach for the item in the green box (irrespective of whether the toy had been moved or not).

Onishi and Baillargeon (2005) held that the toddlers were attributing beliefs to the adult. They provided two reasons, one “theoretical” (p. 257) and one empirical. Their theoretical reason is that:

children are born with an abstract computational system that guides their interpretation of others' behavior. In this view, even young children appeal to others' mental states—goals, perceptions, and beliefs—to make sense of their actions; development involves primarily learning which states underlie which actions and not coming to understand that such states exist at all. (p. 257)

The “empirical” (p. 257) reason was that the authors cite evidence from other studies that toddlers can predict where an adult will seek an object even when the adult does not see it disappear, but must use cues to establish its location. The authors claim it is more parsimonious

to assume that infants attribute to others beliefs that can be shaped and updated by multiple sources of information than to assume that infants form an extensive series of superficial expectations linking different perceptions to different actions. (p. 257)

From a relational perspective, the Onishi and Baillargeon experiment offers no evidence that infants understand the mental causes (in this case, “beliefs”) behind the actor's action. Rather, the results of this experiment suggest infants possess an understanding of social activity.

In the Onishi and Baillargeon experiment, a violation of expectation paradigm was used, a paradigm that presupposes infants learn about and become familiar with patterns of social activity. The experimental design leads infants to anticipate an activity that does not subsequently occur, hence violating the infant's expectation. Onishi and Baillargeon's experiment started with a presupposition that infants would be familiar with the functional and recognizable act of placing and retrieving, which is why this activity was included in the experimental design instead of, say, looking at a map and following its directions. The infant understood the pattern of activity and remembered what the actor had done previously. The infant expected the activity to continue in coherence with the anticipated pattern and looked longer when this did not occur.

Aperly and Butterfill (2009) also presuppose that infants understand patterns of social activity. They argue that registration "can be understood as determining which location an individual will direct their actions to when attempting to act on that object" (p. 962). This registration can only be understood within the context of a familiar activity.

Three inferences from the Onishi and Baillargeon experiment seem particularly salient. First, the infant had to understand the pattern of placing and retrieving before she could attribute mental states as causes of that activity. By adopting counterfactual causal reasoning (Lewis, 1973), we can say that if the infant had not understood this activity, she could not have understood the mental states involved in the activity. Second, following Povinelli and Vonk (2003), if the infant did understand the activity, the infant would not need to understand mental state reasoning to anticipate what the actor would do. Third—and this is the "bone of contention"—if the infant could not anticipate what someone

would do based on what that person had done, the infants would not have expected a particular outcome (and hence that expectation would not have been violated).

For some scholars (Onishi & Baillargeon, 2005; Spaulding, 2010), the third point constitutes an understanding of mental causes, the inner mental causes of the experimenter's overt behavior. The experimenter behaved as she did because of her belief. For others (Gallagher & Povinelli, 2012; Sharrock & Coulter, 2009; Zahavi, 2011), this does not follow. Can we reasonably say that, in anticipating what someone will do based on what that person had done, an infant understands the beliefs of others? Following Mead (1934) and Anscombe (1957), one might specify four *prima facie* reasons why we can.

First, we can say the infant's anticipating that a person will act in accordance with what that person did or looked at is, in itself, understanding that person's beliefs about a situation. Understanding a belief is no more than anticipating what a person will do based on what he had done.¹³

Second, following Anscombe (1957) we can ask, what further an infant is doing in looking at what another person is doing. We can say that the infant is anticipating what

¹³ Some focus on investigations in which a key to "mind reading" is in registering what the person looked at rather than simply what the person did (e.g., Liskowski, Carpenter, & Tomasello, 2007). I address this issue more fully when I discuss Lurz and Krachun (2011) in a subsequent chapter. In Onishi and Baillargeon (2005), the experimenter's eyes were hidden by a visor. The point I am making here is that gaze following in itself is not a window into the mental springs of action behind a person's "behavior."

that person will do based on what that person is doing or has done. We can say that the infant is following the other's beliefs about the situation.

Third, we can say this because, following Mead (1922, 1934), through participating actively in interactions with others we have learned to anticipate how others talk about particular aspects of the world around us, including the intentional acts with which we engage. We have learned to signify with discernment about aspects of our social activity. We have learned to attune to and talk about the mental causes of our own acts and the acts of others.

Fourth, and again following Mead (1932, 1938), a role of science is to develop ever finer distinctions among the observable features of our world. Scientists seek to discern among similar phenomena, signify these discernments (say, through specific terms or notation), and promulgate these discernments so that each scientist is ready to engage with a new discernment as another would engage. In terms of the question at hand, we can develop a fairly precise and mutually shared understanding of what constitutes an "implicit understanding of beliefs." Not only is it the role of developmental psychology to make these discernments, but it is hard to conceive of a developmental psychology that did not make such discernments.

In interpreting the results of the Onishi and Baillargeon (2005) experiment, Apperly and Butterfill (2009) hold that infants are tracking beliefs, that this activity is distinct from tracking the location of objects, and that this activity is also distinct from understanding what a person is doing in a given moment. Invoking a belief reasoning

system is held to be parsimonious. Such a system accounts for infants' ability to anticipate what a person will do in a broad range of situations. The infant simply needs to keep track of others' beliefs.

Why though can we say that infants are tracking beliefs and why is this explanation parsimonious? Our reasoning is verbal reasoning. Parsimony is the most efficient, reasonable verbal description of the toddler's intentional act. We have learned to talk and reason about others' beliefs and we can construe by analogy that infants do the same. As language capable adults we are able to signify to ourselves and others about our beliefs because, at a very early age, we have learned to parse our intentional activity into mental and behavioral elements, we have learned that wanting to draw is distinct from drawing. We have learned that there is a distinction between what we think and what we do.

Verbal reasoning about mental states, however, may misdirect our explanations of infants' performance in the Onishi and Baillargeon task. There is a critical distinction between the perspective of the adult observer and the perspective of the infant. Distinctions between thinking and doing do not exist in the perspective of an infant. Infants think, but they do not reflectively engage with the thoughts, fancies, beliefs, or suspicions of self or other until they have learned to participate in and talk about such activity in the same manner as they have witnessed and heard others do. Admittedly, few would argue that infants are reflectively representing mental states. Rather, infants' belief reasoning system is considered to be "implicit" (Caron, 2009; Clements & Perner, 1994; Kovács et al., 2010; Luo, 2011; Onishi & Baillargeon, 2005).

In what, though, is belief reasoning implicit? Belief reasoning is implicit in understanding and anticipating familiar social activity. As we have discussed, anticipating familiar social activity is presupposed in Onishi and Baillargeon's experimental design and also in Apperly and Butterfill's (2009) interpretation. A belief reasoning system invokes an unobserved cognitive system that is tracking unobservable mental causes of another person's actions. In which case, an explanation needs to be given as to why an infant, even at a sub-personal level, would be reasoning about mental causes that, as we have argued, are unobservable.

Can infants be learning about something that is unobservable? One explanation might be that humans have evolved an innate, perhaps modular, neural mechanism, a mechanism that infers unobservable causes from observable features of the environment (Baron-Cohen, 1996). Prima facie, innate "theory of mind" may seem to sit well with evolutionary theory. A gerbil, even a very young gerbil may attune to a large shadow passing over it and run for cover. In this case, however, there need be no unobservable cause. The visible change in light caused the gerbil to hide. Possibly some animals do learn about unobserved causes. A deer may learn that certain movements of tall grass are caused by an unobserved predator (the cause of the moving grass). It will have learned this, however, by attuning to particular visible features of the environment and experiencing predators bursting forth. Intentions and beliefs do not burst forth. Theories of innate mind reading, then, involve an explanation for infant looking behavior that involves an infant's ability to construe permanently invisible causal entities from visible

activity, an ability perhaps possessed by human infants alone. It is, at best, speculative to invoke an innate belief tracking system.

Alternatively, following Apperly and Butterfill (2009), might infants infer mental causes in the same manner as they infer quantity? Infants distinguish quantities up to three before they understand the symbolic representation or the verbal indication of such quantities (Baroody & Dowker, 2003). Could infants be inferring mental causes as some kind of abstraction from visible action? This returns us to the presuppositions of the Onishi and Baillargeon task that I have critiqued. Infants could only make such inferences if they already understood the patterns of activity involved in a situation, and when such patterns are understood, the need to infer inner mental causes to explain the infants' responses in an experimental condition dissolves. In addition, to the extent that infants are abstracting features of a situation in order to anticipate future activity (which seems a non-controversial inference for developmental psychologists to make), these abstractions are from visible patterns of purposive action. It is not clear how abstracting features from and anticipating patterns of action provides any access to inner mental causes of that action.

One account that seeks to explain how young children infer an inner mind from observable action is theory theory (Gopnik & Wellman, 1992, 2012) which proposes that infants and young children discover or figure out these inner mental causes for themselves. Human action, however, is replete with unobservable mechanisms that facilitate action ranging from physical forces such as gravity to bio-mechanical forces such as muscular systems. Anticipating that objects fall or arms move is simply to

anticipate a fairly regular form of motion. It does not follow that infants hold, even implicitly, that gravity caused the object to drop or that muscles caused an arm to move. It is not clear then why we would need to invoke a developing theory of mental causation in order to explain the infant's anticipation of the regularities involved in familiar social activity.

I hold that infants recognize and understand observable patterns of action, an explanation for which we can find analogues throughout the living world. Possibly (as discussed in Chapter 4), the infant's temporal span of attention when attuning to such activity is more extended than it is in many other species. Infants appear to anticipate what someone will do based on what that person had done or perhaps what that person looked at.

Does anticipating patterns of social activity constitute implicit belief reasoning or, characterized more broadly, implicit understanding of mental causes? Above, I offered four reasons why we talk about infants understanding mental causes. Following the first reason, infants attune to visible acts and anticipate what a person will do based on what that person did or looked at, we might choose to say that this, in itself, constitutes reasoning about mental causes. If we constrain ourselves to such a characterization of mental causes, however, mental causes are not inner and infants do not take into account other people's "internal representations" (e.g., Southgate, Chevallier, & Csibra, 2010, p. 14). Rather, beliefs, intentions, and desires are manifest in what we do. It might be clearer to refer to an infant understanding the orientation of others rather than mental states, let alone mental causes of other people's action. An infant attunes to the same aspects of a

situation as others and understands from previous experience what that person will do next. In short, as Anscombe (1957) and Wittgenstein (1951) argued, when we say that infants understand beliefs, intentions, desires or, more broadly, mental causes, we are saying that infants understand the circumstances and contexts in which people act and anticipate what people will do.

The remaining three reasons are equally problematic. Following the second reason, we can say that, in looking where another person looks, an infant construes a belief. However, since, third, we can only talk about and understand beliefs because we have learned to do so, we are talking about something that does not exist in the perspective of the infant. It does not follow that infants are tracking inner mental causes. If we set aside innate understanding of mental causes and theory building as too speculative, and if, at the same time, infants have yet to learn the language through which we learn to talk about intentions and beliefs as distinct from what we do, then mental causes cannot exist for the infant at any level of awareness or neural processing. Fourth, as scientists we legitimately seek ever finer discernments in our understanding of intentional action. Of course, conscious or sub-personal engagement in any situation requires neural processing. In recent decades, an explanation of which cognitive and neural mechanisms facilitate infant's social engagement has driven much work in the discipline of developmental psychology. It does not follow, however, that these mechanisms track invisible mental states.

Do 7-Month-Old Infants Track Beliefs?

“Theory of mind” interpretations of development do not depend on evidence from Onishi and Baillargeon’s (2005) experiment alone. Rather, this experiment is a cornerstone in a broad array of experimental results that purport to provide evidence for infants’ developing “theory of mind.” I will review some of this evidence here, starting with Kovács et al.’s (2010) study of automatic “online belief computations” (p. 1834) in 7-month-old infants.

Infants were shown a stop-frame animation. In the familiarization version of the animation, a blue, plastic figure standing in the left foreground rolled a yellow ball towards an opaque, green rectangular wall (an occluder) in the center background of the scene. The ball rolled around the left of the occluder, reappeared on the right, continued to roll out of the screen on the right and then rolled back behind the occluder. The occluder then lowered and the ball was visible behind the occluder. The key comparison to the familiarization animation was a condition in which the plastic figure “falsely believed” the ball was behind the occluder. In this condition, the plastic figure left the scene after the ball rolled behind the occluder and hence was not present when the ball rolled out of the screen on the right. The ball did not roll back to a position behind the occluder. The plastic figure returned as the occluder was dropped revealing that the ball was not present.

Kovács et al. (2010) found that infants tended to look longer when the plastic figure was absent as the ball rolled out of the screen. Kovács et al. interpreted the finding as follows.

This suggests that infants computed the agent's belief and looked longer when this belief was not confirmed, possibly also expecting the agent to be surprised. Thus, the beliefs of the agent influenced the infants' looking behavior, even though they clashed with the infants' own beliefs (p. 1833).

The relational thesis developed herein is that infants do not anticipate the mental causes of another's actions. No new evidence is provided in Kovács et al.'s (2010) experiment that infants are "computing" the unobserved mental functioning of another person. Again, the argument is that belief computation is "implicit" (p. 1834). As such, Kovács et al.'s interpretation is subject to the same critique leveled at Onishi and Baillargeon's (2005).

Nonetheless, Kovács et al.'s (2010) experiment supports the claim that infants attune to and anticipate social activity. The infant saw the animation and attuned both to the movement of the ball and the activity of the plastic toy, which was probably construed as an animate agent by the infant. In attuning to the agent, the infant anticipated what the agent would do based on what the agent had done. The infant, of course, was also anticipating what would happen based on her own visual experiences. If two distinct outcomes were anticipated by the infant (i.e., her own and the other agent's), then it is plausible that the infant would pause for longer as she anticipated two possible outcomes. Such anticipation does not require an understanding, or computation of, mental states. It requires a tendency to attune to and anticipate what an agent will do based on what the agent has done; including what the agent had looked at.

One might object that there was no outcome. The animation ended as the occluder dropped. Moreover, based on the familiarization animation, the infant might have anticipated that the false belief animation would end when it did. The infant, it might be argued, is more likely to be focusing on the agent's current mental state rather than some future action. A mental state that is dissociated from subsequent action, however, would be acausal. Even among adults, when we attribute a mental state to someone, we do so to provide an explanation for what a person does. In saying, for example, "My husband believes Lincoln was a great president," a person is anticipating what her husband might say, read, or watch on TV based on what her husband has previously said and done.

The only possible explanation for 7-month-old infants attributing invisible, acausal mental states, would be an innate module. As I have discussed above, however, an innate module is highly speculative. If we accept that an infant's mental state attributions are anticipatory (as Kovács et al., 2010, seem to do), then we again return to whether mental states attributions are needed to anticipate what a person will do. I have argued that they are not needed. Rather, infants attune to and anticipate what others are anticipating. Mead (1926, 1932) referred to this as perspective taking. The importance of Kovács et al.'s experiment is that it highlights infants' perspective taking rather than infants' computation of unobservable mental states.

Toddlers' Understanding of Intentions

In 1995, Meltzoff conducted a study into infant's understanding of intentions. In this study, 18-month-old toddlers were introduced to novel objects. In one experimental

condition, the experimenter showed toddlers how an object worked. The toddlers then engaged with the object and typically re-enacted the target action shown in the demonstration. In another condition, the experimenter, in showing how the object worked, failed to complete the target act. One object, for example, looked like a dumbbell. By pulling each end of the dumbbell it could be taken apart. In the failed condition, the experimenter pulled the dumbbell outwards, but his hand slipped off one end. The key finding is that the toddlers were just as likely to complete the target act when they saw the failed attempt as they were when they saw the successful attempt.

Meltzoff (1995) noted cautiously that there was insufficient evidence to claim that infants understand intentions as inner, causal mental states. Rather, “[i]nfants apparently represent the behavior of people in a psychological framework involving goals and intended acts, instead of purely physical movements or motions” (p. 846). What, though, constitutes the psychological framework? Meltzoff (1995, see also Meltzoff, Gopnik, & Repacholi, 1999; Meltzoff & Prinz, 2002) referred to a surface level of action understanding in terms of purely physical movement and a deeper level of intentional, purposive action understanding.

First, I suggest that there is no surface level of human action with which the deeper level can be compared. From very early infancy, infants are attuning to the patterns of social activity around them and anticipating what might occur (Murray & Trevarthen, 1985). Infants are not simply perceiving physical movement or responding to stimuli, but rather they are actively projecting to anticipated outcomes.

The deeper level, I argue, is not a level of deeper, causal mental states, which Meltzoff recognized could not be detected from his experiments. The deeper level may be characterized as a depth of social understanding that has emerged through attending to temporal patterns of social activity. Huang, Heyes, and Charman (2002) replicated Meltzoff's (1995) experiment with an additional condition. In this condition, the experimenter showed an 18-month-old a novel object, acted on the object behind an occluder, showed the toddler the changed state of the object, then, again behind an occluder, reset the object to its original state. Even though the toddler had not seen a human act on the object, she was as likely to produce the target, functional act as a toddler that had seen the experimenter act on the object either successfully or unsuccessfully. Toddlers understood a temporal pattern of activity that involved the purposive manipulation of the object.

How, though, were toddlers able to understand that there was a target act and then perform that act themselves? Another replication of Meltzoff's (1995) experiment by Bellagamba and Tomasello (1999) found that 12-month-old infants were less likely than 18-month-olds to produce the target act when they saw the unsuccessful demonstration. This suggests that toddlers have learned to understand patterns of functional, social activity, patterns that include the manipulation of objects in a functional way. Surely, the first question to ask is what the infants have learned. For example, in Meltzoff's (1995) experiment, the experimenter demonstrated an effort to complete a task. How did the experimenter demonstrate effort? Did the experimenter show a look of

frustration when he failed to open the dumbbell?¹⁴ Does such an expression influence the toddler's ability to recognize that a functional purpose was not achieved? Following Mead (1934), I would submit that a toddler's ability to understand failed attempts involves anticipating from such expressive gestures that a second attempt might be made. It is also worthy of note that the experimenter explicitly called for the toddler's attention. What might a toddler have learned to anticipate from a call for attention? A necessary consideration is the similar patterns of activity in which the toddler has been involved and how these activities have been beneficial to the toddler.

¹⁴ The author does not comment on the facial expression of the experimenter, but notes that there was a clear demonstration that an effort was made to open the dumbbell.

Testing the Appearance Reality Distinction

Lurz and Krachun (2011) have suggested an experimental design through which it may be possible to identify whether an agent (i.e., chimpanzee) understands the mental causes of another agent's actions as opposed to understanding past behavior or circumstances as causes of the behavior. The protocol is based on Appearance Reality Mindreading (ARM) theory. ARM theory suggests that some animals have evolved an ability to make mental state attributions of "internal goals" (p. 449) in order to anticipate behavior. Knowing how an object perceptually appears to another agent, for example, may facilitate more accurate anticipations of that agent's behavior than simply knowing what that object is. For example, often food is occluded or camouflaged.

In many environmental settings, the way distal objects (e.g., food, partially occluded objects, other animals) perceptually appear (e.g., look, sound, smell) to an agent is a better predictor of how the agent is likely to act toward the objects than the way the objects objectively are. (p. 469)

The experimental protocol Lurz and Krachun propose involves a food competition experimental design. In brief, in familiarization trials a large grape is placed in one transparent container and a small grape in another. The chimpanzee watches as a human reaches for the large grape, succeeding to reach the grape on half the trials and failing on the other half. In test trials, one container magnifies the size of the grape, while the other minimizes the size. Hence, the big grape appears small and the small grape appears big. The grapes are placed in the container without the human being present. Given that the chimpanzee has an interest in which grape the human takes, one would expect the

chimpanzee to stare intently at the grape that the chimpanzee anticipates the human will take. If the chimpanzee anticipates that the human will take the magnified grape, but the chimpanzee takes the minimized grape, then, the authors suggest, we can interpret from this pattern of activity that the chimpanzee is mind reading. The chimpanzee knows that the grape appears big to the human, but in fact, it is small.

The experimental design precludes prior behavior for the chimpanzee to interpret. The human simply enters the scene and the chimpanzee anticipates what the human will do. Let us assume that the chimpanzee anticipates that the human opts for the maximized grape and the chimpanzee takes the minimized grape. According to a “theory of mind” explanation the chimpanzee understands that how the grape appears to the human is different from how the grape really is. The chimpanzee has made a distinction between perceptual appearance and reality and is reading inner, perceptual mental states of others. How, though, does the chimpanzee understand this? If no learning were required, then we could expect infant chimpanzees to complete the task as soon as they can reach. I doubt this would happen. If learning is involved, what has been learned? The chimpanzee must have learned that a foraging competitor will reach for an object that appears large. The object appearing large is a visible feature of the environment. There is no need for the chimpanzee to understand inner mental causes of the reaching behavior. If the chimpanzee did not know that competitors reach for objects that are large, it would not be able to understand that they appear large in the inner mental state of the competitor. If the chimpanzee does know that competitors reach for objects that appear large, it does not need to know about inner, invisible, mental states. Certainly, the chimpanzee has taken

the perspective of the other. The chimpanzee anticipates that the other agent will engage with the situation differently, just as the infants in Kovács et al.'s experiment seem to do. Anticipating that another agent will act on different features of the environment does not, however, require recourse to mental states. It does require a sophisticated understanding of patterns of visible, intentional activity.

The Lack of Evidence for Mental Causes

One objection to critiques of the “theory of mind” paradigm is that no empirical evidence has been provided in support of an alternative theoretical framework. As has been made clear here, however, there is no empirical support for the “theory of mind” framework. The onus is on “theory of mind” exponents to provide compelling evidence that infants are accessing and computing invisible, mental causes of another person’s action, evidence that does not simply re-describe particular social acts in “theory of mind” terms. No such evidence has yet to emerge (see Penn & Povinelli, 2007, for discussion). Rather, the extant research supports a relational interpretation.

A “theory of mind” theorist might also object that this chapter is an exercise in pedantry. When “theory of mind” theorists talk about mental state understanding, they are claiming no more than an infant anticipates what another will do based on what that person saw or did. This is all that is meant by the term “implicit.” There are no claims that infants understand representational or inner mental causes of another’s action. Some readers may legitimately make this claim in which case this chapter simply highlights a need for a much richer understanding of the visible and temporal features of human social

activity to which the infant attunes. At the same time, some developmental psychologists (e.g., Onishi & Baillargeon, 2005; Baillargeon, Scott, & He, 2010; Caron, 2009; Tomasello, 2008; Spaulding, 2010) do hold that infants are construing invisible, mental causes of another's action. I have argued that such a position is speculative and superfluous.

Some may also object that I have discussed beliefs, intentions, and visual perception in a single treatment, although these aspects of development are typically considered separately and with careful attention to detail. The argument, however, is that infants do not understand invisible mental causes of another's action, no matter what those causes might be. If this is the case, then infants do not distinguish between inner beliefs, intentions, and visual perception. In the Onishi and Baillargeon task, for example, was the infant surprised because she expected that the actor intended to reach for the yellow box or because she thought the actor believed the toy was in the yellow box? The distinction is verbal and does not exist for the infant. This case is founded on the claim that infants anticipate outcomes of intentional acts. Some may object that anticipation is not "one thing." A broad array of cognitive processes is involved in anticipating what may happen. Admittedly, much more can be done to understand and explain the temporal, attentive, and anticipatory orientation of an infant. Much of this work is well underway in the disciplines of neuroscience and developmental psychology. Connectionist models, for example, (Rumelhart et al., 1986) assume an anticipatory orientation to the world (albeit with an added and unneeded representational element that can be criticized along the same lines as "theory of mind" has been critiqued herein).

It also can be suggested that the account provided herein lacks specificity in terms of what aspects of human social activity are salient to an infant and why an infant might attune to and learn about specific features of visible human activity. I would agree but note that a similar criticism can also be directed at “theory of mind” approaches (Bermudez, 2003). Much future work can be done in investigating how infants come to understand temporal patterns of meaningful, social activity. Here I have attempted to show that the relational theoretical framework coheres with many key empirical findings but seeks to highlight the rich, complex, meaningful, and temporally extended patterns of social activity that constitute the human form of life, the form of life into which the child grows and within which the child participates, learns, and develops.

Chapter Six: Language and the Emergence of Social Understanding

In Chapter 2 of this dissertation, I provided a characterization of a toddler's social understanding. In Chapter 3, I attempted to provide a conceptualization of the intentional social patterns of interaction within which toddlers become participants and Chapter 4 considered the enabling conditions that make such participation possible. Chapter 5 argued that toddlers are able to engage in and make sense of social acts without recourse to understanding the mental causes of another person's acts, whether these causes be construed as beliefs, desires, or intentions. The arguments set forth so far, however, do not account for how we, as adults, do come to talk in depth and with remarkable sophistication about a rich mental world, a mental world that is often used to explain what we are doing and why we are doing it. As discussed in Chapter 2, it is a well established canon of developmental psychology that most 4-year-olds are able to talk about the beliefs of others (Wimmer & Perner, 1983). They appear to have gained insight into the inner minds of others. Three-year-old children, however, seem to be less able to talk about the beliefs of others. If one adopts a "theory of mind" approach to development, there appears to be a paradox that needs explaining; why are 15-month-old toddlers able to understand the false belief of another while a 3-year-old is unable to express such an understanding of other people's minds?

In this chapter, I will attempt to explain how children's acquisition of language facilitates a growing self-awareness and a sophisticated ability to take the perspective of

others in a diverse array of social activities. Gradually children acquire an ability not only to make sense of social acts and individual roles in these acts, but also to express a refined understanding of the motivations for acting, motivations of both self and other.

The Emergence of Language and Self-Awareness

How then, do verbal descriptions of intentional action emerge? To consider this question, I again apply the thought of G.H. Mead (1922, 1934; Miller, 1982). Following Mead, children learn to refine the meaning of gestures, words, and phrases by attuning to how they and others engage in social activity. They learn for example that “laugh” is distinct from “giggle” and that “drink” is distinct from “sip” by orienting and engaging as the other orients and engages. Children develop along a trajectory of gradual refinement of their functional engagement with others and the world. They learn to talk with increasing mutuality about their interpersonal interactions and the observable activity around them.

It is well accepted in developmental psychology that children’s exposure to talk about mental causes and their ability to use such talk themselves is related to their ability to talk about and express their anticipation of other people’s knowledge, beliefs, and desires (Carpendale & Lewis, 2010; de Villiers & de Villiers, 2000; Tomasello, 2008). Following Mead (1934; Miller, 1982), a child learns about a world of action understood in terms of mental causes as she engages in a social world where such causes are articulated and made explicit in conversations.

Language is inherent in much of the social activity that constitutes a young child's world (consider, for example, the language entailed in bringing a family to the dinner table). By engaging in shared social activity, a child is, at the same time, both attuning to and learning to make significant gestures such as words and pointing gestures. In Chapter 3, it was argued (following Mead, 1934), that when a toddler engages with another in a social activity, she is (1) anticipating how a social activity is unfolding, (2) anticipating that the other is attending to the same aspect of the activity as she is, and (3) anticipating that the other is attending to the gesture or word she is about to make (Mead, 1934). As a toddler engages in an expanding repertoire of social activities, she learns the expanding repertoire of words, phrases, and gestures that accompanies these activities. She is also increasingly able to anticipate that others are anticipating her own activity. In anticipating that others are anticipating her active involvement in an activity, the child attunes to her own activity. She becomes aware that she too is an actor in the situation.

Reflective thought emerges as the child attunes and responds to her own attitudes, i.e., her own incipient readiness to engage in a situation (Mead, 1912, 1922, 1932, 1934). As words and phrases from her expanding lexicon arise ever more frequently in her own attitudes, her thought begins to reflect the meaning she has encountered in her social world.

In sum, when a child uses language, when she points, talks, or otherwise communicates with others, she is anticipating how others will respond to her. She becomes aware of herself and, in responding to herself in the same manner as others have

responded to her, her thought assumes similar patterns of meaningful attuning and responding.

The implications of Mead's discussion of significant communication are as follows. First, a child becomes conscious of herself by virtue of direct interactive experiences with others, experiences that have involved occupying, exchanging, and coordinating positions, roles, and perspectives within routine sequences of social interactivity. The child becomes able to attune to and reflect on her own perspective. Second, shared understandings emerge through which particular attitudes are isolated by words and gestures. A child is able to tell herself and others that she is angry, frustrated, or sad because she has engaged in social activities where such feelings have been talked about with others. The child has learned to communicate about a familiar kind of situation, her way of acting in that situation, and the fleeting somatic sensations and incipient responses involved in her acting in the situation. Without this rich shared language that emerges in the coordinating and sharing of perspectives, self-awareness would be fleeting, discontinuous, and insufficient for communicating about, or reflecting on, the perspectives of self and others.

The child's understanding of mind, then, issues from the patterns of social activity within which she engages and within which descriptions of mind are shared. For Mead (1932), the mind does not exist as "inner" or "deeper" psychological states. Rather, mind exists within a shared perspective, a perspective in which we are able to talk about and coordinate the roles and actions of self and other within social interactivity.

Consider the following (in this case, contrived) illustration. A 15-month-old child orients to some crayons in a box. The toddler has already learned to anticipate patterns of activity, affordances, and outcomes involved in drawing. She has also learned a verbal description of this activity ('drawing'). In orienting to the crayons, she attempts to open the box but she is unable. Her mother says, "You want to draw, do you?" and helps the infant to open the box. Repeatedly, the child has engaged in actions in which she has reached and others have given. Such situations involve orienting, and perhaps pointing towards an activity or object and may be accompanied by those around her using the word "want." The child hears others "want" as she sees others orienting towards an object and hears others telling her that she "wants" as she orients towards an object. Often in such situations, the toddler does not get what she wants. Through such interactions, the toddler has gradually become aware of herself as an actor in a situation as she anticipates the other's readiness to interact with her. As words and phrases from her expanding lexicon arise ever more frequently in her own anticipations, her thought begins to reflect the meaning (i.e., the functional relations that pertain between actions and their interpersonal and social consequences) she has encountered in her social world.

In taking the perspective of a collaborator and assuming that the collaborator is attending to the toddler's role in a social act, the toddler becomes aware of herself as an actor in the situation. As a toddler anticipates that others are attuning to her, a consciousness of self gradually emerges. The child, in attuning to herself, is eventually able to tell herself that she "wants" just as others had said that they "wanted" and had told her that she "wanted." "Wanting" becomes a way to talk about how she orients towards

an object or activity. “Wanting” becomes a description of a visible and mutually understandable demeanor, a description that a child can utilize in her own deliberations as linguistic reflective activity emerges.

What constitutes a verbal description of intentional action? Following Mead, intentional action is action with an anticipated, functional outcome. As I have discussed, our words are an expression of our anticipations. Our anticipations are constituted by our engagement in shared activity, activity in which we anticipate the activity of others and in which others anticipate our activity. Our verbal expressions are not labels that point or refer to particular neural or somatic states. Rather, verbal expressions, whether uttered, thought, or incipient within our attuning to a situation, both respond to and anticipate our circumstances.

As such, our understanding of intentional action is constituted by our interactions and verbal activity. Of course, such activity requires neural and somatic processes, processes that are held by many scholars in developmental psychology to be the mental causes of our intentional acts. These neural processes, however, are formed in, and substantially determined by, our attuning to and learning about the verbal, intentional, social activity that constitutes our world.

By approximately four years of age, children have learned to talk about the mental causes of human conduct in terms of what they felt or thought, and they have learned to make use of these attributions to explain what someone will do or has done. They can say, for example, what someone knows, believes, wants, needs, or adores, and hence what that

person will do. Four-year-old children are beginning to discern between knowing and believing or liking and adoring. Our task then is to explain how children learn to explain human conduct in terms of “mental causes” and how they come to recognize and discern particular uses of mentalist expressions within the contexts of social activity. To accomplish this task, we must first consider how infants learn to take part in linguistically meaningful social activities.

Developmental Antecedents to Talking about Mind

As we have seen in the previous chapter, toddlers already are attuning to their social world. An awareness of self emerges through participating in meaningful activity with others (Mead, 1934). In anticipating how others will act in the situation, that the other will attend to the same aspect of the situation as she is, and that the other is attuning to the toddler’s own role in the situation, a toddler takes the perspective of another person, a perspective that involves the toddler herself as an actor in the situation. The toddler learns to anticipate her own activity by anticipating other people’s orientation towards her. This, Mead identified, is the basis for the emergence of a reflective awareness of self.

Consider, for example, Liskowski, Carpenter, and Tomasello’s (2007) study into infant pointing at about 12 months of age. Although Liskowski et al. suggested that the study demonstrated infants’ understanding of other people’s “mental states” (p. F2), states such as knowledge states, interests, and attitudes, I suggest that the study provides evidence for how social engagement facilitates an emergence of self-awareness in infants. In Liskowski et al. (2007), an experimenter accompanied a toddler into a room with two

windows. A puppet appeared for 20 seconds at one of the windows. In two trials, the experimenter looked at the window where the puppet appeared. In two trials the experimenter looked at the other, closed window. In all trials, the experimenter looked towards the child twice during the puppet's appearance. In one condition, the experimenter responded positively and happily to either the puppet or the closed window (depending on where she was looking). In the second condition, the experimenter responded disinterestedly to the puppet or the closed window. After the puppet had disappeared from the window, the experimenter turned to face the infant.

Infants in both conditions pointed more frequently when the experimenter was not looking at the puppet. The majority of infants also pointed after the puppet had disappeared; they were orienting the experimenter to an event that had already passed. Moreover, after the puppet had disappeared, infants pointed more frequently when the experimenter had seen and responded positively to the puppet than when the responder had responded disinterestedly to the puppet.

Liszkowski et al. (2007) assert that their study “demonstrates an understanding of persons as mental beings” (p. F6) whose minds can be informed by the infant. Moreover, infants understood others as beings with “knowledge states” (p. F6) that can be altered even after an event has occurred. I argue that the infants anticipated interacting in familiar, meaningful patterns of interactivity in which the visible response of the other was meaningful and salient to the infants. The infants had learned to get others to engage with and respond to particular aspects of a situation by pointing. They had learned that another person is more likely to interact with them when that person is acting in a

particular and familiar way, say, by talking in the high pitched tone that adults so often use when interacting with infants. When pointing at an absent referent—the location of a past event—the infants anticipated that the adult would engage with them, perhaps by talking or perhaps by retrieving the disappeared object. There is no evidence that invisible mental causes of the adult’s overt conduct existed for the infant, and hence there is no evidence that toddlers were seeking to alter unobserved, inner knowledge states of the adult.

Although not specified by the authors, the results of Liszkowski et al. (2007) suggest that from 12-months of age, if not before (see Reddy, 2003), infants are beginning to develop an awareness of self as they anticipate other people’s responses to them. This is not to say that infants and toddlers are consciously aware of their own “inner” intentions or beliefs. Rather, they anticipate that they are actors in the perspective of the other and are ready to engage as such. As I have argued, assuming that others are attuning to the same aspect of a situation, anticipating patterns of social activity and engaging with others in completing social acts are characteristic activities of typical development. Such activities facilitate an increasingly refined understanding of social activity, its accompanying language, and the role of the self in interacting with others. As I will discuss shortly, this increasingly refined understanding enables a gradually developing ability to talk about the minds of self and others.

Crucially, children do not typically learn language as labels or referents that are attached to things in the world (or things in the head if talking about “intentions” or “beliefs”). As Wittgenstein (1953) famously argued, language is an intrinsic aspect of

day-to-day social activity. An experiment by Warneken and Tomasello (2007) illustrates the linguistic activity involved as toddlers join in familiar activities, activities in which they are able both to anticipate the outcome and also to coordinate with others to achieve that outcome. In one condition (see online video, Warneken, n.d.), an 18-month-old stood beside his mother in the corner of the room when an experimenter entered the room carrying a stack of books in two hands. The experimenter walked over to a closed cabinet, banging his books against the cabinet door and uttering a sound, “Oh.” The experimenter stepped back and turned 90 degrees so he was standing beside the cabinet. He uttered another sound “hmmm.” The experimenter then bumped the books against the closed door of the cabinet two more times, uttered the sound “oh” and then stepped back again to the side of the cabinet. At no time did the experimenter look at the toddler. The toddler walked over to the cabinet while glancing up at the experimenter, opened the door of the cabinet, stepped back and looked at the experimenter again.

The toddler likely had learned about the activity of carrying and placing objects and also had learned the affordances of doors and cabinets. The toddler anticipated the outcome of the act and actively took part in the completion of that outcome. The toddler took the perspective of the experimenter and was ready to perform the same act as the experimenter. Possibly, the toddler would have completed the act even if the experimenter had not uttered any sounds. Crucially though, this experimental activity—as with most day-to-day social activities—was accompanied by utterances and gestures to which toddlers attune and through which they anticipate what others are doing. The toddler understood that the experimenter’s act was not completed and heard the utterance

“Oh.” Because the toddler took the perspective of the other (was anticipating what the other was anticipating), the toddler was ready to engage with this activity by attending to and completing an unfulfilled outcome. The utterance became a significant aspect of a situation that facilitated the toddler’s understanding of what was happening.

Does the active participation of toddlers in linguistic, social activity also inform us about their ability to understand the “inner” or “deeper” beliefs of others prior to their ability to talk about such beliefs? Southgate, Chevallier, and Csibra (2010) believe that it does. In Southgate et al.’s experiment, a 17-month-old toddler sat on the floor with her mother. Two boxes were placed one meter apart and 120cm in front of the toddler. In the test condition, an experimenter (E1) placed one toy in each box and told the toddler that she was leaving the room. As soon as the experimenter left the room, a second experimenter (E2) appeared. E2 “behaved in a deceptive manner (crept towards the boxes, and gestured to the infant to ‘shush’)” (p. 908). E2 then switched the toys between boxes and left. E1 returned, pointed at a box and said, “Do you remember what I put in here? There’s a sefo in here” (p. 908). Nine out of twelve toddlers either pointed or reached towards the non-referred box. The toddlers anticipated that E1 was referring to the toy in its original location.

Southgate et al. (2010) concluded that the results provided “strong evidence in favor of the proposal that children are able, from a very young age, to deal with referential ambiguity by taking into account a speaker’s internal representations” (p. 911). The evidence for understanding a speaker’s “internal representation,” however, rapidly dissolves when the child’s understanding of social activity and the child’s anticipation of

action are taken into account. What did the toddler need to understand in order to anticipate what the first experimenter was referring to when she said “sefo?” Clearly, the toddler needed to understand the patterns of placing and retrieving objects I discussed when considering the Onishi and Baillargeon task (2005). The toddler needed to anticipate that the experimenter now intended to retrieve an object. For the toddler to help the experimenter retrieve the “sefo,” she also needed to anticipate that she was acting with the experimenter in this situation. Crucially, the experimenter’s intention was clearly manifest in the experimenter’s orientation and gestures. The toddler need not pre-reflectively assume a separate, inner, mental intention that would cause the experimenter to retrieve the toy. Rather the toddler anticipated the experimenter’s next action based on her own understanding of what preceded along with the experimenters’ current orientation to the situation. The toddler understood a temporally extended pattern of activity rather than a mentally encapsulated cause of action. The toddler could only have understood what the experimenter meant by “sefo” if she already understood these patterns of activity. The word “sefo” was involved in a pattern of activity that made sense to the toddler and to that extent, the word “sefo” made sense to the toddler. Rather than understanding the experimenter’s “internal representations,” the toddler understood the social activity within which she was jointly engaged.

Perspective Sharing and Failing the False Belief Task

In a canonical experiment, Wimmer and Perner (1983) studied children’s verbal expressions of their beliefs. Children between the ages of 3 and 6 years old observed a puppet show in which one of the puppets, Maxi, put chocolate in a blue cupboard. Then,

while he was out playing, Maxi's mother moved the chocolate from the blue to the green cupboard. When Maxi returned for his chocolate, the experimenter asked the child, "Where will Maxi look for the chocolate" (p. 109)? In the original study, the 3- to 4-year-olds answered incorrectly that Maxi would look in the green cupboard where the child had seen the chocolate placed (but Maxi had not). More than half the 5- to 6-year-olds, however, answered correctly that Maxi would look in the blue cupboard. The authors interpreted their findings as suggesting that younger children were unable to represent the false beliefs of others.

In light of recent investigations into infant perspective taking (e.g., Onishi & Baillargeon, 2005; Surian, Caldi, & Sperber, 2007), two distinct questions need to be addressed. First, why were younger children unable to say correctly where Maxi would look for the chocolate? Second, why were older children able to do so. I will address the first question in this section.

Toddlers have spent a lifetime involved in patterns of social interaction. They participate, for example, in meal times, bed time routines, and bathing. In attuning to the same aspects of a situation as others, toddlers have learned the words and gestures involved in these routines. They have learned to engage with these words as others engage. A toddler learns, for example, to "run" by acting as another person acts when that person "runs." A toddler distinguishes "run" from "hop" by distinguishing and learning the acts of others and acting as others act when they run or hop. When a toddler attunes to the language involved in daily activity, the toddler presupposes that she is attuning to the same aspects of the situation as the other (Chapman, 1999; Mead, 1934). To the extent

that the toddler is ready to respond to a word or gesture in the same way as the other, or is ready to participate in the same social act as the other, the meaning of the word or gesture is the same. In attuning to shared perspectives, children have learned to participate ever more successfully with the people around them, strengthening an orientation to engage as others engage.

It will be helpful to highlight some aspects of the thesis set forth so far. Infants attune to their caregivers and engage in temporal patterns of interactivity. From around the age of six months, infants may already be anticipating that others are attuning to the same aspect of a situation as they are (as inferred from Kovács et al's., 2010, experiment discussed in Chapter 5). Certainly, by around twelve months, when infants begin to point communicatively, there is evidence that infants are assuming that they are attuning to the same aspects of a situation as others. This is not a suggestion that infants are mind reading. They are simply anticipating that they are engaging with others towards the same aspects of a situation. They anticipate this because this is what they have learned. People around them often do engage with them towards the same aspects of a situation. For a young child in the first three to four years of her life, engaging in the social world has depended to a substantial extent on presupposing the sameness of her perspective with the perspectives of those around her.

Why is this shared perspective relevant to failing the false belief task? Let us imagine for a moment a 15-month-old is taking part in the Maxi task. The infant will attune to the same aspects of the situation as the narrator. She will attune to the narrator manipulating Maxi to place the chocolate in one cupboard and she will attune to Maxi's

mother and the narrator moving the chocolate. She will assume that the narrator is attuning to the same aspects of the situation as she is and will anticipate that the narrator is ready to engage as she engages. Indeed, the narrator just placed the chocolate in the green cupboard (after moving it from the blue cupboard), so the narrator will retrieve the chocolate from the green cupboard. Following the standard inferences from Onishi and Baillargeon's (2005) task, infants do follow such activities of placing and retrieving and anticipate what will be retrieved from which location.

A 3-year-old child has spent a lifetime attuning to the same aspects of a situation as others. To be absolutely clear, the child has not been attuning to knowledge states or perceptions of others. The child has been attuning to the activity of others and anticipating from antecedent activity what a person will do next. In the elicited false belief task, the child saw the narrator place the chocolate in the green cupboard and hence anticipated that the narrator will retrieve it from the green cupboard. Of course, there is another aspect of the task, namely, the narrative. In the narrative, what the narrator does is much less salient than what the narrative says about Maxi. Maybe, a 3-year-old child has been exposed to narratives from a very young age. Perhaps she has been exposed to narratives acted out by narrators and dolls. Nonetheless, her ability to engage cooperatively with others and use the words that others use has not depended on such activities. Rather, it has depended on attuning to what the people around her are doing and learning to engage with them in shared activity. This focus on the actions of those around her was a key enabling condition for entering into social engagement with the people around her. Why then do young, typically developing children fail the elicited

false belief task? When the experimenter asks the child, “Where will Maxi look for the chocolate?” the child is still, first and foremost, attending to the same aspects of the situation as the narrator. The narrator’s perspective becomes salient as the young child adjusts her perspective to that of the narrator.

Is such an explanation distinguishable from a simple egocentric argument, namely, that the child simply assumes that the world is as she sees it? I am not sure that there is an experiment that can empirically demonstrate such a distinction, but from a theoretical standpoint, the distinction is profound. Following Piaget (1954) and also Bickhard (2002), previously developed understandings are often the enabling conditions for developing new understandings. Following this principle, I have argued that anticipating a mutual attunement to a particular aspect of a situation is an enabling condition for engaging in cooperative activity and acquiring the language that accompanies such activity. If we assume the child does not attune to the perspective of others, but simply assumes that her own perspective is the matter of fact, then we seem to have an impossible gulf to cross between egocentrism and the acquisition of cooperative social engagement and language. Moreover, there is abundant evidence already cited in this thesis that suggests infants do indeed attune to the perspective of others (e.g., Kovács et al., 2010; Onishi & Baillargeon, 2005).

One might object that there is a distinction between solipsism and egocentrism. The child does not ignore the perspective of others but rather assumes that other people’s perspectives are the same as hers. This objection is problematic for two reasons, the first of which is analytical. If a child presupposes that another’s perspective is the same as

hers, then she is, at the same time, presupposing that her perspective is the same as the other's. Let us assume, however, that we could make such a distinction between an egocentric and non-egocentric assumption of perspectives. There is still another reason to reject such an objection. If an infant assumed that everyone else shared her perspective, then the infant would not learn to engage in cooperative activities such as getting dressed, sharing food, and rolling a ball back and forth. Recall, to take the perspective of another is to anticipate what the other will do. The infant learns how to cooperate by attuning to what others are doing and anticipating that she too can participate. To be clear, the argument here is not against the Piagetian notion of centration. As children become more adept at perspective taking, they decenter more from the here and now and they decenter more from the assumption that they share the same perspective as others. However, from very early in life, infants, toddlers, and young children are acutely attuned to the perspective of others (see Carpendale & Racine, 2011, for discussion).

I am arguing then that taking the perspective of others—assuming a mutual attunement to how a situation will unfold—is a key enabling condition for development. I am arguing that it is this orientation that remains salient to a 3-year-old who is still acquiring the language of here and now activity. It is this orientation that leads a 3-year-old to see the narrator place the chocolate in the green cupboard and expect the chocolate will be retrieved from the green cupboard.

Crucially, I have not explained why older children pass the Maxi task. Rather, I have explained why 3-year-old children *do not* pass. As mentioned earlier, previously developed understandings are often the enabling conditions for developing new

understandings. New understandings must develop before a child is able to pass the Maxi task. *The previously acquired ability to attune to the same aspects of a situation as others and talk about these situations as other people talk about them becomes the enabling condition for passing the Maxi task.* I will discuss this development in a later section of this chapter. First, however, I will address another question. If infants appear to be passing spontaneous false belief tasks at around 18-months old, how are such tasks distinct from the elicited false belief tasks such as the Maxi task? Why do spontaneous false belief tasks involve different abilities to elicited false belief tasks?

The Paradox of Infant False Belief

This brings our focus to a seeming paradox that has emerged from experimental investigations of child development. Infants as young as 15 months (or perhaps even younger, see, for example, Luo, 2011; Surian, Caldi, & Sperber, 2007) are considered to have an “implicit” understanding of “false belief.” Three-year-old children, however, are unable to express an understanding of false belief.

I already have argued that young children understand familiar patterns of activity. Children anticipate what someone will do by attending to her antecedent acts. Three-year-olds have not lost this ability. However, they anticipate that they are attuning to the same aspect of a situation as others, they orient to acting with others and, in particular, when speaking, they anticipate that they are talking about the same aspect of a situation as others. There is no paradox. For a 3-year-old, certain aspects of a social interaction have become more salient, especially when taking part in verbal exchanges with others.

The salient aspects of the situation, however, depend not only on what the child is doing, but also, on what others are doing. Hence, in deliberate (and probably familiar) acts of hiding and tricking where the child collaborates with another person to hide an object, young children are more able to anticipate that another will act as though tricked (Chandler & Hala, 1994; Southgate et al., 2010).

The argument presented so far has yet to resolve all difficulties in explaining the performance of toddlers and 3-year-old children. A transitional phase can be seen in a spontaneous false belief task in which children aged two years and six months were told a “Maxi-like” story in which an apple was moved from one container to another (Scott, He, Baillargeon, & Cummins, 2012). As the child was told the story, she was shown a picture book. On each double page were two pictures. One was relevant to the story and one was irrelevant. On the last page were two pictures, one of which showed the protagonist looking in the original (false belief) location of the apple and one looking in the new location. The children gazed reliably longer at the picture of the protagonist looking in the original location; they appeared to anticipate that the protagonist would look in this location.

In an earlier and related experiment by Clements and Perner (1994), a narrator presented 2- and 3-year-old children with a story in which a mouse lived in a hole with two entrances, one on each side of the stage. The mouse placed some cheese in a red box by one entrance and then went into his hole to sleep. While the mouse was asleep, the mouse’s friend moved the cheese to a blue box at the other entrance. The narrator first prompted the child’s anticipation by saying, “I wonder where he’s going to look” (p. 383)?

When the narrator prompted the child's anticipation, most children aged between two years and five months and two years and 10 months looked at the blue box (where the cheese was currently located). Most children over two years and 11 months passed the spontaneous false belief task by looking towards the red box (where the mouse had put the cheese). However, most in this older group still failed an elicited false belief task. Subsequently, the narrator asked directly, "Which box will he open first" (p. 383)? The children in both older and younger groups said the mouse would retrieve the cheese from its current location (i.e., the blue box).

The anticipatory looking found by Scott et al. (2012) and Clements and Perner (1994) can be interpreted by the relational account already provided for the Onishi and Baillargeon (2005) task: Young children are adept at following and anticipating typical patterns of daily activity. Why though, did the younger group in Clements and Perner's task *not* anticipate that the mouse would look in the red box? Also, why was the older group able to respond to a spontaneous task before an elicited task?

It is important to note that the Clements and Perner (1994) spontaneous task required children to anticipate into the future, whereas the Onishi and Baillargeon (2005) or Southgate et al. (2010) tasks did not (J.I.M. Carpendale, personal communication). The relational approach argues that infants and toddlers gradually learn about ever more complex and temporally extended patterns of activity. I hypothesize that a child under two and a half would be more likely to pass a spontaneous task when the temporal extent of the social activity is shorter and when the anticipated activity is more imminent. There is a distinction between anticipating what action is imminent and anticipating a probable

future path of action that has yet to be commenced. Again, anticipating imminent action is an enabling condition for learning to anticipate future possible courses of action. As such, we should expect younger children are better able to anticipate the former than the latter. In short, a younger child can take the perspective of another towards an imminent situation before she is able to do so for a more extended series of future events.

It is also important to note that unlike the non-verbal Onishi and Baillargeon (2005) task, Clements and Perner's (1994) task involved a verbal narrative as well as spontaneous and elicited responses. Just as with the Maxi task, the narrator was present in the situation and, although it is not clearly stated in Clements and Perner's paper, the narrator most likely manipulated the figures in the scene. Both the older and younger groups were exposed to two perspectives, viz., the perspective of the narrator and the perspective of the mouse. Following the relational approach to development set forth herein, the question is which perspective was more salient to the child. If, as I suggested in the previous section and as I will elaborate in the next section, previous ways of understanding become the enabling conditions for new ways of understanding, then we would expect younger children (such as those between two years and five months and two years and 10 months in Clements and Perner's study) to find the perspective of the narrator more salient. Again, I stress, this perspective does not include knowledge states or perceptions, but rather anticipations of what the narrator will do. Since the narrator placed the cheese in the blue box, a younger child would anticipate that the narrator would retrieve the cheese from the blue box.

Slightly older children (such as those of around three years old in Clements and Perner's study) may find the perspective of the mouse more salient. Older children have had more time to learn about the patterns of activity in daily life and the language that accompanies such activity. Older children have had more time to learn about narratives and they have had more time to distinguish between the perspective of a protagonist and the perspective of the narrator. However, unlike the abilities manifest by the 4-year-olds that pass the Maxi task, children at around three years old have yet to truly master this distinction under all circumstances. Under many circumstances, they still find the perspective of the narrator to be more salient than the perspective of the protagonist in the narrative.

Why did the first prompt from the narrator ("I wonder where he's going to look") leave the child attuned to the perspective of the mouse, but the direct question seem to switch the child's perspective back to the shared perspective of the child and the narrator? Possibly the child attuned to the perspective of the narrator only when asked a direct question by the narrator. When the narrator asked a child a direct question, the child responded directly to the narrator. At this moment, the narrator's perspective became more salient to the child and the child was ready to attune to and engage with the situation as she anticipated that the narrator will engage. Since a well established pattern of activity is to retrieve objects from where they are placed, the child anticipates that this was what the narrator will do.

One can also imagine, however, the same child watching Sam's story as an animation and a person coming into the room and asking a direct question after the story

was complete. In such a situation, the child may still point to the blue box in which the cheese is currently located. When asked a direct question by the person, the child anticipates the regular pattern of placing and retrieving and anticipates that this is the activity in which the questioner is ready to engage. Indeed, such a perspective taking ability is evident in 18-month-olds who, for example, help a person open a cupboard door when that person is unable to do so himself (Warneken & Tomasello, 2006, 2007). In this case, just as in the Warneken and Tomasello experiment, the child has taken the narrator's perspective, but (from an adult point of view) she has got it wrong as her focus is on the regular patterns of what people do when placing and retrieving things. This explanation may seem to beg the question as to why a direct question brings a child at around 3 years-old to find the perspective of the questioner more salient than other possible perspectives and why the child assumes that the shared perspective anticipates regular patterns of activity in the imminent present. However, this question has already been addressed. First, the child has grown into a world of social activity and language by attuning to precisely these aspects of a situation. Orienting to a shared anticipation of the present circumstances has proved very fruitful to the child. Indeed, such an orientation has enabled her to learn language. This orientation remains highly salient to a 3-year-old child when she is being spoken to directly. Second, there are clearly many possible explanations as to why a child in a transitional period of development may respond one way to a spontaneous false belief task and another way to an elicited false belief task. While I have suggested some possible explanations here, the thesis being set forth does not depend on whether it is or is not a direct question that shifts a child's perspective. Rather, the argument set forth here is that the child's perspective shifts and that the

reason for the shift is her tendency to assume the here and now perspective of the people around her is the most salient perspective. To be clear, I am not suggesting a singular formulaic solution as to why children fail elicited false belief tasks at a certain developmental phase. Rather, I am suggesting that explaining any particular case in which a child does not understand a person's perspective in the same way as an adult or an older child will involve an explanation of what aspect of the situation and what aspect of another person's perspective stand out as most salient to the child. Third, precisely through such an orientation to the actions, words, and gestures of others, a 3-year-old is still learning to engage with the perspectives of others in more subtle ways, ways that will facilitate an ability to pass elicited false belief tasks. I will address this issue in the next section.

Talking about Mental Causes

Children gradually learn to talk about human activity with a broad range of mentalist terms such as intentions, needs, likes, and thoughts. They learn that the likes or intentions of another are reasons for that person's acts. There is evidence from correlational studies that hearing talk about mental causes facilitates the use of such language (e.g., Adrián, Clemente, & Villanueva, 2007; Ensor & Hughes, 2008; see Carpendale & Lewis 2010, for a review).

What, though, are children learning, when they learn to talk about mental states? This question was discussed in the first section of this chapter. Young children attune to the activity of others and assume the perspective of others as they anticipate the outcome

of social activities. They learn that they are involved in social acts as others are involved and they learn to discern and talk about what they are doing as others discern and talk about what they are doing. In taking the perspective of others, children become aware of themselves as actors in the perspective of others. This is the process of developing an awareness of self, which involves children attuning and responding to their own incipient responses, responses that are increasingly verbal as they grow into the social world.

Children learn that they and others want something or like something because others have talked about wanting or liking particular things in particular situations. In short, children learn to talk about mental states because they have regularly participated in activities that are accompanied by such talk. Children learn to talk about mental states because talking about mental states is something that we, as people, do.

Language, Perspectives, and Passing the False Belief Task

We now turn to how children learn the abilities that facilitate their passing elicited false belief tasks. Shared perspectives on coordinated activity can break down. Children encounter people taking part in activity that is not completed as anticipated. Children encounter expressions of frustration and are able to anticipate that such expressions are often followed by an adjustment in the person's activity (Hoicka & Gattis, 2008).

Children become involved in an ever expanding array of situations in which coordinated activity can break down and expressions of surprise or frustration are made (Tomasello & Rakoczy, 2003). When communication breaks down, people may talk about that breakdown with expressions such as "I thought" (de Villiers & de Villiers, 2000;

Lohmann & Tomasello, 2003) or “that’s strange...” At each occurrence, the child adjusts her perspective on how people show surprise, frustration, or wonder.

Children see others express misunderstandings. Others show that situations are not unfolding as they anticipated (as illustrated with Warneken & Tomasello, 2007). Others may tell a child that the child had misunderstood a situation. People talk about such misunderstandings in particular ways, using particular kinds of expressions. As children learn how others express differences in perspectives, they learn to reflect on, think about, and anticipate perspectival distinctions. They will then be able to perform the false belief task.

A key distinction between the Onishi and Baillargeon (2005) task and the Maxi task is this: From the Onishi and Baillargeon task, we can infer that children anticipate placing and retrieving objects. Infants look longer when the familiar pattern does not occur. Crucially, infants do *not* anticipate that another person will be surprised or that another person's expectation will be violated. The social understanding required for the Maxi task is distinct. In performing the Maxi task, children anticipate another familiar activity; namely, the activity of getting things wrong, of looking in the wrong place, of being surprised. Although there may be an abstracted analytical relation between the two tasks (i.e., true belief or false belief), young children are not learning to reason abstractly and analytically. Rather, children are learning to make sense of particular patterns of activity. Anticipating that someone will retrieve an object is distinct from anticipating that someone will get something wrong.

Baillargeon, Scott, and He (2010) propose a neural system in which a mental state attribution sub-system attributes reality-congruent mental states to others and a second system which attributes reality-incongruent mental states to others. When children fail the elicited false belief task, their “response inhibition process” fails to inhibit the first sub-system. Their explanation does not explain, however, why the one system requires inhibiting by the “response inhibition process.”

Following the relational perspective presented herein, there is not an innate system for attributing mental states. Rather, infants attune to and learn about what the people around them are doing; they learn about patterns of social activity. As they engage with and learn about the meaningful language involved in such activity, they attune to how this language is used in daily life. In order to learn how to use language, young children need to coordinate their perspective with the perspectives of others, they need to understand that when they are using the word “run,” for example, they are using the word as others use it. The so called “reality-congruent system” is simply a weak, information processing metaphor for a learned ability, namely, the ability to attune to the same aspect of a situation as others. For a young child, the shared perspective becomes particularly salient (see also Chapman, 1999; Mead, 1934). In short, performance in false belief tasks depends on socially learned, meaningful understandings of our day-to-day activity rather than specific “pre-wired” cognitive systems.

Apperly and Butterfill (2009) describe four complexities involved in a flexible, costly belief reasoning system, viz., understanding complex causal structures, abductive reasoning, normative understanding, and propositional content. However, three of these

complexities are also involved in their inflexible system. In order to anticipate what someone will do based on that person's antecedent activity, an infant would still need a pre-reflective understanding of normative patterns of activity – the antecedents (causes) of these activities and how particular patterns of activity will unfold based on experience with previous similar situations. All that remains to be added in the complex system, it seems, is language and language is learned through social engagement.

Chapter 7: Agency, Self-Regulation, and Executive Function

The preceding chapters have provided an account of how a child enters into the human world, a world constituted by the patterns of social activity that determine much of our lives, from the activities that comprise schools and workplaces we attend to the meals we share together with friends and families. This account has sought to explain how we come to understand our own roles and the roles of others in our daily activity and how we learn to talk about the reasons for what we do, reasons that often refer to our thoughts and feelings. Children, I have argued, do not discover a mind as a motive force and causal power behind the acts of self and other. Rather, they *learn* to talk about the acts of self and other as accompanied by intentions and beliefs. They learn to discern between an intention or belief on the one hand and an overt act on the other because people *describe* their acts as determined by intentions and beliefs.

The account set forth so far, however, remains problematic in an important respect, namely, it has not yet accounted for the development of agency and the ability to make choices about one's own actions. It might appear from the preceding chapters that children simply meld into the flow of social processes and follow the norms of society. And yet, infants and young children are often characterized as egocentric (Mead, 1934; Piaget, 1997), as occupying a perspective that does not involve the perspective of others. Toddlers and young children seem to have minds of their own. They have their own

desires and intentions and from a very young age these may be contrary to the intentions of those around them.

The purpose of this chapter is to apply Mead's thought in order to characterize the development of both agency and self-regulation in early childhood while taking into account the development of social understanding that has been set forth in previous chapters. I will very briefly discuss some of the diverse conceptions of agency in contemporary usage and consider some key features of self-regulation that have been identified by researchers. I will then discuss a Meadian characterization of agency and how this approach might help us to develop a useful characterization of self-regulation.

Before commencing with this project, however, it is helpful to consider the problems that arise when seeking to characterize agency and its relation to self-regulation. Consider a group of preschool children in a classroom. The teacher gives each child a paper with the letter "D" on it and a picture of a dog. She tells the children to trace the "D" and color the dog. The teacher then moves on to help some other children. One child immediately starts work on the task and remains at the task until it is complete. Another scribbles a little and then leaves the table to play elsewhere. Assuming that all children understood the teacher and were equally able to complete the task; can we say that one child is exercising more agency than another in this situation? Can we say that one is more self-regulating than the other? Perhaps the first answer that springs to mind is that one child was more impulsive and impulsivity is antithetical to both self-regulation and agency. It is quite possible, however, that the child who completed the task did so on an impulse to please the teacher or cohere with the social act of sitting and coloring in a

small group. In which case, are not both children acting impulsively? Can one act agentively and at the same time impulsively? Can one act impulsively, or simply in pre-reflective coordination with others and still be self-regulating? Alternatively, as some literature on self-regulation emphasizes (Posner & Rothbart, 2000), is effortful control a key feature of self-regulation, that is, the ability to suppress an impulse in order to choose an alternative mode of conduct? If effortful control is a key feature of self-regulation, then perhaps neither child was self-regulating, but does it follow that neither child was acting agentively? Crucially, none of these questions are empirical questions. Rather, they are conceptual questions. As discussed in Chapter 1, it is only when the conceptual work is undertaken, that empirical work can begin to make sense. The following discussion, then, is an unabashedly conceptual discussion of agency and self-regulation, commencing with a brief outline of different characterizations of agency.

Agency

As noted by Emirbayer and Mische (1998), “the term agency itself has maintained an elusive, albeit resonant, vagueness” (p. 962). In common usage, an agent is any object or substance that effects change on another object or substance; an acid, for example. In this sense, it is difficult to conceive of any element, field, object, or force in the universe that cannot, under certain circumstances, be conceived as an agent. Agency, then, can only be conceived in terms of degree. At first blush, one might assume that this conception of agency is far removed from conceptions of human agency and the development of human agency in childhood. However, neuroscientific approaches to agency are, at times, susceptible to such a conception of what agency is. In

neuroscientific studies, human action and human choice can be explained as the result of chemical substances and chemical reactions effecting change on the human body (see for example, Frank & Claus, 2006; Haynes & Rees, 2006; Libet, 1993; Mitchell et al., 2004).

An additional aspect of agency, an aspect that distinguishes the agency of materials from the agency of living organisms, is that an agentive organism is capable of action selection. For the biologist, Kauffman (1995), an agent is a system that is able to maintain its own thermodynamic equilibrium. It is a system that not only expends energy, but also detects, orients towards, and utilizes the energy in its environment. In this sense, a bacterium is an agent, but an acid is not. Bickhard (2002, 2009) concurs that such a minimal system is an agent, but makes an additional distinction in his discussion of “epistemic agents” (2009, p. 559). In brief, an epistemic agent is an agent that not only attunes to and responds to its environment, but also is able to adjust its orientation in cases of error. If, for example, a bird orients to an insect, but on swooping down detects that the object is not an insect, then the bird will change its action before its completion. An epistemic agent, then, has access to, and is able to adjust, its own perspective.¹⁵ It is able continuously to compare its own perspective to the situation within which it is engaged. It follows that such an agent possesses an understanding of its environment, is able to anticipate what it is about to do, and is able to learn from its actions in the environment. Dennett (1984) articulates a further distinction between agents whose

¹⁵ Bickhard prefers the word “representation” (2009, p. 562) and characterizes representations as irreducible and not subject to regress. The focus on this section is agency and complex discussions of representation are not directly relevant to the discussion.

ability to select actions are biologically constrained through evolutionary processes to a limited array of action patterns and agents that are able to learn as much as possible about their world and, when unanticipated obstacles occur, are able to respond with innovative, appropriate actions.

Although human agency does to some extent involve all the characterizations of agency discussed so far, most would hold that such characterizations would be inadequate when explaining people's actions. None of the characterizations presented thus far involve an awareness of one's own self-determination or a sense of moral agency. Moreover, while it has been argued that animals are capable of problem solving and some forms of conditional reasoning (see Watanabe & Huber, 2006, for review), there is clearly a distinction between the limited problem solving of a New Caledonian crow making a tool and the rational thinking of a typical human being.

Emirbayer and Mische (1998) point to some key strands in the theorizing of human agency in Western civilization since the Enlightenment. Following Locke (1694), one strand holds agency to be an ability to make rational choices. For Locke, the senses furnish the mind with ideas and, through the connection of ideas in the mind and the reflection of the mind upon its own operation, a person is able to think rationally. Through such rational, reflective thinking people are able to pursue their own rational self-interest. The concept of an individual's agency in terms of rational self-interest was foundational in the thinking of philosophers such as Adam Smith (1827), Jeremy Bentham (Taylor, 1989), and John Stuart Mill (1913) and permeated the fledgling discipline of psychology from its inception (Danziger, 1997). Rational agency remains

central to many conceptions of agency and intentional (and so, one might assume, agentive) action. As discussed in Chapter 3, Davidson defined intentional action in terms of the rational connection between a desire and a belief. Following “theory of mind” approaches to development, children are “little scientists” testing their theories and rationalizing (or running Bayesian calculations as held by Gopnik & Wellman, 2012) about the likely implications of their theories.

Another strand in the theorizing of agency is highlighted in the emphasis that Rousseau (1955) placed on conscience and moral will (although such ideas were also present to a lesser degree in the work of Locke). For Rousseau, the conscience was each individual’s source of moral guidance, a source that could be sullied by the artifacts and practices of human society. An innate moral sense that guides human action has recently become a focus of developmental theory. Infants and toddlers, it has been argued, possess an innate sense of right and wrong and use this sense to choose how to engage in a particular situation (Hamlin, Wynn, & Bloom, 2007).

Emirbayer and Mische (1998) suggest that the rational and moral strands of agency were integrated by Kant whose categorical imperative stipulated that human agentive choice involved making rational decisions about what constitutes shared moral interests as opposed to what constitutes self-interest. For Kant, then, human agency involved reasoning about what the norms of a society should be. As I will discuss shortly, conceptions of self-regulation appear to rely on this Kantian notion of agency. A human agent is often considered to be attuned to the norms and values of society and, at the same

time, is able to make rational choices based on that attunement (e.g., Rueda, Posner, & Rothbart, 2004).

Along with reasoning and moral choice, another key strand in the theorizing of agency is self-awareness, the ability to reflect on one's own thoughts and plans and adjust one's conduct accordingly. For Bandura (2001), agency involves intentional action, the ability to plan, and the self-awareness to monitor and adjust one's own actions.

Agency thus involves not only the deliberative ability to make choices and action plans, but the ability to give shape to appropriate courses of action and to motivate and regulate their execution. This multifaceted self-directedness operates through self-regulatory processes that link thought to action.” (Bandura, 2001, p. 8)

Conceiving agency as a reflective and self-governing awareness of one's own thoughts and actions dates back at least as far as Locke (1694). This strand in the conception of agency is prevalent in studies of metacognition. Flavell (1979), for example, characterized metacognition as the ability to reflect on and evaluate one's own knowledge, experience, goals, and actions. It is also a focus of study in development where such reflective knowledge of one's own mind becomes evident when children are, at around the age of four years old, able to say what they had previously believed as well as what they believe now (Gopnik & Astington, 1988).

Perhaps because all the theoretical strands of human agency discussed so far have roots reaching back at least as far as the Enlightenment, they permeate most contemporary Western views of human agency. Of course, there may be substantive

differences in emphasis, with some conceptions focusing more on environment and behavior (e.g., Bandura, 1977) others on moral agency (e.g., Sugarman, 2006) and still others focusing more on rationality (e.g., Dennett, 1988; Pinker, 1999), or self-awareness and self-directedness (e.g., Bickhard, 2002; Mead, 1932, 1934). Nonetheless, most conceptions of human agency involve a recognition that human agents (1) are biological agents subject to and capable of causing physical effects, (2) attune to and engage with their surroundings, (3) deliberate and reason about their actions (although the emphasis on the moral and social norms about which they reason varies substantively among accounts), (4) make moral choices, and (5) are able to reflect on and adjust their own perspectives.

As the previous chapters of this dissertation highlight, however, the locus of human agency is very much in contention. Sugarman and Sokol (2012) point to two distinct conceptions of agency: an internalist and an externalist conception. The internalist conception of human agency assumes that the locus of human agency is within the individual. A human agent possesses “intrinsic features and interiorized mental capacities [that] serve as the fundamental source of human agency” (Sugarman & Sokol, 2012, p. 2). Sugarman and Sokol note two distinct internalist conceptions. The first is the traditional Cartesian view that mind is distinct from body and thought is distinct from action. As discussed in Chapter 5, this view is held by many in developmental psychology. This view can be seen in Meltzoff’s (1995) study into toddlers’ understanding of intention. Meltzoff assumed that there is a “surface” and “deeper” level of action understanding, the former referring to an understanding of behavior and the

latter referring to the mental states that underlie such behavior. The second internalist conception is a materialist conception that reduces human agency to brain processes and explains the development of human agency in terms of the innate existence or the development of neural mechanisms. This view was also discussed in Chapter 5.

Baillargeon, Scott, and He (2010), for example, consider the ability to make sense of the non-verbal, spontaneous false belief task solely in terms of the development of neural mechanisms.

The externalist view of human agency conceptualizes human agency in terms of an inter-relationship among individuals and between individuals and their surroundings. While internalist views of agency characterize agents as interacting with their environment, the causes of and explanations for their actions remain focused on the agents' own internal processes. In externalist views of human agency, the contexts and circumstances within which a person acts become central to the explanation of why a person acted as she did. Sugarman and Sokol (2012) note that there is a diverse range of externalist views of human agency. At one end of the spectrum are minimalist views that recognize the human agent's orientation to and relationship with the world, but remain focused on the agent's own intentions and beliefs. The later work of Davidson (1978, see also Chapter 3 of this dissertation) that did not take a reductive stance towards mental states might be characterized as a minimally externalist view. As another example, Bandura recognizes the importance of external stimuli (especially social stimuli) in shaping agency. Bandura (1977) characterizes a triadic relationship between internal cognitive and metacognitive processes, overt behavior, and the environmental effects of

that behavior that provide feedback to the cognitive processes. For Bandura, however, there remains a Cartesian distinction between the external world and inner cognitive processes that determine behavior.

At the other end of the spectrum are views that characterize human agency as substantively determined by external or historical conditions. At this end are naturalistic views that conceive of human agency as determined by our evolutionary past (e.g., Pinker, 1999) and also socio-cultural views that conceive of human agency as determined by socio-cultural contexts such as the social practices in which we engage and the historical contingencies through which these practices emerged (e.g., Gergen, 2009). Such views do not question the human ability to act as agents (i.e., choose our actions based on a reflective awareness of our moral or reasoned concerns), but consider the ability as determined substantively by external contexts.

Sugarman and Sokol (2012) outline three externalist approaches to explaining the development of human agency. The first is the constructivist approach associated most strongly with the work of Piaget (1954). In this approach, an infant engages with her surroundings and through such engagement makes sense of and organizes her modes of engagement with that world. The child learns that she is the agent of her own actions and possesses the ability to act upon and influence her surroundings. Constructivist approaches to development focus on how a child makes sense of and organizes her knowledge about the world through interaction with her surroundings and how the child increasingly becomes an agent capable of decentering from her own perspective and

choosing what to do based on multiple perspectives and the rational and moral norms that can be abstracted from these perspectives.

A second externalist approach is Cultural Historical Activity Theory (CHAT) that emerged from the developmental theories of Vygotsky and his colleagues. The Marxist heritage of CHAT brought a stronger focus to the ability of humans to work collectively to change their environment rather than to simply adapt to the environment. The emphasis on collective activity led to more of a focus on human culture as a mediator of human agency. CHAT accounts of human agency focus on how culture and, in particular, the language through which culture is shared, mediate between a person's orienting to and actively engaging with the world. A child is guided in her engagement with her surroundings by her caregivers and more experienced peers. (It is this idea of guidance that influenced Whitebread's discussion of other, shared, and self regulation discussed in Chapter 2). Gradually, a child learns to use language as a tool to guide her own thinking. While the focus on cultural tools and collective social practices may differ from many constructivist approaches to development, the characterization of agency that develops is similar. Perhaps because Vygotsky (1978) had read Piaget and was trying to answer some of the same questions posited by Piaget (*viz.*, how do children become rational, moral agents of their own actions), CHAT approaches to agency also focus on the development of moral and rational human agents capable of abstract thought.

The third externalist approach to agency outlined by Sugarman and Sokol (2012) is the Meadian approach (Mead, 1925, 1934; Martin, 2006). Many aspects of the Meadian approach to the development of human agency have been discussed in previous

chapters and integrated with Anscombe's thought on intentional action and other relational approaches to development (e.g., Carpendale & Lewis, 2006). I will discuss a Meadian concept of human agency in depth shortly. As a very brief prelude, however, I will note that a Meadian concept of human agency involves an ability to reflect on and choose one's own actions, an ability that emerges through a child's attunement to and collaborative engagement with others (as described in Chapters 5 and 6). For Mead (1932, 1938), distinct ways of thinking about the world constitute distinct shared perspectives about how to engage collaboratively with the world. In this sense, Mead's thought was closer to Wittgenstein (1953) who drew a famous analogy between human modes of action and an old city with its crammed and crooked older sections and newer sections of straight avenues and equally spaced houses. For the pragmatist, Mead, human agency facilitated the abilities to both collectively and individually resolve conflicts and overcome the obstacles we encounter in our daily lives. Rational, abstract, and scientific thought were but a few of many such abilities.

How then might human agency best be characterized? As should be clear from the arguments set forth in Chapters 3, 4, and 5 of this dissertation, internalist approaches to human agency are suspect, especially when considering the development of agency. It has already been argued that an infant or toddler does not have access to her own or others' inner mental states and that her ability to talk about a mental world emerges in interaction with others. The awareness of self and the ability to reflect on one's own perspective emerge in engagement with others. It is only in interaction with others that a child becomes aware of herself as an actor in collaborative engagement with others

(Mead, 1934). If awareness of self is a key feature of human agency, and, if awareness of self emerges in interaction with others (as I have argued in Chapter 6), then internalist views of agency are untenable. Human agency depends on and is profoundly shaped by social processes.

Admittedly, an internalist view of agency may hold that mental states and action selection processes are internal, sub-personal processes that determine action. With this view, there is no requirement that such states and processes involve self-awareness. Self-awareness of action selection only emerges after the course of action has already been determined at a sub-personal level (Haynes & Rees, 2006; Libet, 1993; Mitchell et al., 2004). Such a conception of agency dismisses the relevance of the human agent as distinct from other forms of epistemic agent and seems to argue that the accomplishments of an individual and also of society as a whole are ultimately reducible to basal physical processes. Such a view can only make sense with two assumptions in place. The first is that human action is caused by neural processes that are in turn reducible to, and can be solely explained by physical processes. The second assumption is that not only are the contexts and circumstances in which action takes place reducible to and explained solely in physical terms, but also, these contexts and circumstances can be explained away as the objects against which the internal agent acts rather than as playing formative role in agentive action.

As argued by Campbell and Bickhard (2011), the first assumption is unsound. The authors considered the proposition of a well known exponent of reductive physicalism,

Jaegwon Kim (2005), who concluded his book, *Physicalism or Something Near Enough*, by saying:

The core of contemporary physicalism is the idea that all things that exist in this world are bits of matter and structures aggregated out of bits of matter, all behaving in accordance with laws of physics, and that any phenomenon of the world can be physically explained if it can be explained at all. (p. 150)

While Kim recognized that agents act selectively and adaptively in their environments and that people reflect and deliberate about their actions, he argued that mental properties such as intentions and beliefs were reducible to physical properties which in turn were reducible to the basal constituents of matter cohering with the laws of physics.

If Kim's argument holds, then all agentic activity is determined by the activity of the basal constituents of physical matter, whatever these basal constituents may be. If agentic activity is determined by the basal constituents of matter cohering with the laws of physics, there is no room for agentic self-determination. Any form of agentic choice that was held to be either compatible with determinism or an instance of under-determined action would be entirely reducible to, and entirely determined by physical matter cohering with the laws of physics.

In brief, Campbell and Bickhard's (2011) argument has two central points. The first is that reductive physicalism is faced with the stark choice of admitting the possibility of causal drain or accepting causal emergence. Causal drain occurs when there

is no particular “level” of physical causation that is the basal level. If there is no basal level, then there would be no causal level and all causation would “drain” from physical systems. Current understandings of sub-atomic physics point to the distinct possibility that there is no basal level. Rather, at quantum levels of analysis, configurations of particles and quantum fields are constitutive of the causal possibilities of matter. If, however, configurations of matter are constitutive of matter’s causal possibilities, there is no basal configuration that does all the causal work. Differing configurations of matter will involve differing causal possibilities that are not reducible to the causal possibilities of the basal constituents. In short, the causal possibilities of a process or system emerge through the formation of new, relatively stable configurations.

The second key point of Campbell and Bickhard’s (2011) argument is that emergent causal possibilities are no more than the causal possibilities that emerge in the configuration of stable processes. There is no need to invoke emergent properties that are at a “higher level” than physical properties. The emergent characteristics of a process are not at a distinct level to the physical, but rather constitute the configuration of the process.

Perhaps more importantly, the second assumption is untenable if the first assumption is held. If human agency is physically reducible, then the boundary between the human and the world is dissolved. There are simply particles of matter interacting with each other. All that remains of human agency is the physical agency attributable to acids. The alternative is to take the configuration of processes such as molecules, cells, organisms, or societies into account, but to do so is to reject reductionism.

In sum, there can be no reductionist, internalist view of human agency as such a view has already dissolved the boundary between human and world. Moreover, the reductionist view is unsound as it cannot account for the emergence of organized processes such as cells, organisms, ecosystems, and societies. Indeed, it cannot account for causality. As should be clear from the preceding three chapters, non-reductionist, internalist views of human agency are equally untenable where such views involve any notion of self-reflection or self-awareness being involved in our choices. Such self-awareness only emerges in beings who are already profoundly involved in a social world.

Rejecting internalist views is not a rejection of the human ability to partially determine one's own actions. Children do gradually become agents who are capable of making moral choices and of acting in a manner that is perceived by self and others as rational. Children learn to reflect on their own thoughts and actions and deliberate about what they will do.

Martin, Sugarman, & Thompson (2003) characterize human agency as follows:

[H]uman agency is the deliberative, reflective activity of a human being in framing, choosing, and executing his or her actions in a way that is not fully determined by factors and conditions other than his or her own understanding and reasoning. Such other factors and conditions include external constraints and coercions, as well as internal constraints over which the person has no conscious control. (p. 112)

By their account, humans are biological creatures who, in many respects are determined by their biological evolution within an organic world of physical objects and agentive organisms. Through our long and contingent evolution and cultural history, however, human societies, personal conduct, and modes of communication have also profoundly influenced both how people act and our explanations as to how and why people do what they do. People develop a self-aware and self-reflective psychology in which the kind of people we become and the possible ways of being and acting in the world emerge through engagement with and deliberation about the social world into which we have grown. Crucially, in this account, human agency is irreducible to any particular mode of explanation, whether that mode be physical, biological, socio-cultural, or psychological. Human agency can only be explained in human contexts, contexts in which all these elements co-exist.

When referring to human agency, I will adopt and defend the characterization provided by Martin et al. (2003). With this characterization of agency in place, we need to consider the relation of self-regulation and human agency. Moreover, we need to account for the development of human agency. If human agency is “the deliberative, reflective activity of a human being in framing, choosing, and executing his or her actions” then human agency emerges in ontogenesis. Certainly, neonates are agentive beings as described in the minimalist characterizations of agency provided by Kauffman (1995) and perhaps Bickhard (2001). The ability, however, to deliberate and reflect on one’s own existence and one’s own actions is not present at birth. As I have already discussed, it is an ability that emerges as children grow into the world.

Self-Regulation, Attentional Control, and Effortful Control

As with agency, the conception of self-regulation is variously understood. Self-regulation has been discussed, for example, in terms of an infant's breast milk intake (Dewey & Lönnerdal, 1986; Li, Fein, & Grummer-Strawn, 2010). Infants are capable of regulating how much milk they consume and cease drinking when satiated. According to the Oxford English Dictionary (n.d.), to regulate means to "control, govern, or direct." If we take the prefix "self" preceding the verb to refer simply to an entity that is acting on itself (as, say, self-raising flour raises itself), then we can say that infant consumption of breast milk is a form of self-regulation. The infant regulates her own milk consumption. Self-regulation characterized thusly does not apply to humans alone. Rather, it is precisely the ability to regulate energy intake that characterizes the most minimal forms of living agents (see Kauffman, 1995 and also the preceding section on agency).

In the discipline of psychology, self-regulation tends to be conceptualized in terms of a human agency involving self-awareness, rationality, and moral choice. For Rothbart, Posner, and Kieras (2008) self-regulation involves processes that may involve both deliberate and also sub-personal mechanisms to modulate thought, affect, and behavior. In addition, the authors state that "self-regulation refers to processes that serve to modulate reactivity" (p. 338), where reactivity is characterized as a rapid emotional response to a situation. This characterization of self-regulation would preclude an infant's consumption and cessation of breast milk as being a self-regulatory process; the breast feeding infant's cessation may be a form of reactivity to a feeling of satiation. Rather, Rothbart, Posner, and Kieras (see also Jones, Rothbart, & Posner, 2003; Posner &

Rothbart, 2000; Posner & Rothbart, 2009; Rueda, Posner, & Rothbart, 2004) assume a reductionist, internalist approach to human agency that conceives of the role of caregivers as nurturing the inner mechanisms that facilitate self-regulation. For these authors, the development of self-regulation primarily involves the development of internal, cognitive mechanisms that are able to monitor and modulate internal affect and impulse and then select an appropriate pattern of behavior.

Two key mechanisms addressed in the work of Rothbart, Posner, and their colleagues are attentional control and effortful control. Attentional control refers to the ability to control that to which one is attending. The ability to control attention is linked to specific brain networks that are believed to modulate activity in the brain's visual systems (Rueda, Posner, & Rothbart, 2004). The relation between attentional control and self-regulation is believed to be this: to the extent that people can control their attention, they are able to focus their attention on positive or appropriate aspects of their surroundings and avoid aspects of their surroundings that may induce stress or a reactive response. According to the authors, "a major advantage of viewing attention in relation to self-regulation is that it allows one to relate the development of a specific neural network to the ability of children and adults to regulate their thought" (Rueda, Posner, & Rothbart, 2004).

The authors suggest a developmental trajectory in which infants as young as three months old are soothed by attending to visual stimuli. By four months of age, infants become able to disengage their own attention from one location and move it to another (Rothbart, Sheese, Rueda, & Posner, 2011). An infant's direction of attention appears to

“distract” the infant from her own distress and is thus construed as an early developing aspect of the self-regulation of emotion. The infant’s ability to look away from distressing objects and situations was found to correlate with a reduction in the expression of negative affect. This ability to direct attention was associated with activity in the cingulate cortex, an area that is associated in older children with the ability to monitor and control actions. Posner and Rothbart (2009) suggest “development of the cingulate would allow appropriate attention to the [emotional] signals provided by amygdala activity” (p. 104).

Clearly, the ability to attend to emotional signals is insufficient for self-regulation. Control over emotional signals and control over impulses to action must follow. Effortful control refers to the ability to select one course of action over another stronger impulse to action. According to Posner and Rothbart (2000):

Attention can provide priority to some computations, reprogramming the organization of the circuits by which tasks are executed. Priority is produced by amplifying the amount of neural activity within the area performing the computation. Often this is done voluntarily, as one tries to select a set of operations that seem most appropriate to a given task. This is what we call effortful control by attention. (p. 429)

Effortful control requires the ability to switch brain states from activating a less appropriate response to an alternative more appropriate response. This brain state switching occurs in a neural network primarily located in the fronto-insular cortex. Self-

regulation, then, requires three neural networks: the visual or auditory network, the attentional network in the cingulate, and the effortful control network in the fronto-insular cortex.

It is important to note that Posner, Rothbart, and colleagues suggest that effortful control and attentional control may play differing roles in different individuals. Children whose temperament involves high reactivity (i.e., an amygdala prone to strong activation in fearful situations) may respond intuitively to situations in an empathic manner and may be more prone to cooperating with and pleasing others (Posner & Rothbart, 2009). Such children have less need to attend to their emotional states and select appropriate actions. There are, according to the authors, two developmental trajectories to socialization, one is self-regulation, the other is a sensitive temperament prone to cooperation.

How, then, do Posner, Rothbart, and colleagues conceptualize self-regulation? They focus their work on empirical studies in the disciplines of neuroscience and developmental psychology, and, for the most part, their focus remains on mechanisms that facilitate self-regulation rather than a thorough articulation of what self-regulation is. The assumption seems to be that self-regulation *is* the attentional control and effortful control we utilize to determine our own conduct. That humans develop effortful control and attentional control is a given, assumed in ancient religious texts (Bodhi, 2005), by enlightenment philosophers such as Hobbes (2010), Locke (1694), and Rousseau (1955), taught by 19th Century teachers (Northend, 1859) and subsumed into the discipline of psychology at its inception (Heck, 1909). Where the work of Posner and Rothbart may

shed additional light is on how effortful control and attentional control are manifest in brain activity and how these manifestations differ among individuals. As with any “how does it function” question, this is a relevant line of empirical investigation. However, such an investigation depends on first establishing the conception under investigation. Posner and Rothbart also offer some ideas about the relation between human agency, self-regulation, and temperament that speak to a question posited at the beginning of the Chapter, namely, does cooperation entail self-regulation? Again, this issue can only be elucidated if we are first able to construe their conceptions of self-regulation and temperament.

Since an in depth conception of temperament is somewhat beyond the scope of this dissertation, I will treat this topic briefly. As accepted in the premises of this dissertation, neonates are embodied beings, each constituting a distinct biological moment in the perpetuation of human activity on this planet. Since all human abilities involve and are facilitated by biological processes and since there is biological variance among individuals, there will be individual differences in these abilities. Our abilities involve the ability to attune to and engage with our surroundings and hence there will be individual differences in how we attune and engage. According to Rothbart (in Goldsmith et al., 1987), temperament refers to

relatively stable, primarily biologically based individual differences in reactivity and self-regulation. By reactivity, we mean the excitability or arousability of behavioral, endocrine, autonomic, and central nervous system response, as

assessed through response parameters of threshold, latency, intensity, rise time, and recovery time. (p. 510)

While this view is contested and other scholars hold interaction with the environment to be an equally important aspect of temperament (Goldsmith et al., 1987), there is little reason to doubt that infants are born with differences in reactivity to their surroundings. I will accept Rothbart's conception of reactivity as an element of temperament and that this notion suffices for our current purposes.

We can now turn to Posner and Rothbart's conception of self-regulation. As noted above, Posner and Rothbart specified two trajectories to socialization. The first is through a temperament that facilitates empathy and a readiness to cooperate. The second is through the attentional and effortful control of conduct when one's strongest impulse is to act in a way that is socially inappropriate, say, by expressing too much emotion or acting in an aggressive manner that is inappropriate to the situation. By socialization, Posner and Rothbart (2000) are referring to factors such as conscience, aggression, and empathy. For Posner and Rothbart, then, self-regulation seems to be a Kantian form of human agency. They hold that simply having a conscience or intuitively cooperating with or helping others is not self-regulation (although it is still a good thing to do). Self-regulation involves making rational, and effortful decisions to act in the right way even when one's impulse might be to act in a contrary manner. This is similar to how Kant

(2002) explained moral agency.¹⁶ Following Rothbart and Posner, then, neither the preschool child that sat and colored according to the teacher's instructions nor the child that left the table were necessarily self-regulating. A child is self-regulating as she learns to become a Kantian moral agent that can suppress impulses and inclinations in order to act for the moral good.

Crucially though, the work of Rothbart and Posner did not commence with scientific data and then find that the data cohered with a Kantian notion of agency. Rather, they started with a Kantian conception of agency, designed experiments that sought to study the requirements for a Kantian conception of agency, viz., effortful control and effortful attention and then traced these requirements to regions of activation in the brain. Their work adds little to conceptions of what self-regulation is. Rather it starts with an assumption that self-regulation is a form of moral agency and like Kant, they hold that moral agency is one way to act morally. Moreover, their "finding" that a child can cohere with social norms either through an orientation towards cooperating with others or through effortful control of one's impulse to act contrarily is probably less an empirical

¹⁶ This is not to say that the concept of self-regulation proffered by Rothbart and Posner is an all encompassing account of Kantian moral agency. There are distinctions. Kant (2002) also held, for example, that, acting out of duty, was not necessarily acting with moral agency even if the act was moral. It seems that Rothbart and Posner would hold that acting out of duty involves self-regulation where such an act involves effortful control. Here, however, the distinction is in the conceptualized ends of human action. For Kant, the conceptualized end was the ability to make rational, moral choices. For Posner and Rothbart's conceptualization of self regulation, the conceptualized end is a well socialized child.

finding than a logical entailment as cooperation seems to entail either effortful control or an inclination to coordinate with others.

That Rothbart and Posner start with a Kantian conception of agency is not necessarily a critique of their work. As discussed in the first chapter and also at the beginning of this chapter, we need to have a conception of what we are investigating before serious empirical work can commence. Their strong reductive, internalist conception of agency that underlies their conception of self-regulation, however, is untenable for reasons explained in the previous section. And yet, even if we set aside reductionism and consider their investigation as a Kantian extension of Cartesian dualism, there is much that is still left unexplained by their account.

First, a moral sense involves mutual understandings of appropriate social conduct. Since a moral sense does not emerge in isolation from the social world, self-regulation as an internal mechanism would be devoid of moral sense even though self-regulation functions to regulate socially acceptable (and, at least by some accounts, moral) action. Ostensibly, this objection might be countered by citing the work of Hamlin, Wynn, and Bloom (2007) who claim to have found evidence that infants possess an innate moral sense. Such a claim, however, is subject to the same objections as those raised against innate concepts of mind. While it is entirely plausible that infants are born with an orientation towards particular salient aspects of the environment (such as others' eyes), morality is no more visible than mind. Readers are also referred to Carpendale, Hammond, and Atwood (2013), who present a number of arguments against innate theories of morality including, on the one hand, the theoretical lacuna between a gene

producing proteins and a person with a moral sense of right and wrong and, on the other, the assumption that infants have learned nothing about human interaction before they are able to demonstrate a “moral sense” in experimental conditions at 6 months of age. The explanation of moral sense is absent from Posner and Rothbart’s work. Their account, then, does not explain what children are self-regulating about, how children make sense of appropriate conduct, or how children choose what to do in a given situation. Likewise, no account is given about how children learn to reason, even though, as Rothbart and Posner (Rothbart, Posner, & Kieras, 2008) recognize, reasoning about appropriate conduct is involved in self regulation.

Is it possible, then, to consider self-regulation simply as cognitive functions of attentional and effortful control and study their development? The question then arises as to how this development might be studied. One task that Posner and Rothbart utilize to operationalize effortful control is the spatial conflict task (Rothbart, Ellis, Rueda, & Posner, 2003; Rothbart & Posner, 2009). In this task, a child sees two pictures (e.g., a bear and a lion) in the bottom left and the bottom right corner of a touch screen. A duplicate of one picture appears in a top corner of the screen and the child is asked to touch the matching picture in a bottom corner. Results from this task show that if the duplicate appears in a diagonal corner (that is, a bear appears above the lion instead of above the bear), reaction times are slower and the children are more likely to touch the wrong picture. Results also showed that 32-month-old children had faster reaction times than 24-month-old children and committed fewer errors. The hypothesis behind the task is that children have a strong, impulsive tendency to touch the nearest picture and that, with

effortful control, children are able to make the correct match no matter where the duplicate picture is positioned on the screen. The results from this task, then, are interpreted as evidence for the development of effortful control.

The interpretation itself is reasonable, but not informative. The task assumes that children are already engaged in cooperative activity with others for that is the only way they could understand what the task was. It is notable that eighteen-month-old children struggled to comprehend the task at all (Rothbart, Ellis, Rueda, & Posner, 2003). Moreover, the task not only assumes that children understand symbols, but also the purpose of these symbols in this particular context. Since these factors are simply assumed, there is no way of investigating whether cooperative contexts and the use of symbols play a role in the development of effortful control. In addition to these concerns, the experimental results from this study and related studies used with slightly older children such as the Dimensional Change Card Sort task (Zelazo, Müller, Frye, & Marcovitch, 2003) offer no developmental account of how infants develop attentional and effortful control. There is no account of how children become self-aware and learn to reflect on and choose their actions. Rather, the accumulated research shows that effortful control as operationalized in experimental conditions improves with age and that effortful control is correlated with activation in particular parts of the brain. In short, while there is no doubt that effortful control and attentional control involve neural and cognitive function, an account that focuses solely on these aspects is not a developmental account at all, but simply a few indicators of how self-regulation is manifest within the constraints of experimental conditions.

To be clear, the critique set forth above is not that attentional control and effortful control are irrelevant to self-regulation. Nor was the preceding discussion a critique of the Kantian conceptions from which Posner, Rothbart, and colleagues appear to start. On the contrary, Mead saw Kant as an important influence on his own work as Kant recognized (though not explicitly) the importance of social norms as a determinant of human agency (Shalin, 2011). Rather, the critique is that the internalist conceptions of human agency inherent in Posner and Rothbart's account preclude an adequate discussion of the *development* of self-regulation because they exclude the world of social activity.

Executive Function

Studies of executive function ostensibly avoid the moral or social ends assumed in studies of self-regulation. Friedman et al. (2008) suggest some key elements of executive function:

[A]rguably the three most frequently studied executive functions are response inhibition (the ability to inhibit dominant, automatic, or prepotent responses), updating working memory representations (the ability to monitor incoming information for relevance to the task at hand and then appropriately update by replacing old, no longer relevant information with newer, more relevant information), and set shifting (the ability to flexibly switch back and forth between tasks or mental sets). (p. 201)

Prima facie these are cognitive functions that take place in the brain and can be explained in terms of neural or cognitive mechanisms. As such they are subject to the

same critique applied to internal, reductionist approaches to human agency, which needn't be recounted here. Zelazo et al. (2003) take a different approach. While they investigate the abilities outlined by Friedman et al. (2008) as aspects of executive function, they point out that executive function is understood in terms of what it accomplishes. They characterize executive control as a functional concept, that is, a concept that specifies what executive function enables a person to do. For Zelazo et al., executive function involves the ability to use knowledge and self-awareness to guide actions (see also Zelazo & Müller, 2002). As such, executive function is not an explanation but an explanandum; it is what needs to be explained both in terms of the cognitive processes involved and its developmental trajectory.

The authors argue that the development of executive function can be conceptualized as the developing ability to apply a hierarchy of rules to a situation.

According to this theory, age-related changes in executive function—considered as a functional construct—are due to age-related changes in the maximum complexity of the rules that children can formulate and use when solving problems. These age-related changes in maximum rule complexity are, in turn, made possible by age-related increases in the degree to which children can reflect on the rules they represent. On this account, rules are formulated in an ad hoc fashion in potentially silent self-directed speech. These rules link antecedent conditions to consequences, as when we tell ourselves, “If I see a mailbox, then I need to mail this letter.” When children reflect on the rules they represent, they are able to consider them in contradistinction to other rules and embed them under higher order rules, in the same way that we might say, “If it is before 5 p.m., then if I see

a mailbox, then I need to mail this letter, otherwise, I'll have to go directly to the post office." In this example, a simple conditional statement regarding the mailbox is made dependent on the satisfaction of yet another condition (namely, the time) (Zelazo et al., 2003, p. 8).

The authors utilize the Dimensional Change Card Sort (DCCS) task to furnish evidence for their theory. In this task, children as young as three years old are presented with cards that can be sorted by two dimensions, either by color or by picture. Children could, for example, either sort by whether the card is a picture of a boat or a rabbit, or they could sort the same set of cards by color, say red car/rabbit or green car/rabbit. Typically, 3- to 4-year-olds struggle to switch from one sorting activity to the other. Even when the sorting instructions change, they tend to continue with the first sorting task. Through a number of studies in which different aspects of the task were manipulated, the authors provided evidence that the key challenges faced by children who perseverated with the first sorting task after the experimenter changed the rules were (1) that there was a conflict among at least two rules and (2) that these rules were in conflict under a higher order rule that functioned as a setting condition. Hence, children had little trouble switching from sorting by one color to sorting by another color. In this case, the change in rules remains at one level, i.e., they only need to know rules pertaining to color sorting and apply differentially according to instructions. However, children did have trouble switching from sorting by picture to sorting by color because they needed to be aware of an additional, higher order rule. Not only did they need to understand the sorting rule for

shapes but also the setting condition rule that if they are “playing the shape game,” they sort by shape, if they are “playing the color game” they sort by color.

The work of Zelazo, Müller, and colleagues is regarded as central to studies of the development of self-regulation.¹⁷ How, though, is ruled based reasoning related to executive function? Also, how does executive function relate to self-regulation? Again, the answers depend on how executive function is conceptualized, and how self-regulation is conceptualized. As discussed above, Zelazo et al. (2003) argue that executive function should be characterized as a function rather than as a cognitive mechanism or neural process. The function of executive function that remains the central focus of their study is the ability to understand and use rules to solve problems (Martin, 2010). Moreover, Zelazo and Müller (2002) conceptualize executive function as involving an awareness of what these rules are and the ability to use this reflective awareness to guide action. Ostensibly, this conceptualization seems to be a somewhat curtailed view of executive function: executive function involves understanding and applying the rules to guide a person in their choice of action. Does this concept capture the function of effortful control set forth by Posner and Rothbart (2000)? Is a child’s ability to control her inclination to cry, for example, due to her reflective understanding of social rules? If the child does inhibit her inclination to cry simply because she has associated crying with a negative experience then it would seem that this would not be a case of the child using

¹⁷ The influence of Zelazo’s work is reflected in a recent volume, *Self and Social Regulation*, edited by Sokol, Müller, Carpendale, Young, & Iarocci (2010) where their work was cited by 13 of the 17 contributors.

executive function no matter how effortful her attempts to control her conduct. Hence, if we accept that effortful control and attentional control are involved in self-regulation, then Zelazo and Müller's discussion of executive function is only a partial contribution to conceptions of self-regulation. Being a partial contribution is a limitation but if the limitation is made explicit, it is not necessarily a drawback. It seems reasonable to suggest that the development of effortful control and attentional control are enabling conditions for executive function. Executive function, by Zelazo and Müller's account also involves a reflective awareness of and ability to apply rules that, in turn, depend on but are not analogous with effortful control and attentional control. The reasonableness of this conception cannot be assessed empirically. Rather, the question is about the array of abilities we choose to include in our conception of executive function.

Zelazo and Müller appear to follow Vygotsky (1978) and Luria (1959) in considering executive function as a human ability that emerges with the development of language and hence allows a child to articulate a rule in verbal speech or be aware of a rule in private speech and follow that rule as she performs a task. I will return to Vygotsky and Luria shortly. First, however, we need to consider what can be inferred from the DCCS task, and the degree to which it informs our understanding of executive function as conceptualized by Zelazo and Müller.

The conditions of the DCCS task are clear and can quite easily be manipulated to test particular abilities that are needed to complete the task. The question nonetheless arises as to whether the DCCS task explains anything further than the abilities required to complete the DCCS task. While the DCCS task requires a child to follow a hierarchy of

rules and switch rules at a given moment, does it follow that executive function is the ability to understand, follow, and apply a hierarchy of rules? Zelazo and Müller believe that the DCCS provides evidence that executive function is a function for understanding and applying rules and suggest that this conceptualization of executive function is generalizable beyond performance in the DCCS task. Zelazo and Müller (2002) argue that in the Maxi task (Wimmer & Perner, 1983) a child needs to switch between two setting conditions, their own perspective and Maxi's perspective. Müller, Zelazo, and Imrisek (2005) argue that the unexpected contents task (Gopnik & Astington, 1988) also involves a switch between two setting conditions, the perspective of self and friend. By inviting the same group of children to perform the DCCS, the unexpected contents task and also tasks related to language development, they found that performance in the DCCS task correlated with performance in the unexpected contents task and that, even when language ability was already accounted for, performance in the DCCS task predicted performance in the unexpected contents task in a regression analysis.

Does this finding support an attempt to generalize from the DCCS task the inference that executive function applies rules to guide action? Müller et al. (2005) argue that the child applies the following rules to the unexpected contents task:

IF me (setting condition 1)

THEN

If asked about content of the box (antecedent 1), then stickers

(consequent 1)

IF friend (setting condition 2)

THEN

If asked about the content of the box (antecedent 1), then crayon.

(consequent 2). (p. 176)

However, the child is not asked conditional questions in the unexpected contents task, she is simply asked what is in the box and, as a distinct question, what her friend will say is in the box. Hence, there is no reason to assume that the child inferred a rule setting condition in either question that she then applied to the question at hand. In addition, while there appear to be two conditions, namely asking about self and friend, there is no clear hierarchy of rules. Certainly, there is no reason to assume that the child's cognition involved applying the condition "if asked about the content of the box..." Hence, the only rule seems to be about perspective. Intuitively, there seems to be a difference between asking a child to change color when sorting and asking a child to change perspectives when anticipating her own and others' actions. However, it is not clear how we determine the setting conditions for each nor how these distinctions fit into a hierarchy. While a hierarchy of rules can be constructed in a carefully designed experimental task such as the DCCS, such a hierarchy is not easily mapped to other experimental tasks such as false belief tasks let alone to human action in a world of social interactions. Moreover, there is no suggestion that asking about the child's friend's perspective as the first setting condition in the unexpected contents task will lead to the child perseverating with her friend's perspective when asked about what she herself

thinks is in the box. Finally, as discussed in terms of the spatial conflict task (Rothbart, Ellis, Rueda, & Posner, 2003), the DCCS offers indicators of how children perform on a particular task rather than offering insights into how the abilities to perform such tasks develop. Even if executive function were best conceived as an ability to understand and apply rules, the DCCS will not explain how such abilities emerge, but rather show that the abilities do emerge. However, as just discussed, it is not evident that executive function is an ability to understand and apply a hierarchy of rules. Consequently, it seems that the inferences taken from the DCCS task are limited.

The preceding critique, however, requires some tempering. Although there is little evidence that children are learning a hierarchical series of conditional rules, in both the DCCS and the false belief tasks, children do need to understand particular, normative patterns of social activities. The patterns of social activity that facilitate children's understanding of false belief tasks have been discussed in Chapters 4, 5, and 6. To perform the DCCS, a child needs to understand about sorting and that sorting is an activity that an adult can ask a child to do. It is interesting that this task is often characterized as a "game" by the experimenters. The child's understanding of what a game is and how games are played in coordination with others is relevant to what the child is doing in the DCCS task, that is, learning and engaging with a novel series of actions. Although these actions are constituted by the experimenter as rules, it may be more helpful to understand these rules as novel patterns of shared action, for that is precisely how the experimenter characterized the rules to the child, viz., as a game. If this is the case, we lose the conception of rules and hierarchies, but find a helpful

commonality across performance in executive function tasks and performance in false belief tasks, namely, both involve an ability to attune to and engage with patterns of social activity and both demand that the child is able to adjust her perspective at a moment's notice in order to perform the task successfully. Perhaps executive function is founded on the ability to attend to, understand, and engage with temporally extended patterns of activity and involves an ability to understand these patterns of activity, as well as adjusting one's own perspective and actions as the situation demands. This conception of executive function is not an argument against the work of Zelazo and colleagues, but rather a relaxing of the analytical constraints on their theorizing.¹⁸

It is not clear whether there is a singular answer as to why children are able to switch perspectives or adjust their activity more easily in some situations than others. As just discussed, explaining this ability in terms of a hierarchy of rules is somewhat doubtful. It is also unclear why a singular answer is needed. To the extent that executive function is facilitated by neural processes, there is no evidence that these processes only facilitate one functional ability to guide action under one set of criteria (*viz.*, rules). To the extent that executive function is guided by inner speech, as Zelazo and Müller (2002)

¹⁸ Müller has also stepped back from conceiving of self-regulation in terms of an ability to understand and apply rules. His more recent work (e.g., Müller, Liebermann-Finestone, Carpendale, Hammond, & Bibok, 2012) does not refer to executive function in terms of rules and he has recognized critiques of this approach (Müller, personal communication) raised by Kloo and Perner (e.g., 2010). The critique raised by Kloo and Perner is not raised herein as it remains focused on how the DCCS task is manipulated. Hence, the arguments set forth by Kloo and Perner are subject to similar critiques as those I have raised against the ability to generalize conceptions of executive function based on results from this task.

believe, there is no reason to assume that the functions of inner speech can be reduced to a single ability to understand and apply rules (although this may be one way that we select and guide our own actions). Setting conditions may not always be rule based. Rather, setting conditions may be better understood as the presuppositions and assumptions that a child brings to the task at hand. Distinctions between setting conditions can vary to a greater and lesser extent and, if we assume that executive function is related to private speech, setting conditions can probably differ in as many ways as a child is able to articulate the distinctions. There does not seem to be a rationale for seeking a singular explanation of how setting conditions differ and how children are able to switch setting conditions when guiding their own actions.

The Development of Executive Function and Self-Regulation

The discussions of self-regulation and executive function in previous sections focused on the interpretation of experimental studies. As noted, however, these studies identify certain manifestations of self-regulation or executive function under certain experimental conditions and, over a number of studies with different age groups, these studies may provide indicators of how executive function or self-regulatory abilities change through ontogenesis. The data from such experiments, however, do not conceptualize what self-regulation or executive function are and they do not provide an account of how these abilities develop. Rather, they provide data points that may be construed as evidence for or against a particular developmental account.

Given the critiques of internalist conceptions of agency and self-regulation earlier in this chapter, I will not review internalist accounts of development further. Rather, I now will focus on the most broadly accepted externalist account of how self-regulation develops, namely, the account of Vygotsky (1978, 1986) and Luria (1959).

Vygotsky (1978, 1986) conceived his developmental theory in contrast to the behavioral theories that were prevalent in the early 20th Century. In behavioral theory, a stimulus from the environment triggers a response in the organism. Vygotsky felt that behavioral theory alone could not explain human thought and action. With people, responses were not always immediate and were often adjusted after an action had commenced. As with other animals, people possess an organic central nervous system subject to similar behavioral responses as other organisms. Vygotsky referred to this form of functioning as the *lower mental functions*. Unlike other organisms, however, an infant

is born into a cultural world. This world of social practices and cultural significance is a world constituted by shared language. Through engagement with others, the infant learns about cultural signs and the activities within which such signs occur. These signs, whether they be spoken, gestural, or visual symbols (to name but three common examples) are appropriated by the child. The child uses these signs as she sees others use them (Bodrova & Leong, 1996; Vygotsky, 1978, 1986; Wertsch, 1994). The child appropriates the signs as tools that allow her to engage with others. These cultural tools also allow her a degree of control over her own mental processes, mental processes that occur between her perception of a situation and her responding to that situation. These culturally specific and historically situated tools that include all of language as well as a rich web of other cultural signs constitute the child's developing *higher mental functions*. As a child grows, her lower mental functions become integrated into a system of higher mental functions.

Influenced by Marxist theory, Vygotsky (1978) saw development as a process of contestation (Bakhurst, 2007; Newman & Holzman, 1993). According to Vygotsky (1978, 1986), advances in development depend on the child engaging within, and resolving, distinct and often conflicting lines of development. In infancy thought and speech emerge along distinct lines of development. The utterances of an infant under twelve months in age do not involve thinking. Rather, such utterances are predominantly emotional expressions and social calls that, Vygotsky argued (1986), are analogous to the utterances of other primates. Thought, on the other hand, emerges as the infant engages with her physical world, drawing connections between the objects she manipulates and the

outcomes she experiences. In the first year of life, then thinking does not involve language and language does not involve thought. As the infant continues to grow into the social world, however, the child appropriates speech from others. Phrases such as “too big” and “all gone” come to mediate her thought. Previously distinct lines of development of thought and speech merge. Thought becomes linguistic and speech comes to constitute thought.

The higher and lower mental functions, then, are not distinct cognitive mechanisms, nor are they even distinct mental functions. Rather, they represent two aspects of a dialectic, a contestation between two practical modes of engaging with the world. Emerging from these two aspects is a practical mode of engaging with the world that is neither a stimulus response mechanism nor a governing system of language and symbols, but rather, a synthesis of the two in which responses are mediated by internalized private speech (which Vygotsky hypothesized was a truncated form of spoken language).

Following Vygotsky’s theory, Luria (1959; Fernyhough, 2010) studied the directive function of speech in young children and argued that young children used spoken language to direct attention and control impulses. Luria’s studies focused on motor responses and the central nervous system on the one hand and the role of speech on the other. As such, he is generally recognized as a founding figure in the study of executive function where, as I have discussed, a focus remains on directing attention and inhibiting responses. Luria suggested that, in early development, it is the act of uttering words that guided attention and action. A two year old child, for example, may utter the

word “press” when instructed to press a bulb when it lights up. She may, however, continue to utter the word “press” when she is given a different instruction, namely, not to press the bulb. When a child is subsequently instructed to say “don’t press” and refrain from pressing when the bulb lights up, two and three year old children often utter the word “don’t press” while vigorously pressing the bulb. Hence in early development, Luria argued, it is the act of speaking that is guiding a child’s action as opposed to the meaning of the words. Speech is a motor response that is coordinating with other motor responses but not yet functioning as a guidance to other responses in all circumstances. As the child becomes more proficient in the cultural practices and linguistic tools of her world, she is more able to use the meaning of the words to guide her actions.

It is important to note that these findings cohere with Vygotskian theory where there is a developmental dialectic between the functions of speech and the functions of language. Speech as a motor response and language as a means of meaningful engagement with the world gradually synthesize into thought that guides action in a situation.

To varying degrees, the theories of Vygotsky and Luria have influenced studies of executive function and self-regulation. The work of Zelazo and colleagues (e.g., Zelazo et al., 2003), for example, is premised on a child’s developing ability to guide action through private speech. Kopp’s (1982) influential developmental account of self-regulation was also influenced by Vygotsky. Kopp argued that in infancy, antecedents of self-regulation are manifest as a bio-physical function for regulating states of arousal and physical movement, a function which is modulated by the routines and interactions

provided by caregivers. Towards the end of her first year, an infant gradually learns “compliance” (p. 200) with these routines and over the next year learns the impulse control that allows her to coordinate more successfully with social routines and practices. Kopp argues that self-regulation emerges as children interiorize social activities and use their understanding of these activities as they engage with others. Subsequently, as a child becomes more deeply embedded in the cultural practices of her community and as she becomes more adept with the linguistic tools available to her, she becomes able to abstract social rules that can guide her conduct in diverse situations.

As discussed in the consideration of social understanding in Chapter 2, self-regulation does not emerge as a direct interaction between child and language. Rather, it emerges in an interactive process characterized by Whitebread et al. (2007) as involving other regulation, say, when a mother brushes her child’s teeth, shared regulation (where mother may guide the hand of the child in brushing teeth), and self-regulation (where the child brushes her teeth independently).

In the next chapter, I will consider a relational approach to human agency. This approach is also an externalist view of development and is complementary to the Vygotskian account set forth here. First, however, I will suggest plausible conceptions of agency, self-regulation, and executive function that can be construed from the discussion so far.

Conceptions of Agency, Self-Regulation, and Executive Function and their Utility

While the discussion so far has highlighted some shortcomings in the conceptions of self-regulation and executive function, it is possible to suggest at least some elements of a conception of self-regulation that have positive relevance for the current project and will be revisited in subsequent chapters. It may be helpful, then, to clarify the distinctions between agency, executive function, and self-regulation. Crucially, however, it needs to be stressed that these are distinctions between conceptions, not distinctions between reified objects or natural processes of human functioning.

In developmental psychology, self-regulation is usually related to conceptions of human agency in which a person is able to reflect on and guide her own actions. Self-regulation also involves social understanding, an understanding of the routines, patterns of activity, or social acts that set the norms for our conduct. In addition, in many contemporary accounts, self-regulation involves some inner conflict. If a child is inclined to cooperate with others in a particular situation and cooperates with others, we tend not to say that the child is self-regulating. Self-regulation can be conceived as an ability to choose one mode of action even though the child is inclined to act otherwise. Hence, self-regulation involves the ability to guide one's own attention to different aspects of a situation and, with effortful control of one's own inclinations, choose an appropriate mode of action.

While such a conception of self-regulation will, in many cases, involve moral agency, the conceptions of moral agency and self-regulation are distinct. It is easy to

imagine, for example, a newly trained soldier who requires immense effortful control in order to kill another man. The morality of the action is unrelated to the effortful control involved. These distinctions, however, will be difficult to find in studies of early development where the development of moral understanding is closely related to the development of social understanding and a child's attunement to social norms (Carpendale, 2009).

The concept of executive function, meanwhile, is closely related to the concept of self-regulation because executive function requires an ability to attune to and engage with social acts and involves an ability not only to switch one's own actions but also to adjust the presuppositions and assumptions through which an action makes sense. Since adjusting one's presuppositions about a situation involves adjusting one's anticipations about the outcome of the situation, executive function can be conceived as an ability to adjust one's own perspective and act in a manner that will bring about the newly anticipated outcome.

Executive function is an ability to be aware of and adjust one's own perspective while self-regulation involves using this ability to adjust one's perspective in order to act in a manner that is socially acceptable when one is inclined to act otherwise.

Human agency is the ability to reflect on, deliberate, and determine one's own actions (Martin et al. 2003). Is a person with executive function and an ability to self-regulate a person capable of human agency? Executive function and self-regulation involve an ability to reflect on one's perspective and, assuming the involvement of

private speech in reflection, an ability to deliberate. Whether these abilities are sufficient for human agency will depend on how we conceive self-determination. For the purposes of this dissertation, however, this question will take us a bridge too far. The focus of this thesis is young children's reasoning about self and others and the degree to which such reasoning emerges in, and is constituted by, the social contexts in which children engage. Previous chapters argued that social understanding emerges in social interaction. The discussion in this chapter suggests that plausible conceptions of executive function and self-regulation are profoundly intertwined with a child's ability to attune to and engage within her social world along with the ability to reflect on her own conduct that emerges with social interaction.

An important question remains. How useful are these concepts when providing an account of the development of social understanding? Morelli and Rothbaum (2007) have argued that the focus on inner conflict assumed in Western concepts of self-regulation (e.g., effortful control) are founded on assumptions about a conflict between autonomy and social cooperation that has deep roots in Western culture but may be of much less relevance in other cultures. If the assumption of inner conflict is removed from conceptions of self-regulation, then the conception of self-regulation changes substantively, with more focus brought to how children learn to cooperate and coordinate with others. This observation, however, is not to give primacy to one particular concept of self-regulation, but simply to note that what needs explaining will depend on how the concept is constructed, and how the concept is constructed may depend on cultural assumptions.

It is also notable that early developmental theories did not always address self-regulation. While Bronson (2001) has outlined Piaget's theory of self-regulation, Piaget himself did not explicitly do so. Rather, Piaget investigated the development of human intelligence and understanding and does not appear to have seen self-regulation as a usefully distinct concept. Piaget considered a child as adapting to her surroundings in a process that involved adjusting her understanding of her surroundings. As rational and moral understanding develops, the child becomes increasingly able to choose appropriate actions. For Piaget, this process involved a lot more than inhibition, effortful control, reflective awareness, and the development of executive function. While Vygotsky (1978, 1986) did see regulation of action as a central explanandum, it is important to note that along with Piaget, Vygotsky did not articulate a concept of self-regulation, but rather addressed the child's developing ability to act intelligently in the world.

Conceiving self-regulation in the terms outlined earlier in this section, then, may be an arbitrary curtailment of investigations into the development of human intelligence. By arbitrary, however, I mean adjudicated rather than capricious. Not all investigations of development can focus on broad theories. Theories need to be applied and explained in particular contexts with the help of particular concepts. In constraining the scope of the concept of self-regulation, however, we also limit the questions we can ask and are at risk of finding that the answers we develop are, in fact, question begging to the point of not being particularly useful answers at all. For example, if self-regulation involves effortful control, then an adequate account of self-regulation needs to include the development of effortful control. What, though, is effortful control? Can this be explained in terms of

some sub-function of self-regulation such as executive function? Can executive function be explained in terms of its sub-functions such as neural function? If these questions cannot be answered without a clear regress (and I have already argued that they cannot be), then effortful control needs to be explained within a broader array of developmental processes. Effortful control remains that which needs explaining and self-regulation will not have been explained at all.

Chapter 8: Agentic Action and Agentic Choice

I argued in Chapter 5 that young children do not learn to understand the mind of self or others in terms of mental causes. In Chapter 7, I argued that internalist, reductive theories of agency are invalid because (1) it is incoherent for a theory to be both internalist and reductivist, and (2) because reductivism is unsound. The “physical” world includes its organizational or configurational processes, whether we are talking about a quantum process, a cell, a brain, or a society. I also argued in Chapter 7 that non-reductive internalist or dualist theories are equally inadequate because they assume deliberative or executive processes whose development demands an explanation. Since conceptions of self-regulation and executive function assume human agency, internalist approaches to both self-regulation and executive function are equally circular. Having argued against the possibility that our action can be explained in terms of theoretically encapsulated, inner, cognitive processes, I will now consider an alternative, relational conception of agency.

In the previous chapter, it was noted that most conceptions of self-regulation involve both an ability to reflect on and choose an appropriate course of action and also an ability to attune to and understand what the appropriate course of action is in a given situation. It was also noted that many Western conceptions of self-regulation assume an ability to cope with internal conflict between an often egocentric inclination or impulse on the one hand and a socially appropriate action on the other. And yet, as argued by Morelli and Rothbaum (2007), this assumption of conflict between autonomous,

egocentric desires on the one hand and social practices on the other is embedded to a degree in Western assumptions of human agency. Moreover, there is a lacuna in our account of agency and its relation to social understanding. What is a child doing when she cooperates because it is her inclination to cooperate rather than an effortful repression of her own inclinations? Is such an act an agentive act? I believe it is helpful to draw a distinction between a person's agentive action on the one hand and a person's agentive choice on the other.

Agentive Action

Agentive action is constituted by our often presupposed or implicit understanding of what we are doing, an understanding discussed in depth in Chapter 3 and the developmental trajectory of which was discussed in Chapters 5 and 6. When we talk about someone intending, wanting, or desiring to do something, we are talking about that person's sense of what she is doing and her sense of the circumstances in which she is acting. Following Martin et al. (2003), as a person engages in intentional action, that person is framing, choosing, and executing her actions in a manner that involves her own understanding and reasoning. This can be conceptualized in Meadian terms as follows. As an individual attunes to a situation, she is occupying a perspective on that situation, that is, she anticipates possible outcomes and she is ready to engage with the situation in order to achieve a particular outcome. Her perspective frames the situation to the extent that her perspective encompasses all possible ways to engage in the situation that are available to her. Her understanding of the situation involves her readiness to engage in a particular way. Her choice of action may follow with few or no conflicting inclinations

arising. We can say—and normally we do say—that this person is the agent of her own actions. We do not assume a person has made a deliberate choice or decision before saying that a person intended to act thus and so and then abstract from her action a property of agentive action. Which enculturated adult, for example, would deliberate about whether to take the carefully selected fruit from the basket of another shopper in a grocery store rather than to select fruit from the bins in the grocery store? We seldom deliberate about such things, we simply know what to do in a grocery store, with whom we interact, and how we interact. Such day to day intentional actions and interactions are agentive.

We are able to engage in the agentive actions and interactions of our world because such actions exist in the world. Mead (1938) wrote, “[i]f knowledge is discovery of the unknown, this world is not known— it is simply there” (p. 45). We have grown into the social acts through which our understanding of self, other, and human conduct are made possible. This is a crucial point. It is not the development of our brains or cognitive processes that lead to an understanding of our own and others’ intentions and beliefs. Rather, it is our engagement with a world of social acts that makes such ways of thinking possible. We come to understand the existence of our selves as actors and come to understand those with whom we cooperate as our companions in the human world. We gain an ability to reflectively attribute reasons to our own and our companions’ actions. As Wittgenstein (1953) argued, there are patterns of human action (or “grammar”, §20, to use Wittgenstein’s word) that constitute the human form of life. This form of life is the

common ground through which we are able to make sense of our world and make sense of each other. We understand self and other because we engage in the same social acts.

It is doubtful that a neonate is capable of agentive action in the sense just described. As she suckles for the first time, her response is a biophysical reflex that involves neither a framing nor understanding of the situation. From the moment of birth, however, the infant is learning about agentive action. Piaget's (1954) studies of infants in the first year of life were a thorough and still relevant investigation of how an infant's perspectives are shaped by her interactions with the world, in particular, her engagement with the tangible objects in her world. The nascent social interactions upon which an infant's perspective and perspective taking ability gradually develop are also illustrated in Murray and Trevarthen's (1985) study of mother/infant interactions discussed in Chapter 3. Through a very young infant's tangible and social interactions, agentive, intentional action emerges.

Martin and Gillespie (2010) offer a helpful developmental account as to how children learn to engage in agentive action. They argue that the neonate is born into a world in which the tactile and social are very much intertwined. The neonate, for example, encounters the breast, loses contact and regains contact through the tactile guidance of the mother. Through such moments of engagement with the world, infants learn to anticipate the recovery of objects and learn to orient themselves to making such recovery possible. Very young infants learn to take the perspective of others as they engage in position exchange with their caregivers, switching, for example, from being the observer of smiles and coos to being the performer of such expressions towards her observing caregiver.

Such interactions often become regularized into “games” such as “peek a boo.” The child’s perspective begins to involve an anticipation of herself as an actor in the perspective of others which, in turn, provides a key enabling condition for engaging in significant communication with others, that is, communication in which the child anticipates that her own gestural acts are attuned to by those around her and that both her and other are attuning to the same aspect of the situation (i.e., that aspect to which the gesture directs attention). As the child grows into society, she engages with increasingly varied and complex (but nonetheless regular and predictable) patterns of action. The child attunes to what others are doing. She does not simply mimic what they are doing, but also exchanges roles with others, placing another person in her role as she adopts the role of the other. A toddler, for example, can both roll and receive a ball. A 3-year-old child can both be a student in circle time and also be the teacher, placing her friends, parents, or stuffed toys in the role of students. The child is learning to engage in the patterns of agentic action that constitute the common ground that binds us into the human form of life and about which we seldom deliberate or reflect.

Consider the following examples of infants who are engaging with and learning to establish a role in a common ground of possibilities for action. The first two examples come from parents’ diaries of their babies early communicative interactions collected for Professor Jeremy Carpendale. The third is an interaction between a toddler and myself in a Strong Start center for parents and their young children.

At lunch today, Isla [aged 47 weeks] pointed at the empty avocado shell that was sitting on my plate. She was reaching slightly, her body leaning forwards a little;

arm and index finger extended fully. She vocalized ‘nana’ (which she seems to say in reference to food in general). Originally looking in the direction of her point, she shifted her gaze to me, and looked at me expectantly. In response, I looked on my plate and picked up a grape and offered it to her, saying ‘Do you want this?’. Isla rejected the grape, pushing my hand aside and then looked and pointed at the avocado shell again. When I held it out to her, she took it and she expressed excitement, smiling and waving the avocado shell in her hand.

What was Isla doing in this situation? Firstly she was attuning to her surroundings and she was ready to engage. By 47 weeks, Isla had had many experiences of reaching for and engaging with objects. She had learned to anticipate that her mother would attune to and engage with the same aspects of the situation as she did and that her mother would engage with her in shared activities. In this situation, Isla anticipated that her mother was attuning to her actions. Also, to the extent that she anticipated her own actions as instrumental in guiding her mother, Isla anticipated herself as an actor in the situation. Isla oriented to her surroundings and was ready to engage.

The next example is most likely an example of position exchange as discussed by Martin and Gillespie (2010) where the infant is already learning not only about regular patterns of social activity, but also the different roles taken in such activity.

[Grey, aged 13 months] has other social gestures - on Thursday the 24th of Sept he brought Ryan [father] his shoes, hooted and protested till Ryan put them on, and marched him to the door. They went out and played, and when they came in

he put his hands on the door, and Ryan started to walk away. Grey stood there at the door and hooted at him with his foot raised till Ryan took off his shoe, then he raised the other foot and hooted till that shoe was removed.

Grey had some experience with a particular social activity (playing outside) and was ready to re-engage with this activity. Grey also had a sense of what this particular pattern of activity involved. As with Isla, Grey had learned that his caregivers attuned to the same aspect of a situation as he did and that Grey's own actions could initiate a shared activity. This situation also highlights Grey's ability to switch roles in an activity. He became the "enforcer" of the social grammar just as his parents would have done with him on previous occasions. Grey anticipated and was able to convey that others would engage in a previously experienced pattern of action.¹⁹

The next example highlights a toddler's actions as he identifies a new pattern of social interaction.

Lincoln [aged 14 months] had interacted with me several times during earlier visits to the Strong Start center. On this occasion, he ran up to me and gave me a foam number 8 (about 6 inches in height). I thanked him, smiled, and raised the letter 8 to my eyes as though it were a pair of glasses. Lincoln ran to a basket of

¹⁹ Admittedly, the diary does not refer to previous instances where a parent had told Grey to put on his shoes before going outside or take them off after coming inside. Grey did not, however, demand that his father hop on one foot or take off his pants when entering the house. It is a very reasonable inference that Grey's actions were motivated by an anticipation that both Grey and his father follow a known pattern of social action.

numbers on the other side of the classroom. He returned with a number 2, which he gave to me. I smiled and thanked him. Lincoln frowned, took my wrist and pressed my hand holding the number to my face. I then put the number 2 over my eyes as I had done with the 8. Lincoln nodded, ran off and returned with the letter 4. We repeated this interaction three more times.

(Stone, J. E. Observation at Strong Start Center)

In this instance, Lincoln was ready to re-engage with a previously experienced action (giving and taking). He encountered a new variation of this activity (raising the object to the eyes) and anticipated that this pattern of activity would be repeated.

Perhaps, as toddlers become more mobile and more able to interact with others in diverse activities, they attune ever more acutely to the patterns of activity around them and rapidly discern new patterns. It is also interesting that, in this instance, the pattern of activity was not functional in most senses of that word. On the contrary, from an adult perspective, the action was “silly” or “playful.” We needn’t assume, however, that Lincoln drew such a distinction between functional and playful activity. His expression was quite serious throughout the interaction. Lincoln was learning how to coordinate his acts with others.

These illustrations show that a key enabling condition for growing into the human form of life is that a child learns to attune to and engage with the pre-existing world of social activity, a world that constitutes our common ground for the very possibility of being human. Indeed, the terms used to characterize many of the fundamental theories of

human development, terms such as “cognitivism,” “constructivism,” and even “social constructionism” can be profoundly misleading, or, at least, easily misinterpreted. Cognitivism is strongly associated with a dualist view of mind where inner mental processes actively make sense of external stimuli. Constructivism and social constructionism both have roots in the same analogy, the analogy of constructing. The analogy suggests knowledge structures being built and this in turn suggests a location for these knowledge structures. While not intended by many proponents of both constructivism and social constructionism, Western culture tends to cultivate imagery of knowledge structures as being “in the head.” Hence, the analogy leaves an impression that for constructivism, the child is left to construct knowledge in her own head and, for social constructionism, society seems to be left with the impossible task of somehow constructing knowledge in someone else's head.

A more appropriate term might be “social induction,” a term that emphasizes a child’s being drawn into a human form of existence. Rather than conceiving of a child as cognizing or constructing her own view of the world, the child is better conceived as being inducted into the social interactions through which an understanding of the human world becomes possible. Induction suggests being brought into certain paths or patterns or customs. This process of induction plays a leading role in development. Imagine, for example, a child entering pre-school for the first time. The parent leads the child in by the hand to the cubbies to take off her coat and is then led to the carpet where she is told to sit with the other children. First the child is inducted into a way of doing things and the places in which they are done. As she goes along and as she repeats the patterns, she

develops subtle understandings of what she is doing, what is permissible, and who plays what role in each activity. It seems to me that it is this induction into social activities that leads the child into the activities through which she makes sense of her world.

Children, then, are drawn into a human form of life and learn to engage agentively in shared social acts. For the most part, such agentive activity is pre-reflective, emerging from moment to moment as we engage with the day-to-day regularities of our lives. As discussed in Chapter 7, however, we are able to deliberate and make conscious choices. We are able to suppress or reject our own impulses and we are able to compel ourselves to act in a manner that defies our own inclinations. A developmental account of social understanding demands not only an account of our pre-reflective agentive action, but also our ability to make agentive choices.

Agentive Choice

Agentive choice is the ability to deliberate and then choose a course of action. In *Mind, Self, and Society* (Mead, 1934), an account is provided as to how we learn to deliberate and make choices. I will set forth this account here, but I will also offer an important corrective.

Mead drew a famous distinction between an individual's momentary attuning and the thoughts to which that individual attunes. The "I" is forever in the moment, attuning both to the world and one's incipient readiness to engage with the world. The "me" is constituted by one's own incipient responses, responses to which the "I" responds. In *Mind, Self, and Society* (1934), it is argued that the "I" always maintains a degree of

autonomy from the “me.” Whereas, the “me” involves the learned responses that are shaped by previous experience, the “I” is ready to engage agentively in a novel manner rather than one determined by past experience. The “me,” then, is the determined, conventional readiness to conform to past patterns of action, patterns determined by our previous, conventional engagement in social acts (Aboulafia, 1986). The “I” provides the agentive ability to make choices that are not altogether determined by past experience.

The idea that the past constitutes a profound determining influence on events occurring in any given moment pervades Mead’s writings throughout his career (see, for example, Mead, 1912, 1913, 1932, 1938). The past, Mead argued, involved the past experiences that shape our incipient responses. The idea that a moment of action in the present nonetheless maintains an aspect of novelty is also prevalent throughout Mead’s writings. The temporally converging events that constitute a momentary circumstance give rise to anticipated outcomes that are not determined by past events, but rather, arise in the temporal span between attuning to and engaging with the present circumstances. In some respects, Mead’s thought shares similarities with that of Vygotsky (1978) who held that our use of language and other cultural tools extended the temporal span between attuning and responding to a situation. For Mead (1932), this temporal span included an additional agentive aspect, namely, the ability to anticipate and act towards future outcomes that are determined by the converging circumstances of the present and, in particular the converging perspectives of multiple agents. Agentive acts, then, are not determined by past events alone, but also by the convergence and interaction of perspectives as agents attune to and anticipate each other’s acts. Such anticipations are

determined by the momentary existence of a particular situation as well as the past experiences of the agents involved. There is, then, a moment of attuning in which the possible outcomes emerge in the momentary convergence of perspectives, a convergence that was not determined by the past of each agent or the combined history of all agents encountering that moment. This concept of agency is discussed in depth in Martin (2006, 2007) and Mead (1932). Does it follow, as it appears to follow in *Mind, Self, and Society* (1934), that the “me,” that is, the individual’s readiness to engage in accordance with past experience, is a conventional and conforming influence on human action?

It is important to note that while Mead discussed the temporal aspects of human agency throughout his career, Mead’s discussion of the “I” and the “me” is more prevalent in the work of subsequent scholars (e.g., Aboulafia, 1986) than it was in his own work, where such discussions were only emphasized in two papers (Mead, 1912, 1913) and in the posthumous class notes collected by his student, Charles Morris, and compiled into the book *Mind, Self, and Society* (1934). It is also notable that other lecture notes from 1914 and 1927 collected by Miller (1982) have no reference to the “I” and the “me.” Possibly, Mead had been sufficiently convinced by behaviorist theories to believe that conforming responses were conditioned by previous experience and that the only way to make choices that were not behaviorally conditioned was to invoke an autonomous “I.” Nowhere in his own writings, however, does Mead say this. One can also speculate that, as the son of a preacher who had struggled with the powerful social forces of religion as a young man (Joas, 1997), Mead may have been inducted into a world in which social norms had a quite powerful or coercive effect on him. For Mead,

maybe some pivotal agentic choices in his own life had been decisions to reject social norms. Again, references to this possibility in Mead's own writings are sparse. Indeed, there are few references in Mead's own writings (as opposed to student notes) that Mead believed the "me" was necessarily a conventional or conforming influence.

No matter whether Mead did hold the "me" to be conventional, it is clear that in the more recent mainstream studies of agency (some of which were discussed in Chapter 7), the perception is often that agentic choice enables children to cohere with, rather than break away from social norms. An account of how we learn to make agentic choices must account for how we are able to make that choice rather than whether that choice leads to an action that coheres with or defies social convention.

Crucially, Mead's own theory does not *entail* a conventional "me" contrasted with an agentic "I" that is more autonomous from social norms. As discussed in Chapter 6, as children interact with others in increasingly diverse and extended social acts, they become aware of themselves as actors in a situation. To be precise, very young children anticipate what others are anticipating. In cooperative interaction, a child anticipates the other is anticipating the child's own actions. Through such anticipations, the child comes to anticipate her own actions. She begins to attune to her own incipient readiness to act. As her shared actions involve more spoken language, her incipient responses involve a readiness to use language in her practical dealings with a situation. As a child learns to attune to her own incipient responses—incipient responses involving an ever richer array of verbal responses—the child is ready to respond to her own incipient responses. A

recursive process of linguistic deliberation emerges. The child learns to engage with her own thoughts.

As we learn to engage with our own thoughts, we are able to deliberate. Following Mead's own arguments about the development of self-awareness and deliberation, agentic choice need not be distinguished by a readiness to act that runs counter to the anticipated social norms. Moreover, agentic choice may not be between a conventional and non-conventional response. Rather, agentic choice is constituted by an ability to attune to one's own orientation—one's own incipient readiness to engage—and one's own reasons for action and then to decide which action to take. Deliberation is the recursive ability to attune and respond to one's own array of affective, linguistic, somatic, and sensorimotor incipient responses. Agentic choice is the ability to deliberate and then choose which action to take. Whether that choice be moral, conforming, or a break from social norms has no bearing on whether the choice is agentic. That a person is able to deliberate and choose a course of action constitutes an ability for human agentic choice.²⁰

²⁰ Mead (1932) argued that the momentary emergence of novel possibilities under-determined by the past constituted a space in which free will was possible and compatible with determinism. Arguments for free will, however, are beyond the scope of this dissertation. The relationship between agency as conceived herein and free will has been set aside.

A Relational Approach to Executive Function, Effortful Control, and Self-Regulation

Having characterized agentic action and agentic choice, how might terms such as executive function, effortful control, and self-regulation be understood within a relational framework? Executive function has been theorized as a function that inhibits pre-potent responses, directs and re-directs attention, strategizes, updates working memory, and guides action (Brocki & Bohlin, 2004; Friedman et al., 2008). For Zelazo et al. (2003) executive attention involves the ability to apply rules to a given situation. Following Mead, executive function can be conceived as involving all of these abilities. Executive function involves the processes involved in extending the temporal span between attuning to and engaging with a momentary situation. As such, executive function involves deliberation, inhibition, strategizing, cohering with norms, applying rules and any other abilities we have learned to use as guides for action as we grow into the social world. A trickier question is how might we distinguish between the abilities that we talk about in terms of executive function and other abilities? Perhaps, one approach would be to consider the abilities involved in intentional rather than non-intentional action. Following Anscombe (1957), reflexive kicks, startled jumps, and dilation of the pupils are not influenced by intentional action. This being the case, there are psychological processes ranging from sensing and attending on the one hand to physical responses on the other that do not involve executive function. As the temporal span between attuning and responding extends, the possibility for executive function increases.

Such a distinction between executive and other psychological processes may appear to some as mired in something of a conceptual quagmire. For example, it might be argued that executive function, as characterized here does not distinguish the role of key functions such as attention and inhibition. Attention and inhibition are both characterized as executive processes and also characterized as neural process common among mammals and other organisms. It is not clear, one might argue, whether these processes are executive functions or not. Such an objection, however, is based on a focus on function alone rather than the temporal span in which that function occurs. Following Mead (1932), it is not attention or inhibition that determines our degree of agentive choice over our actions, but rather, it is the temporal span in which such functions occur. As the temporal span between attuning and engaging extends, processes such as attention and inhibition (not to mention strategizing, deliberating, and reflecting) function to help us adjust our perspectives and anticipate the efficacy of our own acts.

Another possible objection to this temporally constituted characterization of executive function might be that many mammals, in particular, herbivores and birds, attune to potential predators for extended periods before acting. Moreover, robots or philosophical zombies might possess complex, temporally extended, executive abilities ranging from attentional control to strategizing and yet be completely unaware of their own actions. It might be argued then, that executive control has little to do with temporal span, and so another explanation is required, perhaps one that involves the size and complexity of our brains.

Such objections highlight a very reasonable point: there must be more to explaining inhibition, attentional control, rule following, and strategizing than simply a temporal span. This point is obviously correct as the comparison with many herbivores suggest. At the same time it is misleading. Following both Mead's (1932) thought and also following typical mainstream characterization of executive function, executive processes occur in the temporal span between attuning and engaging. This is not to say that such processes *necessarily* occur during that temporal span and, in the case of a rabbit, there is neither substantive reason nor evidence to suggest that much attentional control, let alone strategizing does occur. We still need an account of what executive processes occur and how they develop in humans, but, at least, we now have a helpful characterization of what we are trying to explain when we explain executive function.

The question of whether or not robots or philosophical zombies possess executive function depends on how we choose to conceptualize executive function. Do we choose to require a degree of self-awareness as a condition for executive function? If yes, what degree of self-awareness is required? It is worth noting that conceptions of automaticity often conceive automaticity (Moors & De Houwer, 2006; Shiffrin & Schneider, 1977) on a temporal spectrum, with automaticity associated with a rapid response and less self-awareness and executive function associated with a longer response time and also more self-awareness. Similar assumptions are made in cognitive behavioral therapy (Heslop, 2008), not to mention diverse philosophies ranging from Buddhist philosophy (Kalupahana, 1976) to Kant (1933) to Dewey (1910). It is widely held that our agentic choices are related to our self-awareness and it is the executive function of people that is

being considered here. Do we need to conceive executive function in robots or philosophical zombies in the same way as we would conceive of executive function in people? If our project is to provide an account of how people grow into a social world, make sense of their world, and act agentively in that world, then it is not clear how analogies with the psychology of rabbits, robots, or zombies are relevant to the project. In short, a temporal framework is a way to characterize what our executive functions are. Clearly, however, there is more to executive function than a temporal span in which agentive choice can occur. We need to account for what abilities emerge as children attune to and engage with the people around them.

We know that many animals are born with a readiness to orient and attune to particular, visible aspects of the environment (e.g., Bourgeois et al., 2009). It is plausible that neonates attune to particular features of the environment and perhaps attune to temporally constituted patterns of action. Maybe neonates are born with an ability to attend to more extended patterns of action than most other species or an ability to attend to particular kinds of interaction. Maybe neonates' ability to follow extended patterns of action involves a developmental trajectory similar to that involved in learning to walk, that is, a trajectory that involves biological maturation and interaction with the surrounding world. Maybe neonates simply learn to attend to such patterns because such patterns of interaction offer succor and an ability to engage in the social world. Executive function in humans emerges with the ability to attend to and interact with the actions of caregivers. How a child learns to inhibit, deliberate, strategize, or follow social norms as she chooses her actions depends on the world of social interactions into which she grows.

Such an account has already been provided both in preceding sections of this chapter and also in preceding chapters. Children learn to anticipate the social acts that constitute their world and learn to engage with these social acts. Children develop an ability to understand their own intentional acts, shared intentional acts, and the intentional acts of others in terms of the reasons for acting, typically practical reasons oriented to achieving practical outcomes. Children encounter multiple perspectives and multiple possible ways of engaging in a particular situation. Children learn to anticipate outcomes from a number of different perspectives and they learn to make agentic choices.

Following Mead, effortful control emerges as a child begins to occupy a perspective in which she is ready to attune to herself as an actor in the situation. A child learns to attune to her own incipient responses and, at the same time, attune to her surrounding circumstances. She anticipates the social acts involved in those circumstances and she learns to engage with her own perspective. She learns to choose a course of action even when that course of action runs contrary to her inclination. These abilities emerge as the child engages with those around her in meaningful social interactions.

A possible objection to such a relational characterization of effortful control is that this characterization does not explain individual differences. Differences in neural inhibitory processes, it has been argued (Rothbart, Sheese, & Posner, 2007), go a long way to explaining such differences. It is important to remember, however, that a premise of this dissertation is that infants are biological beings and that there are biological differences among individuals. Such differences certainly involve biological differences

in the central nervous system, some of which may be hereditary, others emerging in ontogenesis. Pointing to such differences, however, does not explain what effortful control is or how it emerges in development. It simply points out that effortful control involves neural processes and that these processes vary among individuals. Moreover, since the reasons for such differences may be attributed to a child's experiences with the world as much as, if not more than, the child's genome (Carpendale et al., 2013), explanations of effortful control in terms of neural function elide most of that which needs explaining, namely the child's interactions with, and experiences of the world. I will expand on this argument in the next chapter.

From a relational perspective, self-regulation remains an idea for which different scholars will have different conceptions. For Posner and Rothbart (2000), self-regulation involves effortful control of conduct that facilitates coherence with social norms. For Whitebread et al. (2007) whose work was discussed in Chapter 2 and also other scholars that follow a more Vygotskian approach to self-regulation (e.g., Harris, 1990; Kopp, 1982), self-regulation does not require effortful control, but rather an ability to guide one's own conduct. One might construe another form of self-regulation from Mead's *Mind, Self, and Society* (1934) in which self-regulation involves an ability to resist the conforming influences demanded by social norms and choose one's own course of action. Perhaps, though, there is a commonality to such diverse conceptions of what self-regulation is. All conceptions of self-regulation involve a person's ability to understand and engage in social acts. All conceptions of self-regulation assume the person possesses a degree of what Aristotle termed *phronesis*, a practical understanding of the surrounding

social world and an ability to choose an appropriate course of action in that world. All conceptions of self-regulation also involve an ability to make agentive choices and to fulfill those choices in practical action.

Studies in developmental psychology often point to a connection between abilities associated with executive function and abilities associated with “theory of mind” (Müller et al., 2005). From a relational point of view, such a relationship is to be expected. As children grow into the world, they learn to attune to, anticipate, and engage with patterns of activity such as placing and retrieving objects and sorting and placing objects. An ability to understand the former pattern of activity is a presupposition that stands behind most false belief experiments. An ability to understand the latter pattern of activity (and to follow directions) is a presupposition that stands behind many experimental studies of executive function. I am not claiming here that the two kinds of experimental tasks are analogous in every respect, or even in most respects. However, both kinds of tasks do presuppose the child is able to attune to and engage with familiar patterns of social activity. Both kinds of task assume the child has an ability to take the perspective of others and to adjust her own perspective. Studies of executive function and false belief understanding assume a child who is developing an understanding of human intentional action, a child who is increasingly capable of social understanding.

Chapter 9: Social Understanding

Following Mead, deliberation and agentic choice are not necessarily processes of enlightened, Kantian rational analysis of one's own conflicting inclinations, nor are they processes of utilitarian choices about the greatest good, nor, for that matter, a Confucian reflection about how best to defer to one's social superiors. At the same time, deliberation might involve any of these forms of reasoning. How we deliberate and what we choose to do is determined by our understanding of the social world in which we reside.

The thesis set forth so far has sought to show that (1) from moment to moment, individuals occupy a perspective, a perspective that is constituted by an incipient readiness to engage with that to which the individual is attuning, (2) a perspective involves attuning to and anticipating the interactions that occur in day to day social acts, (3) a perspective involves the perspective of others and so constitutes the others' anticipation of oneself as an actor in a shared situation, (4) the social acts to which we attune involve gestures and verbal communication, and (5) as we learn to attune to our own perspective as others have attuned to our perspective, we attune to the incipient verbal and gestural readiness in our own perspective. We not only become aware of ourselves, but we become reflectively aware of our reasons for acting.

I have argued that young children's—and, I hold, adults'—reasoning about self and others is social reasoning; viz., reasoning about the circumstances in which people are acting, the typical conduct of people acting in such circumstances, and the antecedent and subsequent circumstances of individuals involved in a particular situation. Our self-

understanding is an understanding of our own potential for intentional action. Our understanding of others is an understanding of others' potential for intentional action. I have argued that intentional action is action that is framed by the social acts of which they are a part. We anticipate what others will do based on our experience with the regularities of social acts. We are ready to engage in intentional action to the extent that we anticipate outcomes based on our own understanding of the patterns of social action, patterns that become available to us as we encounter and engage with the world around us.

On the Existence and Relevance of Mental Causes

An important point needs to be recognized here. This thesis has not refuted the thesis that is assumed in much scholarship on developmental psychology and explicitly set forth in Davidson's (1963, 1978) philosophy of intentional action. According to this thesis, the cause of our intentional action is a mental cause, something that goes on in our mind. Moreover, it is important to recognize that mentalist frameworks of psychology and human development seldom deny a role for the kinds of social interactions discussed herein, nor do they deny the temporal aspect of cognition. Indeed, the mid Twentieth Century "cognitive revolution" that frames much scholarship in developmental psychology was a move towards studying the temporally constituted psychological processes between stimulus and response. It is also foundational to most neuroscientific and psychological frameworks that psychology involves a person's interactions with the environment. It must also be recognized that, in a counterfactual causal framework (Lewis, 1973), the brain is a cause of our agentive act. If there had been no neural activity,

I would not have acted thus and so. Likewise, our cognitions (characterized loosely as our pre-reflective sensations and incipient responses as well as our reflective deliberations) must also play a role in determining intentional acts.

The issue at stake here is not whether we have neural processes or whether we cognize. Rather, there is a question. Can we understand human agentic action and agentic choice in terms of neural processes and cognitive processes? I believe that (1) once we understand agentic action and agentic choice in a world of human concerns, neural and cognitive processes add very little to that account and also (2) neural and cognitive processes cannot explain human agentic action and agentic choice until an account of the human world has already been set forth. This is not a case, then, of either casting our psychological explanations as inner mental processes or external social processes. Rather, inner neural and cognitive processes cannot explain psychology until social processes have been explained, but once social processes are understood, neural and cognitive processes add very little to the accounts of why we do what we do.

The Determining Influence of Psychological Constructs and Mental States

The idea that our actions are determined by mental causes often involves a belief that psychological constructs such as effortful control and mental states such as intentions

and beliefs determine what we do.²¹ Such concepts, however, cannot be premises in a developmental account. An infant is not born with an ability for effortful control, nor is she born with intentions and beliefs. Following the arguments set forth in Chapter 3, a neonate is not capable of intentional action no matter whether one adopts Anscombe's (1957) or Davidson's (1978) characterization of intentional action. A neonate is born with an incipient readiness to attune to and perhaps engage with particular observable or tactile elements of her surroundings. Quite possibly, like a baby turtle that orients to the brightest part of the sky, the neonate orients to particular elements of her surroundings. A neonate's orientation, however, does not constitute an ability to engage in intentional action, hold beliefs or understand other people's mental states. The development of mental states and psychological constructs such as effortful control can only be proposed as an explanandum of a developmental account, not premises. What determines their emergence? An answer to this question has been set forth in previous chapters. They emerge in social interaction.

Of course, it is possible to argue that the emergence of psychological constructs and mental states is determined through interaction, but once they have emerged, they are nonetheless determining of our actions. Of what, though, would such mental states and psychological states be constituted? To say that they are constituted by neural processes is obvious, incomplete, and also uninformative. It is obvious because it is

²¹ I will resist the temptation to use scare quotes with words such as "construct" and "mental state." It should be clear from the argument, however, that I am referring to a shared set of assumptions and beliefs rather than to any reified psychological state or function.

counterfactually the case that mental states and psychological constructs would not emerge if neural processes did not occur. It is incomplete because reductive physicalism is unsound and so a reduction of mental states to neural processes is unsound. This is not to deny a dependent relationship between mental states and neural processes (see Fodor, 1974), but rather to note that such a dependent relationship adds nothing to the account of why we believe that something is thus and so, or why we intend to do this or that, or why we effortfully suppress some particular inclination. As intentional beings our thoughts and our mental states are profoundly intertwined with the world around us. As emergent beings engaged in a world of emergent interacting agentive processes, our thoughts and mental states are very much influenced and determined by our engagement with the world. Consequently, it is uninformative to say that mental states are dependent on neural processes as these neural processes are simply one of many determining influences on our thoughts, feelings, and actions.

The (Mis)attribution of Mental States

While cognitive science and neuroscience certainly pay attention to environmental interactions and assume a temporal span between stimulus and response, the focus remains on neural processes and their associated mental states. These, in turn, are held to be the mechanisms, functions, or processes that explain child development and human agentive action. As we have seen in earlier chapters, it has been argued that children possess a “psychological-reasoning system” (Scott, Baillargeon, & He, 2012, p. 111) or a belief reasoning system (Apperly & Butterfill, 2009). It has also been argued that infants “are innately equipped with a teleological action representation and

interpretation system” (Gergely, 2010, p. 79). In many cases, such systems and abilities are attributed to particular, specialized neural mechanisms (e.g., Baillargeon, Scott, & He, 2010).

I will discuss one particular example. Over the last decade, the interpretation of empirical results from neuroscientific studies of false belief is perceived to have bolstered the “theory of mind” framework (e.g., Perner, Aichhorn, Kronbichler, Staffena, & Ladurner, 2010; Saxe & Kanwisher, 2003. Also see Caron, 2009; Mar, 2011, for discussion). In particular, “[t]he right temporo-parietal junction ... is specifically associated with processing mental states like belief” (Perner et al., 2006, p. 245). Drawing conclusions from studies seeking to localize “theory of mind” activity in the brain, however, depends on having “theory of mind” premises as the starting point of the investigation. For example, Saxe and Kanwisher (2003) commenced from the premise that “[theory of mind] reasoning depends on at least two kinds of representation: a representation of another person per se and a representation of that other person’s mental states” (p. 1835). The authors then sought to identify a neural region that responded to reasoning about “mental states” (and not just to the presence of a person per se). One “theory of mind” story that some participants in the Saxe and Kanwisher (2003) experiment read was as follows: “A boy is making a paper mache project for his art class. He spends hours ripping newspaper into even strips. Then he goes out to buy flour. His mother comes home and throws all the newspaper strips away” (p. 1841).) Saxe and Kanwisher (2003) held that, in reading this story, a participant was theorizing about mental states.

Suppose, however, that the same experimental design commenced with the premise that anticipating social acts involved the presence of a person, an anticipation of a social act, and an anticipation of that person's role in the social act. By changing the premises and without changing either the procedures or the results of the experiment, very different interpretations of the role of the temporo-parietal junction would emerge: The temporo-parietal junction might be involved in (1) anticipating a particular role in a social act, (2) coordinating roles in an anticipated social act, (3) resolving anticipated conflict in the roles of actors in anticipated social acts, and/or (4) resolving conflicts between different outcomes of a social activity.

Moreover, following the discussion of language development in Chapter 6, the very notion of mental states depends on shared understandings of social acts and our engagement in these acts. The parsing of one mental state from another is a social process. It is not clear that a program of empirical research could establish whether a child is construing the mental state of another person or using the language of mental states to talk about social activity that can be anticipated from day to day interactions with others.

Studies of the cognitive functions and underlying neural processes that are often taken as explanations of our action commence with assumptions about what the mind is and what it does. Specifying the mental causes of action remains a task in which our attributions of mental causes remain closely tied to the ways in which we have learned to describe our actions (as argued in Chapters 6 and 7). We then apply these descriptions of our reasons for action in order to name latent variables and localized brain regions (see also Danziger, 1997 and Gould, 1996, for related arguments). This process is for all

intents and purposes unidirectional. Eigen values and brain regions have no names attached to them. People give them names and attribute to them causal roles. Our attributions of mental states and their presumed underlying mechanisms are shaped by our social understanding of human action.

Clearly, this argument is not a dismissal of mental causes, but rather highlights that the mental causes of agentic action can very easily be misattributed. If mental causes can be misattributed, then their causal role can also be misattributed, and their relevance to explanations of human conduct remains uncertain.

So far then, I have argued that mental causes, the inner cognitive and neural processes involved in our actions are but one aspect of an account of human agentic action and agentic choice. Moreover, this one aspect has been formulated in the discipline of psychology by borrowing from popular descriptions of social conduct that have emerged through our long cultural history of social interactions. Moreover, these psychological formulations are defined with very little degree of certainty, accuracy, or conceptual clarity.

Reasons for Acting

Mental causes may not be the only relevant aspects of human conduct and we may be uncertain as to what the mental causes of our conduct are, but this, in itself, is not an argument that mental causes are unimportant or barely relevant to an account of human development or human agency. As intentional, agentic beings, we have an intentional orientation to the world and this orientation is often believed to emerge in our

mind and determine our actions. What emerges in our minds, we intuitively feel, determines both our understanding of the world and also how we act in the world. It seems indubitable that we have goals, that we understand other people's goals, and that these goals constitute the causes of our own actions and also our understanding of other people's actions.

Let us return to Saxe and Kanwisher's (2003) study. A "theory of mind" theorist may note that Saxe and Kanwisher were seeking to observe reasoning about mental states, including goal states. From a "theory of mind" perspective, goals are internal and activity is external. Goals may not be realized in social acts. Goals may be foiled or diverted, and yet we are still able to understand them. We do not see goals, we theorize about them. One of the "theory of mind" stories presented by Saxe and Kanwisher (2003) did not appear to involve anticipating any acts at all. The story was presented as follows; "John told Emily that he had a Porsche. Actually, his car is a Ford. Emily doesn't know anything about cars though, so she believed John. —When Emily sees John's car she thinks it is a porsche ford" (p. 1841). This story is quite distinct from the story discussed earlier, a story about a boy and his mother. In the previous story, the participant construed from the mother's visible activity of throwing away the paper that there was a goal of tidying up. In the second story, all of the thoughts seem to be internal. All the participant in the experiment needed to do was reason about the mental states of the protagonist to make sense of the story. Moreover, all the participant needed in order to reason about mental states was to use his or her brain.

I suggest that there is a false conceptual distinction in Saxe and Kanwisher (2003)—and in the “theory of mind” literature in general—between reasoning about acts and reasoning about thoughts. In the second of Saxe and Kanwisher’s stories, the participant was told what Emily knew, what Emily believed, and what Emily thought about John’s car. In this story, Emily’s knowing, believing, and thinking are as perspicuous as John’s telling. If the participant had not been told about Emily’s thoughts and if Emily had said nothing, there would have been no way to reason about Emily’s beliefs.

Even so, the “theory of mind” theorist might argue, there is a clear distinction between reasoning about thoughts and reasoning about acts precisely because there are thoughts that only Emily herself can know, thoughts about which others only can theorize.

Mead (1938) recognized that an act can be truncated. Incipient responses arise that are not completed in an overt act. Emily may have been about to say “I like your Porsche Ford,” when she heard a friend say, “That’s a really banged up Ford, John.” She may then have thought to herself, “I thought that was a Porsche Ford,” and only Emily would ever have known about her false belief. As I have emphasized throughout this dissertation, we have learned to reflect on our own incipient responses. This ability to reflect, however, involves attuning to our own anticipations as we have attuned to other people’s anticipations and as others have attuned to ours. We are thinking about our own activity as we have learned to talk about other people’s activity and as others have talked about our activity. Reasoning about what we do, what we think, what others do, and what others think are hardly distinct ways of reasoning.

By way of illustration, consider these two additional stories that illustrate the relational point of view: (1) John went to pick up Emily and take her to a movie, When John arrived, Emily was still not ready. She went upstairs and returned two minutes later wearing a sweatshirt and jeans; (2) John went to pick up Emily and take her to a movie, When John arrived, Emily was still not ready. She went on the internet and two minutes later she said, “Let’s go and see Mission Impossible.”

In the first story, we construe that Emily was not ready because she was not dressed. We do not see her get dressed, but we safely assume that she got dressed when she went upstairs. In the second story, we construe that Emily was not ready because she had not decided what movie to see. We did not see her deliberations, but we safely assume that she was making a decision while staring at the show times on the internet. From a Meadian perspective, both stories require an understanding of what people typically do when going to see a movie. There is no distinction to be made between reasoning about doing (e.g., getting dressed) and reasoning about thinking (e.g., wondering which movie to see).

Maybe our understanding of others is a social understanding, but isn’t that social understanding caused by—perhaps computed by—our own brains? Let’s consider a third story. (3) John went to pick up Emily and take her to a movie, When John arrived, Emily was still not ready. She went upstairs and returned two minutes later holding a book on calculus and said “I have to stay at home and study tonight.”

How do we account for John thinking that he was going to a movie and then thinking to himself (and most likely saying to Emily) “I thought we were going to see a movie tonight?” John’s reasoning is social reasoning. Emily had agreed earlier in the day to go and see a movie. John anticipated that they were going to see a movie and was aware of both himself and Emily as playing roles in this activity. He was subsequently aware of his own false belief and his own disappointment. John’s intention to take Emily to a movie was very much shaped by the context of his life, including the cultural practices of taking young ladies to movies, of making arrangements, of sharing commitments, and of waiting for people to get ready (see Scheer, 2006, for further discussion). John’s reasoning about what was going to happen was social reasoning. John’s ability to reflect on his own anticipations and feelings was also social reasoning, reasoning that emerged as he learned as a young child to reason about his own actions as others reasoned about him.

It has been argued that mental causes are but one aspect of an explanation of human agency, that mental causes are characterized in terms that emerge in our social interactions and characterized with very little degree of certainty or accuracy, and that we understand ourselves and others in terms of our social contexts, that is, there is no distinction between understanding the thoughts and actions of others or ourselves. Moreover, in Chapter 9 (and preceding chapters) I argued that our agentive, intentional action can only be explained in terms of our understanding of social contexts. We grow into a world that sees each one of us as agents in cooperative, coordinated social acts and we come to see and understand our selves in these terms.

I have not refuted that there are mental causes of intentional action, but these mental causes explain neither our intentional action nor the social roles we assume as agentive human beings. This is not to say that cognition or neuroscience is not worthy of study, nor is it to say that a relational psychology will explain all that needs explaining about the human condition. There are particular deficits in the ability to make sense of the human world that might be explained, or partially explained, in terms of particular neural or cognitive deficits (although what constitutes a “deficit” remains a moral question). The thesis set forth here, fully recognizes that this is an area of research that merits the full attention of the psychological research community. Perhaps, though, with a more relational understanding of human agency, an additional focus on facilitating the development of social understanding is an area worthy of equal emphasis. It is worth noting, for example, that “social stories” which are used to help children with autism understand their social world one social act at a time have proved to be very popular among caregivers and early childhood practitioners (Gray & Garand, 1993; Seida, Ospina, Karkhaneh, Smith, & Clark, 2009).

It is also very important to recognize that neuroscience and cognitive science must play an explanatory role in a relational approach to human development. The question is what we are we trying to explain in terms of neural activity and cognition. In a moment of attuning, incipient responses arise. What responses arise are a product of our social understandings and can be explained in terms of our social contexts. Our understanding of our own and others action are not two different forms of understanding. Nonetheless, there is no doubt much more that can be learned about the underlying functioning of the

brain and how it facilitates the process of attuning, and the incipient responses that arise. Perhaps it is a mistake to equate neural activity with intentional activity. Perhaps, intentional activity (as opposed to sudden starts or scratching itches) exists as part of a broader ecological, interactive life process and the brain plays no more of a causal role than the copper wire plays in the conveying of a phone conversation. Perhaps there is more to the role of the brain than this. Perhaps, there are bio-physical or configurational aspects of the human brain that facilitate (but do not determine) our understanding of and engagement with intentional action. This remains an open question and there remains a currently insurmountable explanatory gap between our understanding of neural activity and our understanding of the world (Jackson, 1982; Chalmers, 1997). The thesis set forth herein does not reject the relevance of these questions, but it does minimize the relevance of these questions to our investigations of human agentive action. If the role and mechanisms of the brain were one hundred per cent understood, our understanding of human agency would only have progressed very little.

A Brief Note on Naturalism

Is the account presented herein a naturalist account of human development? I believe that it is a naturalist account, but one to which important caveats apply. Naturalism is a vague term (Papineau, 2009) that does little more than offer a possible explanation for the human world and human agency, an explanation that does not depend on attributions of deities or mysterious powers and also offers a vague promissory note that, at some future time, our hypotheses will be verified by our careful observations of the world.

In Chapter 8, I have already discussed Campbell and Bickhard (2011) who have shown that any form of naturalism that depends on reductionism is unsound. The key target of their critique was Jaegwon Kim's reductive physicalism which held that all causal explanations are physical explanations and all physical explanations are reducible to the basal components of matter and the laws of physics. Bickhard and Campbell argued that the causal influence of a process (whether it be a cell or a brain) can only be understood in terms of the configuration of that process, that is, by the regularity of the dynamics of that process and its interaction with other processes.

If reductive physicalism is unsound, then can naturalism be construed as a form of emergent physicalism? Perhaps there are emergent properties that supervene on the physical. Theories of supervenience fail, however, as they fail to characterize what a physical property is, if that property is not reducible to its basal constituents and the laws of nature. What would a supervenient property be supervening on if, as Campbell and Bickhard (2011) argue, physical processes already involve the causal properties that constitute the process? The causal and qualitative properties that we, as humans, point out and seek to explain are constitutive of the process rather than supervene upon it. The trouble with emergent physicalism is that the physicalism becomes a vague concept with no clear distinction between what is physical and what is not. If having refuted reductive physicalism, we wish to claim for example, that a brain is a physical process, but a basketball game is not, then what are the criteria for making such a distinction? Both are processes involving sub-processes and interaction with other processes. Both involve interactions with external processes and both involve dynamic patterns of motion.

Moreover, emergent physicalism does not help to explain the famous hard question of consciousness, viz., what it is like to be conscious (Chalmers, 1997). If the world is a world of emergent interacting processes, then qualia is simply being involved in a process that attunes to other processes. To be clear, the point being made here is not that the problem of qualia is solved nor that baseball games and brains are analogous entities. The point is that emergent physicalism cannot resolve these questions as it is not at all clear what would count as physical and what would not.

Is it possible that emergent theories are naturalist if they are construed as a process ontology and it is assumed that any causal process must be observable, predictable, and hence open to investigation? Such a framework would include social processes such as history and culture as being formative of human agency. If this were the case, then moral concepts such as justice and evil would exist to the extent that they are manifest in human conduct. Justice exists because we share a perspective on what justice is and we are able to work together or contend with each other in order to establish the norms of social conduct that cohere with our perspective on justice, our anticipations, that is, of how people should treat each other. Moreover, if naturalism were construed as a process ontology and it were assumed that processes were, in principle, understood as regular occurrences that can be inferred from our experience and our understanding of history, then according to such a metaphysics, an account of human agency must cohere with our understanding of historic processes such as the expansion of the universe and evolution. Such a metaphysics assumes a shared perspective in which we are able to attune to, construe, and engage with regular patterns of occurrences and exclusively use

these patterns as our explanation for human conduct and the world in which we live. This metaphysics is essentially the metaphysics of the American pragmatists.

It is important to recognize, however, that such a metaphysics does not preclude the possibility of higher forms of consciousness, deities, or other spiritual influences on our conduct. Rather, it only takes into account that which is manifest in our interactions with the world. It is not, in itself, a naturalistic metaphysics, but rather it is a metaphysics that leaves open a choice as to how we account for that which cannot be verified through worldly engagement. The work of G. H. Mead can probably be interpreted as wedded to naturalism, not only because he sought to explain the world in terms of interactive processes, but also because he anticipated that all that can be explained, can be explained in these terms. William James, another pragmatist philosopher and a mentor of Mead, accepted that what we can possibly know is constrained by our agentive engagement with the world. For James, however, there was a distinction between what we can know and what the world is. For James (1912), the possibility of God was a belief that he cherished. As James pointed out, there are two live options. On the one hand, we can hold that there is no more to the world than we can discover through our practical interactions. On the other, we can hold that our practical interactions with the world will never bring about an understanding of the spiritual aspect of our existence. One can believe that there is more to the world than we can possibly know.

In sum, physicalist or materialist naturalism is incoherent since it is not clear what constitutes the physical. A metaphysics that assumes understanding can only emerge through our engagement with regular, causal processes that are observable and

predictable is not, in itself, a form of naturalism. Rather, it is a metaphysics that constrains our explanations to that which we can verify through our perspectival interactions with the world. It is, however, a metaphysics that recognizes the limitations of human perspectives and hence the constraints on what we can know about the world. If naturalization means no more than to account for human conduct in terms of our history of interactions with the world, then perhaps this is a naturalistic account, but one that claims naturalism as a promissory note, namely, that we will be able to understand human development, human conduct and human history in terms of our practical dealings with the world. At the same time, it is an account that leaves open the live option that such a pragmatic account may forever remain incomplete.

Conclusion

On the one hand, the thesis of this dissertation has been that reasoning about the mind is social reasoning. Our reasons for acting, I have argued, are socially constituted reasons and our agentic choices are, for the most part, courses of action substantively determined by our circumstances. On the other hand, both the theoretical framework adopted by many scholars in the disciplines of developmental and cognitive psychology and also the ideas about mind which have come to pervade our day-to-day descriptions of action, assume that insight into the mind is a distinct form of psychological ability. The mind, we intuit, is an inner, mental, realm that governs what we do.

One objection to the thesis presented herein might be that a child's developing insight into the mind is definitive of what it is to be human (e.g., Tomasello, 2008;

Tomasello & Rakoczy, 2003). Hence, to disregard our insight into the mind is to disregard the distinctive feature of human existence. This objection, however, has already been refuted by discussion in previous chapters. Certainly, children are learning a distinctive and very human skill set, the ability to understand and talk about what people do together in coordinated, purposive social acts. However, they are not learning about the inner workings of a hidden mind.

A second objection is that, as a person, I clearly have a rich world of private thought that only I can know firsthand. Others must ask me or I may choose to divulge to them the thoughts about who I am and what I am thinking, planning, dreaming, intending, or hoping. The seeming privacy of what I am thinking or hoping, however, does not make an understanding of mind distinct from an understanding of action. There are many things that I do, that only I know I do. Being the only person who knows about what I am doing does not make such action a different kind of action to action shared with others.

Another objection might be that self-regulation is distinct from any other form of regulation as only *I* can regulate *myself*. The key distinction between a psychology of mind and a psychology of action is that *I* have agentive choice. Others must either compel or persuade me. The key distinction between understanding mind and understanding action, the mentalist may argue, is that mind is agentive. Mind controls action.

I agree that agentive choice distinguishes between self and other and that agentive choice can be characterized as a mindful process or even as a process that occurs in the

mind. However, agentic choice involves an engagement with the possibilities for action available to us. Our action is delimited by these socially constituted possibilities. Our choices are framed within the descriptions available to us and the circumstances in which we act. Our choices are not determined by our own cognitive processes, but rather by the possibilities availed to us by our (typically social) circumstances. This does not deny the possibility that I can make a choice for myself in a manner that is distinct from my making a choice for another or another making a choice for me. The distinction is that, with agentic choice, my deliberations may be consummated in action without the need for my persuading or compelling anyone else. As the sole instigator and performer of an action, some actions may be easier to perform. The ease of performance, however, does not constitute a distinct kind of performance. Ease of performance does not involve a division of instigation and performance as two distinct analytical realms. By analogy, whether I make a cup of tea by myself or ask Sukey to help, a cup of tea is still being made.

As a person, I have learned to understand myself and my roles in shared social acts. I have learned that what I did is explained by what I intended, what I desired, what I believed, what I feared, what I worried about, or what I wished. My understanding of mind is constituted by such understandings. As I have argued in previous chapters, such understandings are shared descriptions of normative, social processes. Deliberation emerges within a social process. Deliberation is only possible by a person who, over many years, has grown into the social world where our ways of describing and deliberating about what we do are manifest and pervade our interactions with the people

around us. Deliberation is a social process that eventually I learn to do by myself, just as making a cup of tea is a social process I can learn to do by myself.

Why, then, do I, as a person, persist in seeing mind as distinct and my own mind as distinct from others? I suggest the following answer: I care about what I do. Social processes are not cold, rational processes and my reasons for acting are not cold, rational reasons. Since birth, I have attuned to and cared about the people around me (Sugarman, 2006). I have become aware of myself as an actor in the world and I have become aware of my own existence in the world. Whether one follows the Western philosophical tradition associated with Heidegger (1962) or the Eastern philosophical tradition of Buddhism, as a person I am attached to and care about my own existence (see also Stetsenko, 2012). Contrary to traditional and still prevalent mentalist approaches to the study of the human mind, I have argued that I do not possess privileged access to an inner mind, unobservable to others. I do not possess a mind that is replete with my own encapsulated intentions, beliefs, or other “mental states” that well up from neural activation and function as the “springs of human action” (Whewell, 1852, p. 10) under my own personal executive control. I do not exercise autonomous control of my own acts in a manner that stands me apart from or grants me executive control over the possibilities for acting in the world. I am, however, able to engage with multiple perspectives and make choices. I care about my own actions and my own existence, a care that emerges in any culture where self-awareness emerges.

Care for myself must involve care for what I do. I have grown into a world of shared, meaningful action and I can only be a part of this world if I have learned to

engage in shared action. I have come to see myself as I see others and others see me.

What I do and with whom I do it, over time, come to constitute who I become. I

understand what I do in terms of the descriptions of what I do. The descriptions of what I do involve my reasons for doing what I do. In caring about what I do, I am caring about my reasons for acting.

Perhaps, then, there are characteristics of being a person that are, to borrow from Heidegger (1962), primordial. By primordial, I mean characteristics that are foundational conditions for being a person. Primordial does not mean innate. Rather, these are characteristics that are manifest in the world into which infants grow and characteristics that a child will assume as she grows into the human form of thinking and acting. One such characteristic is, as Heidegger identified, that we care about our existence. This care is not to be confused with our somatic sensations, neural “maps” (Damasio, 2003; Damasio, Everitt, & Bishop 1996) of our bodies, or approach/withdrawal impulses that we share with our animal brethren.²² Rather, we care about our existence because we have learned to understand ourselves as being part of and playing a meaningful role in the human world. We have learned to understand ourselves by being in this human world. We have learned to understand ourselves in terms of that world. I care about myself in particular because I am always here, I am always a central part of the world I experience

²² This dissertation remains silent on the possibility that other animals may possess some form of care or some form of self-awareness. Following the thesis set forth herein, humans grow into a world of language and cultural ways of getting along with each other that is so different to other animals and so profoundly formative of our understandings that such comparisons would be of little value to an account of how human agency develops or what human agency is.

and, as I gradually came to understand as I grew up, how I exist is determined by my dealings with the world. My private deliberations are my own understandings of my own role in the world, but they are not a unique, inner, mental mechanism or cause that requires a distinct form of psychological explanation.

This dissertation has shown that the grounds for believing that each of us possesses executive control over the mental causes of our action cannot be founded in a dispassionate, empirically verifiable account of human development. Rather, following Danziger (1997) and Taylor (1989) the grounds for believing that each of us possesses executive control over the mental causes of our action are grounds that have been hewn through our historical circumstances as we, as societies and individuals, have sought to reason about and, in reasoning, to justify what we do. While we do, of course, care very much about why we may act in a particular manner, our grounds for explaining our actions in terms of mental causes do not, in fact, belong in an account of human ontogenesis, other than as a contingent, local, cultural way of describing what we do.

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