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Being vs. Appearing Socially Uninterested:

Challenging Assumptions about Social Motivation in Autism

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Short Abstract

Many of the behaviors associated with autism could be assumed to indicate a lack of social motivation; however, this assumption is contradicted by many autistic people themselves. We consider alternative explanations for four behaviors that could be interpreted as indicating a lack of social interest: (a) low levels of eye contact, (b) infrequent pointing, (c) motor stereotypies, and (d) echolalia. By highlighting alternative explanations and recommending research in unconventional ways social motivation can be expressed, we hope to contribute to a more accurate, humane, and useful science of autism.
Long Abstract

Progress in psychological science can be limited by a number of factors, not least of which are the starting assumptions of scientists themselves. We believe that some influential accounts of autism rest on a questionable assumption that many of its behavioral characteristics indicate a lack of social interest—an assumption that is flatly contradicted by the testimony of many autistic people themselves. In this paper, we challenge this assumption by describing alternative explanations for four such behaviors: (a) low levels of eye contact, (b) infrequent pointing, (c) motor stereotypies, and (d) echolalia. The assumption that autistic people’s unusual behaviors indicate diminished social motivation has had profound and often negative effects on the ways they are studied and treated. We argue that understanding and supporting autistic individuals will require interrogating this assumption, taking autistic testimony seriously, considering alternative explanations for unusual behaviors, and investigating unconventional—even idiosyncratic—ways that autistic individuals may express their social interest. These steps are crucial, we believe, for creating a more accurate, humane, and useful science of autism.

Keywords: autism; echolalia; eye contact; firsthand accounts; motor stereotypies; pointing; social interest; social motivation; testimony
The way people see autistic folks is that they don’t want to be around other people. That’s wrong. The truth about autistic people is that we want what everyone else wants, but we are sometimes misguided and don’t know how to connect with other people.

Owen Suskind (quoted in R. Suskind 2014, p. 366)

1. Introduction

Autistic people behave in unusual ways. Sometimes they do things that non-autistics do not regularly do, like flick their fingers in front of their eyes (Goldman et al. 2009) or repeatedly recite dialogue from movies or television shows (Gernsbacher, Morson, & Grace 2016). Sometimes they fail to do things that non-autistics regularly do, like engage in sustained eye contact (Senju & Johnson 2009) or point with their index finger to draw attention to an object or event (Baron-Cohen 1989).

One way to interpret many of the behavioral differences between autistic and non-autistic people is that autistics are not interested in other people: If you expect socially interested people to behave in certain ways (e.g., to engage in eye contact), you might infer that someone who does not do so (or who does so infrequently) is aloof and uninterested. This inference is evident in some lay characterizations of autistic people as “perfectly happy within themselves” and “confined in their own world” (Huws & Jones 2010, p. 339). It is also evident in some scientific accounts of autism, where autistic behavior has been seen as signaling a “powerful desire for

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1 We use “autistic” to refer to those who have received a diagnosis of autism, both to respect the identity-first preference of many autistic self-advocates (e.g., Kenny et al. 2016) and because use of person-first language (e.g., “person with autism”) in scholarly writing may accentuate the stigma associated with disabilities (Gernsbacher 2017).
aloneess” (Kanner 1943, p. 249), “little or no social interest” (Grelotti, Gauthier, & Schultz 2002, p. 214), and “an aversion to social stimuli” (Helt et al. 2008, p. 353). Some scientists have argued that autism “can be construed as an extreme case of diminished social motivation” (Chevallier, Kohls, Troiani, Brodkin, & Schultz 2012, p. 231).

Indeed, the belief that many of autistic people’s unusual behaviors reflect diminished social interest is central to social motivation accounts of autism (e.g., Abrams et al. 2013; Chevallier, Kohls, et al. 2012; Dawson 2008; Klin, Jones, Schultz, & Volkmar 2003; Kohls, Chevallier, Troiani, & Schultz 2012; Mundy 2016). On these accounts, because of differences in the reward circuitry of the brain, autistics do not find social stimuli to be as rewarding as non-autistics do (Kohls et al. 2012). As a result, they are less likely to behave in socially interested ways: They are less likely to a) orient toward, b) seek out and enjoy, or c) attempt to maintain relations with other people (Chevallier, Kohls. et al. 2012). These behavioral differences can alter the interactions autistic children and adults have with other people. Altered interactions may deprive autistic children of the kinds of experiences thought to be necessary for typical language and social development, and they may deprive autistic children and adults of opportunities to develop strong social relationships, which have important mental and physical health benefits (e.g., Baumeister & Leary 1995; Holt-Lunstad, Smith, & Layton 2010).

There is no doubt that many autistics do not seem by conventional standards to be as interested in the social world as many non-autistics. Indeed, atypical social behavior constitutes part of the

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2 Note that some autistics do engage in some behaviors that are conventionally interpreted as indicating social interest. For example, Wing and Gould (1979) described a subgroup of autistic children who spontaneously approached potential social partners. The resulting interactions, however, were considered unusual because these
diagnostic criteria for autism (American Psychiatric Association 2013). There is also evidence that autistics may process rewards differently from non-autistics (see Section 6; for a review, see Bottini 2018) and that the average number and quality of friendships may be lower among autistics than non-autistics (e.g., Billstedt, Gillberg, & Gillberg 2011; Kasari, Locke, Gulsrud, & Rotheram-Fuller 2011; but see Petrina, Carter, Stephenson & Sweller 2017). But the fundamental assumption underlying social motivation accounts of autism—that some of autistic people’s unusual behaviors reflect diminished social motivation or interest (we use the two terms interchangeably)—is problematic for at least three reasons.

First, it is contradicted by the testimony of a number of autistic people themselves (see Appendix). As the quotation from Owen Suskind that opens this paper makes clear, someone can appear uninterested in the social world but long to be a part of it. Second, it ignores the fact that explanations unrelated to social motivation are possible for many of autistics’ unusual behaviors. Third, it misconstrues social motivation as residing within an individual when it is more appropriately understood as arising from a dynamic interaction between the individual and how others perceive and react to them. I may perceive someone’s behavior—say, their sidelong glances toward me or their use of my hand to open a door—as indicating their social interest, and you may not. Who is right? Is that person socially motivated?

Assuming that someone is not socially motivated when in fact they are, can have devastating consequences. If you misinterpret an autistic person’s behavior as indicating that they are not children did not adapt their behavior or conversational style to match social norms expected in such situations (hence the name given to this subgroup: “active but odd”).
interested in interacting with you, it can affect the way in which (and even whether) you interact with them. This in turn may undermine the individual’s motivation to engage with you, which will confirm your beliefs about their lack of interest, thus resulting in a self-fulfilling prophecy.

Furthermore, being socially motivated is considered by some to be an essential part of being human (Baumeister & Leary 1995; Tomasello 2014); proposing that deficits in social motivation “ought to appear in all or nearly all individuals with ASD [Autism Spectrum Disorder]” (Chevallier, Kohls, et al. 2012, p. 236) effectively dehumanizes autistic individuals (Gernsbacher 2007a).

In this paper, we challenge the assumption that some common behavioral differences between autistic and non-autistic people necessarily reflect a deficit in social motivation. We begin by presenting alternative explanations unrelated to social motivation for four of these differences. We next describe some of the unintended, negative effects the social motivation perspective has had on research and intervention efforts in autism. Finally, we consider the possibility that autistic people may show their desire to engage with other people in unconventional ways.

In making our case, we draw upon both quantitative and qualitative sources. Like a number of others, we believe that autistic people represent an essential, but surprisingly under-used, source of insight about autism (e.g., Friedner & Block 2018; Gernsbacher 2007b; Nicolaidis et al. 2011; Pellicano & Stears 2011). The perspectives of autistic people are rarely included in scientific accounts that make claims about their social interest or motivation even though they are the ones most affected by this research. We recognize that there are limits on introspection (e.g., Wilson 2002), and some scientists have cautioned against taking “at face value” autistic (and non-
autistic) self-reports (Frith & Happé 1999, p. 18; Happé 1991; O’Neill & Jones 1997). However, if an autistic expresses a desire to connect with other people—as many autistic people so clearly do (see Appendix)—it seems perverse not to take that testimony seriously, a courtesy we certainly extend to non-autistic people who express the same sentiment. This, in turn, compels us to search for alternatives for why they behave in ways that are sometimes interpreted to mean they are not socially interested. Autistics’ self-reports provide a valuable data point in this endeavor and, at the least, a starting point for additional research. We provide further discussion of our use of autistic testimony in Section 3.

Before beginning, it is important to note that social motivation accounts represent just one class of several theories of autism; not all theories make the assumption that autistics have inherent deficits in social motivation (e.g., Baron-Cohen 1995; Happé & Frith 2006; Hill 2004; Mottron, Dawson, Soulières, Hubert, & Burack 2006; Pellicano & Burr 2012). However, many early intervention programs do make this assumption. For example, the Early Start Denver Model is designed to “make social relationships more rewarding for the child, thereby improving the child’s social motivation” (Webb, Jones, Kelly, & Dawson 2014, p. 39). According to the authors of another popular intervention called Pivotal Response Training (PRT), “at its core, PRT aims to improve social motivation” (Bradshaw, Koegel, & Koegel 2017, p. 2444). The primary way in which most early intervention programs attempt to improve social motivation is by trying to increase the frequency of behaviors that are conventionally interpreted as indicating social motivation (Mottron 2017). Additionally, a recent study designed to inform interventions to improve social functioning in adult autistics “highlight[ed] the importance of targeting social motivation in treatment” (Pallathra et al. 2018, p. 10). Thus, the influence of the social
motivation perspective on the treatment of autistics has been and continues to be profound even as its core assumption is questionable. To be clear, we are not offering a new theory of autism in this paper; rather, we are interrogating an influential approach to studying and intervening in autism.

2. Alternative explanations for behaviors commonly interpreted as indicating diminished social motivation in autism

An individual’s behavior is only an imperfect index of what they are thinking or feeling (for a review, see Gilbert & Malone 1995). Although observers tend to assume a one-to-one correspondence between the two—a smile indicating happiness, for example, and a frown indicating sadness—there is no necessary relation between them. People regularly behave in ways that we later learn were not consistent with how they were thinking or feeling. They may do so deliberately, as when they smile despite feeling sad, or they may do so for reasons that are beyond their control. For example, someone with Parkinson’s disease may speak slowly and repeat themselves (e.g., Benke, Hohenstein, Poewe, & Butterworth 2000). Members of Western, middle-class cultures expect adult conversational partners to respond promptly and to make their contributions to conversations unambiguous and relevant (Grice 1975). An uninformed interlocutor therefore might infer that someone with Parkinson’s who regularly violates these (and perhaps other) conventions is socially aloof and/or uninterested in conversation. But that inference would be based entirely on interpretations of behaviors that the individual has no control over.
Autism is a neurological condition with widespread effects, including in attentional, perceptual, and sensorimotor systems (e.g., Burack et al. 2016; Leekam, Nieto, Libby, Wing, & Gould 2007; Mottron et al. 2006). As we will show in this section, some behaviors that social motivation accounts of autism interpret as indicating a lack of social interest can occur because of factors unrelated to social motivation (see also Donnellan, Hill & Leary 2013). Some may occur deliberately, as when someone chooses not to engage in eye contact so as to avoid the anxiety it produces, and some may occur for reasons outside an autistic person’s control, as when someone cannot control their repetitive hand movements. There may be different causes for the same unusual behavior across autistic individuals and even within the same individual at different points in time. But in any case and as we will describe, these unusual behaviors do not have any necessary relation to social motivation, and some may constitute adaptive responses to the unique circumstances of being autistic.

We focus on four behavioral differences between autistics and non-autistics: reduced levels of both eye contact and pointing, and increased levels of both motor stereotypies and echolalic speech. We chose these four differences because they are well-established in the literature, and because they map on to the three categories of behavioral manifestations of social motivation proposed by Chevallier, Kohls, et al. (2012): Socially motivated people are expected to: a) orient toward others by engaging in behaviors like sustained eye contact; b) seek out opportunities to share experiences with others by, for example, pointing to interesting objects or events; and c) maintain and enhance relationships with others by, for example, refraining from behaviors that could be stigmatizing (e.g., motor stereotypies and echolalia).
2.1. Low levels of eye contact

People look each other in the eye for a variety of social reasons—to acknowledge each other, communicate emotion, and coordinate visual attention. Autistics tend to engage in eye contact much less frequently than non-autistics. Indeed, in infancy, reduced eye contact is one of the features that distinguish infants who are later diagnosed with autism from those who are not (Elsabbagh & Johnson 2010; Oner, Oner, & Munir 2014; Zwaigenbaum et al. 2005). One explanation for why autistic children and adults infrequently engage in eye contact is that they are not motivated to do so. For example, Chevallier, Kohls, et al. (2012) describe “a spontaneous disinterest in mutual gaze” (p. 235) as part of a suite of behaviors that indicate “diminished social orienting” (p. 231), which is in turn taken to indicate diminished social motivation. But there are alternatives to this social explanation.

Although sustained eye contact is often assumed to be a universal behavior among non-autistics, there are striking cultural differences in the extent to which individuals engage in it (LeVine et al. 1994). For example, among the Gusii of Kenya, “conventions of adult conversation involve much less mutual gaze” than among Westerners (Richman, Miller, & LeVine 1992, p. 617). Among the Navajo, “looking someone in the eye while they are speaking is a form of rudeness and causes the Navajo speaker considerable discomfort” (Connors & Donnellan 1993, p. 273). Similarly, in China, direct eye contact was historically not common because it was considered “rude and arrogant” (Zhang, Wheeler, & Richey 2006, p. 112). Despite the fact that eye contact

\[3\] Attention to another's gaze is also common in learning situations (e.g., Csibra & Gergely 2009)—for example, where a speaker is looking can indicate what they are referring to. Our discussion here, however, is limited to eye contact as a means of communicating emotional connection and social engagement.
is less common in some other cultures, no one would propose that members of those cultures have diminished social motivation.

There are also cultural differences in the amount of eye contact between non-autistic mothers and infants. For example, Richman et al. (1992) compared naturally occurring social interactions between Gusii mothers and infants with those between mothers and infants in suburban Boston. For the American mothers, the most common category of social behavior directed toward their 10-month-old infants was “looking.” In contrast, the most common category of social behavior for the Gusii mothers was “touching;” “looking” was fourth of the five categories coded. We doubt that Gusii mothers are less interested in connecting with their infants than American mothers. Rather, as LeVine (2004) has suggested, other behaviors, like touching and holding, may be “functionally equivalent to the verbal and visual engagement of Americans” (p. 161). This is a crucial point that is frequently acknowledged in cross-cultural comparisons, but rarely in the autism literature: There are multiple ways to communicate social engagement (see Section 5); gaze aversion may be a useful diagnostic marker for autism in Western cultures (Norbury & Sparks 2013), but it does not necessarily indicate social aversion (Akhtar & Gernsbacher, 2008; Gernsbacher, Stevenson, Khandakar, & Goldsmith 2008).

In fact, looking away from another person’s eyes has been shown to have several adaptive functions in non-autistic individuals. In early infant-caregiver interactions, for example, when infants become over-stimulated, they often look away, which leads to lowered heart rates (Field 1981). In some cultures, caregivers avert their gaze when their infants are upset as a means of calming them (Dixon, Tronick, Keefer, & Brazelton 1981). Doherty-Snoddon and Phelps (2005)
argue that, because maintaining mutual gaze consumes processing resources, gaze aversion can help manage cognitive load: Non-autistic adults avert gaze when solving difficult problems (Glenberg, Schroeder, & Robertson 1998), and training young children to avert gaze can improve their performance on cognitively demanding tasks (Phelps, Doherty-Sneddon, & Warnock 2006).

For autistic individuals too, both experimental evidence and first-person accounts suggest that gaze aversion can confer adaptive benefits. For example, in a classic study, Klin, Jones, Schultz, Volkmar and Cohen (2002) showed autistic adolescents clips from the film *Who’s Afraid of Virginia Woolf*, and measured what they looked at and for how long. There was no relation between the amount of time they spent looking at the actors’ eyes and measures of social competence; however, the more time they spent looking at the actors’ mouths, the better their social competence. Klin et al. argued that social information conveyed through speech may be easier for some autistics to interpret than social information conveyed through the eyes. Concentrating visual attention on the channel that produces the social information they find most interpretable (i.e., the mouth) may help them gain a better understanding of the social world (see also Rice, Moriuchi, Jones, & Klin 2012).

In fact, some autistics say that they avoid looking at a speaker’s face altogether in order to concentrate on what they are saying. For example, one autistic informant in Robledo, Donnellan, and Strand-Conroy (2012) explained, “I can hear a person better if I don’t look at their face… So, when I’m making an effort to listen, I’m not making an effort to look, so sometimes when I’m listening to somebody I might look away from them, but I might turn my ear toward them” (p. 5). This is consistent with the autistic self-advocate Kedar’s (2012) explanation for why he...
does not commonly engage in eye contact: “I can listen better if I don’t look at the person” (p. 49).

Another reason many autistic individuals avoid eye contact is because they find it uncomfortable. It “feels a bit creepy, so I tend to avoid it” (Higashida 2013, p. 25); “I can look but it’s not pleasant” (Kedar 2012, p. 49); doing so feels “strange and uncomfortable” (Tammet 2006, p. 75); and, “It is painful for me to look people in the eye” (Robledo et al. 2012, p. 5) (for several additional first-person accounts, see McGlensy 2016). Rather than indicating a lack of social interest, gaze aversion may be a strategy that some autistics use to focus, or to reduce or avoid stress.

There may be circumstances where learning to engage in eye contact more frequently can be beneficial (see Section 4.2). But for now, the important point is that relatively low levels of eye contact do not necessarily signal a lack of social interest; in fact, gaze aversion is used adaptively by both autistics and non-autistics to manage affective and cognitive resources.

2.2. Infrequent declarative pointing

Autistic children point less often than non-autistic children (e.g., Mundy, Sigman, Ungerer, & Sherman 1986), a behavioral difference that is sometimes interpreted as indicating that autistic toddlers lack the motivation to share experiences with others. In this section, we describe weaknesses with this social motivation interpretation of reduced pointing in autism, and discuss alternative explanations.
Non-autistic children begin pointing with their index finger around 12 months of age (e.g., Bates, Camaioni, & Volterra 1975; Camaioni 1997; Carpenter, Nagell, & Tomasello 1998; Liszkowski, Brown, Callaghan, Takada, & de Vos 2012). Researchers have traditionally suggested that infants are motivated to point for two primary reasons: To obtain things (“proto-imperatives”) and to share experiences with someone (“proto-declaratives”). For example, an infant may point to a desirable toy because s/he wants it; in this case, obtaining the toy is the goal and the adult is merely the means to that goal. Or an infant may point to a helicopter overhead to direct the adult’s attention to that interesting event; in this case, sharing the experience with the adult is the goal and the helicopter is the means to that goal (Bates et al. 1975; Brinck 2004).

Declarative points are generally considered to be more socially, cognitively and communicatively sophisticated than imperative ones. Someone who points to share an experience is assumed to be (1) motivated to inform the addressee of something interesting and (2) sensitive to whether the addressee has registered the intended message. For example, typically developing 12-month-old infants in one study pointed more at an interesting event (e.g., a puppet popping out of a display) if the experimenter expressed positive emotion toward the infant but did not actually look at what the infants were pointing to than if she expressed positive emotion and looked (Liszkowski, Carpenter, Henning, Striano, & Tomasello 2004). These kinds of findings suggest that infants who engage in declarative pointing do so because they want to affect their addressee’s attentional state—specifically, they want them to notice something the infant finds interesting or noteworthy (e.g., Baron-Cohen 1989; Bates 1976; Camaioni 1997).
Imperative points, in contrast to declarative points, are viewed as purely instrumental (e.g., Baron-Cohen 1989; Camaioni 1997). Some understanding of others as causal agents—as individuals who can be directed to carry out desired actions—may be necessary. But the assumption is that imperative gestures can be produced for no purpose other than obtaining a desired object; affecting the mental state of the addressee is not the primary goal (but see Grosse, Behne, Carpenter, & Tomasello 2010; Shwe & Markman 1997).

It is commonly asserted that autistic children point to obtain things, but not to share experiences. For example, DeMarchena and Eigsti (2014) write that “protodeclarative pointing is reduced in young children with ASD, while protoimperative pointing is not” (p. 375). Camaioni (1997) writes “children with autism have severe difficulties in producing . . . declarative, but not imperative, pointing” (p. 222). And Whalen and Schreibman (2003) have suggested that autistic children are “profoundly impaired” on declarative pointing, but not on imperative pointing (p. 456). If autistic children do point imperatively but not declaratively, it would be consistent with the assumption that they lack the motivation to share experiences with other people (Chevallier, Kohls, et al. 2012; Liszkowski 2005). The logic is as follows: Since they point imperatively (and, perhaps, to direct their own attention; Goodhart & Baron-Cohen 1993), they are capable of producing the pointing gesture when they are motivated to do so; their failure to point declaratively must therefore be due to reduced motivation to share experiences with others.

But there are both empirical and theoretical problems with this line of reasoning. As noted earlier, there is no doubt that as a group, autistic children point less frequently than non-autistic children (e.g., Mundy et al. 1986). But the data on the dissociation between imperative and
declarative pointing are not nearly as conclusive as they are sometimes made out to be.
Specifically, if an autistic child does not point declaratively, they also tend not to point
imperatively. For example, in one highly cited study (Baron-Cohen 1989, Experiment 3), 4 of the
10 autistic preschool-aged children observed during a 45-minute play session pointed
imperatively but not declaratively, which is consistent with the notion that autistic children are
uniquely impaired on declarative pointing. But the remaining six autistic children did not point at
all, suggesting that pointing simply may not be a part of the behavioral repertoire for many or
most young autistic children.

Similarly, in Baron-Cohen et al.’s (1996) report on the development of the Checklist for Autism
in Toddlers (CHAT), 9 of the 10 parents of toddlers who were later diagnosed as autistic
reported that their child did not engage in either type of point. Later work on the development of
the Modified-CHAT confirmed this finding (Robins, Fein, Barton, & Green 2001): Parents of
82% of toddlers who later received a diagnosis of autism reported that their child did not point
declaratively and 72% reported their child did not point imperatively. 4 In short, autistic children
as a group are not specifically impaired on declarative pointing, which undermines the claim that
autistic children do not point declaratively because they are not interested in sharing experiences
with other people.

An alternative explanation is that, as Gernsbacher and colleagues (2008) have argued, “it is the
core act of pointing and its underlying motor demands rather than any deficit in intentionality or

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4 For comparison, only 2% of parents of toddlers who did not later receive a diagnosis of autism in Robins et al.’s
(2001) study reported that their child did not point declaratively, and just 3% indicated their child did not point
imperatively.
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desire to share experience that underlies autistic children’s lower frequency of [declarative] pointing” (p. 42). Indeed, autistic children and adults have well-documented and widely acknowledged difficulties with the planning, coordination, and execution of intentional movements in a variety of domains (e.g., Fournier, Hass, Naik, Lodha, & Cauraugh 2010; Glazebrook, Elliott, & Szatmari 2008; LeBarton & Iverson 2016; MacDonald, Lord & Ulrich 2014; Torres & Donnellan 2015).

In firsthand accounts, too, autistics describe occasionally or regularly experiencing a disconnect between a movement they would like to make and the movements they are actually able to make (e.g., Grandin 1992; Robledo et al. 2012; Williams 1992). For example, a 12-year-old autistic explained his movement difficulties as follows: “I may wish to say something or do something. I can’t get myself to move . . . It is confusing because I can initiate some things like eating or getting things in the house sometimes. I don’t have an insight into this aspect of my illness. I just know it’s there” (Kedar 2012, p. 63). At 13, the same child wrote of difficulties he had in getting his body to do what he wanted: “I am telling my hand to raise in class, or my feet to run, or my fingers to move on the piano, however they don’t listen to me. Either they don’t move, or they move badly. It’s really rotten” (p. 101). Another autistic explained that, as a child, he “could not point at objects for many reasons. The most important reason is that I had very little sensation of my body” (Mukhopadhyay & Biklen 2005, p. 133). Thus, some autistics may have difficulty pointing due to motor and/or sensorimotor challenges, not because of a deficit in social motivation.
Furthermore, among autistic children who point, many do, in fact, point declaratively. For example, Mundy et al. (1986) showed that although autistic preschoolers pointed less frequently overall in a standardized assessment than non-autistic children, the autistic children produced, on average, as many declarative as imperative points. Additionally, in a study in which parents of autistic children were asked to rate the frequency of declarative pointing, over 25% selected “a few times/week,” “a few times/day” or “many times/day” (Allison et al. 2008). Given that many autistic children at least occasionally point declaratively, one cannot argue that they are not motivated to share experiences with others.

One could argue that because autistic children engage in declarative pointing less often than non-autistic children, they are less motivated to do so. But this neglects the previously mentioned motor challenges that may make pointing difficult for many autistic children. Furthermore, it is possible that autistic children are similarly motivated to share experiences, but that there are differences in the kinds of things they find interesting or worth sharing. For example, in one commonly used assessment of nonverbal communication (the Early Social Communication Scales; Mundy et al. 2013), autistic toddlers are less likely than non-autistic toddlers to point declaratively at a moving wind-up toy or to pictures in a picturebook. The behavioral difference is indisputable, but the social interpretation that is frequently offered—a lack of motivation to share experiences (e.g., Mundy 2016)—is disputable: It is possible that some autistic children simply do not find these toys or events as interesting as most non-autistic children do.

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5 Non-autistic children in Mundy et al. (1986) produced more imperative than declarative points. Ironically, one could interpret this pattern of results to mean that non-autistic children are the ones who have a specific impairment in declarative pointing: They regularly used pointing to obtain objects, but much less often to share attention with others.

6 Ninety-seven percent of the non-autistic sample pointed declaratively at least a few times per week (Allison et al. 2008).
Some empirical support for this possibility comes from a study in which autistic children were less likely than non-autistic children both to engage in declarative communication about a series of toys and to explore those toys themselves (O’Neill & Happé 2000). This is consistent with reports from some autistics, who describe focusing on and finding enjoyment in different things than non-autistics. For example, one adult autistic informant wrote that, “Lots of times I’m surprised by what other people said they saw and heard, because it is not what I saw and heard ... I don’t know why my head picks things to focus on, but I know it is usually not the same things other people pick to focus on” (Jones, Quigney, & Huws 2003, p. 119; see also Rubin 2005). As a 12-year-old, Kedar (2012) explained, “I’m not entertained by the ordinary things that most people enjoy” (p. 45).

The production of declarative gestures, including pointing, has been linked to a number of positive language outcomes in both non-autistic and autistic children (for reviews, see Colonnesi, Stams, Koster, & Noom 2010; Goldin-Meadow 2009). When a child points to an object, many parents in Western, middle-class families use it as an opportunity to offer the object’s name (e.g., Goldin-Meadow, Goodrich, Sauer, & Iverson 2007). Clearly, there can be benefits if a child and adult attend to the same referent when it is labeled (Tomasello & Farrar 1986). But as with eye contact, pointing is just one of several ways joint attention—a shared focus on the same object or event—can be achieved (Akhtar & Gernsbacher 2007; Gernsbacher et al. 2008), an issue we consider in more detail in Section 5.
Although it is possible that the reduced frequency of declarative pointing in autistic children is somehow caused by a reduced motivation to share experiences, alternative explanations are possible, including differences in motor ability and in what autistic individuals find worth sharing.

2.3. Elevated levels of motor stereotypies

Most autistic people engage motor stereotypies—rhythmic, repetitive movements that (from a naive observer’s perspective) appear purposeless (Bodfish, Symons, Parker, & Lewis 2000; Goldman et al. 2009; Seltzer et al. 2003). For example, they might flap their hands or arms, rock their bodies, wiggle their fingers in front of their eyes, or spin objects. Many non-autistic people also engage in motor stereotypies when anxious or bored, twirling their hair or a pencil, biting their nails, drumming their fingers, tapping their feet. Motor stereotypies are also common early in typical development, where it is thought that they may help infants transition from uncoordinated motor activity to voluntary motor control (Thelen 1981). But whereas they are infrequent beyond the preschool years in most non-autistic children, they tend to persist or become more frequent among autistics (Harrop et al. 2014; MacDonald et al. 2007). In MacDonald et al., for example, 2- and 4-year-old non-autistic children were observed engaging in motor stereotypies, on average, for 4.8% and 2.1%, respectively, of a 10-minute sample; in autistic children, the average percentages were 6.9% and 20.2%.

In discussions of motor stereotypies, self-injurious behaviors are sometimes included (for discussion, see Symons, Sperry, Dropik, & Bodfish 2005). However, whereas the prevalence of motor stereotypies in autism is thought to be around 100% (e.g., Bodfish et al. 2000), one recent population-based study estimates the prevalence of self-injurious behavior in autism to be around 30% (Soke et al. 2016). Thus, the two may represent different classes of behaviors. Our discussion focuses on motor stereotypies that do not involve self-injury.
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When as much as one-fifth of an autistic child’s time is spent engaging in behaviors that appear meaningless to many observers, questions arise about whether that time would be better spent doing other things. Repetitive behaviors in autism have been called “debilitating” (South, Ozonoff, & McMahon 2005, p. 155), “disrupting” (Goldman et al., 2009, p. 36), a “prominent impairment to the daily life of affected individuals” (Langen, Durston, Kas, van Engeland, & Staal 2011, p. 356), and a “major barrier to learning” (Leekam et al. 2011, p. 562). Additionally, because motor stereotypies look odd (Smith & Van Houten 1996), they are often considered to be a source of social stigma (Cunningham & Schreibman 2008). For these reasons, reducing or eliminating them is an explicit goal for many clinicians, teachers, and parents (e.g., Lanovaz, Robertson, Soerono, & Watkins 2013; Rapp & Lanovaz 2014; Rapp & Vollmer 2005).

The cause of motor stereotypies in autism is unknown, but one proposal suggests that it may be related to a lack of social motivation in infancy. In a recent review, Leekam et al. (2011) noted that non-human animals raised in restricted or deprived environments can develop stereotyped motor movements, such as pacing, body-rocking, and compulsive grooming (e.g., Lewis, Tanimura, Lee, & Bodfish 2007). They suggested that autistic infants may also suffer from a restricted environment—specifically, a “self-imposed” restricted environment caused by their “extreme social withdrawal” (p. 577). According to Leekam et al., this restricted environment

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8 In fact, there is evidence to suggest that motor stereotypies in and of themselves do not cause stigmatization. In Harris, Mahone, and Singer (2008), only 18% of non-autistic children referred to a pediatric neurology movement-disorders clinic because they engaged in many of the same kinds of stereotypies as autistic children (e.g., hand flapping, rocking) reported being teased or facing difficulties in group activities because of their stereotypies: “Despite the concerns of caregivers, the behaviors appear to be of little concern to the affected child, whose daily activities are rarely affected” (p. 271). At least part of the reason they are considered so problematic in autism may be because they are produced by autistic people.
could have a number of cascading effects, including the development of motor stereotypies (see also Schultz 2005).

But the link between perceived social withdrawal and motor stereotypies is tenuous at best. Among autistic toddlers and young children, the level of impairment in the social domain (as measured by observation and parent report of conventionally expected social behaviors) is not correlated with the frequency of repetitive and restricted behaviors (RRBs), the umbrella category of behaviors of which motor stereotypies are a part (Harrop et al. 2014). A large population-based study investigating autistic-like traits reported very low correlations (0.1–0.3) between social impairments and RRBs in 7- to 9-year-old children, even when considering only those with extreme scores (Happé & Ronald 2008).

Furthermore, when Leekam et al. (2011) suggest that the ultimate cause of motor stereotypies could be autistic infants’ “extreme social withdrawal” (p. 577), the implication is that these infants are not motivated to interact with people. Leekam et al. do not describe the particular behaviors they believe constitute evidence for extreme social withdrawal in infancy, but we imagine they might include things that are also routinely interpreted as indicating diminished social motivation (e.g., failing to engage in sustained eye contact, not responding when called by name, not actively seeking out adult interaction). As we have been arguing, however, explanations unrelated to social interest are possible for these kinds of behaviors. An infant may be perceived as lacking in social interest, but this does not necessarily mean that she actually is lacking in social interest (see Section 5).
Lack of social motivation has also been implicit in some explanations for why motor stereotypies persist. Many scientists and clinicians believe that motor stereotypies can be brought under voluntary control (e.g., Rapp & Vollmer 2005), and individuals who do not learn to suppress them are sometimes thought to lack the motivation to do so (Miller et al. 2006). The underlying assumption seems to be that someone who wanted to connect with other people would not engage in apparently meaningless behaviors that can cause others to ostracize them. Although some autistics have described using stereotypies because they want to be left alone (Joyce, Honey, Leekam, Barrett, & Rodgers 2017), others have reported that they simply cannot control these movements even though they would like to (e.g., Fleischmann & Fleischmann 2012; Robledo et al. 2012; Tammet 2006). As one autistic informant explained, “I want to stop doing anything that doesn’t look normal” (Robledo et al. 2012, p. 6).

For some autistics, some motor stereotypies can serve important self-regulatory and even communicative functions. For example, one informant explained that “one of my most interesting and prevalent repetitive behaviors (stims, ‘stereotypies’) is rubbing objects (e.g., door knobs) because of the unpleasant sensations they leave on my hands—I keep trying to ‘rub’ the touch off” (Jones et al. 2003, p. 118). A study of autistic young adults found that many described engaging in stereotypies as a coping response to anxiety or uncertainty (Joyce et al. 2017), which is consistent with data showing a link between parent reports of their child’s anxiety and parent and clinician measures of stereotyped behaviors (Sukhodolsky et al. 2008). In terms of communication, Julia Bascom (2011), executive director of the Autistic Self Advocacy Network, has explained that she expresses emotion through hand flapping: Friends “can ‘read’ my flapping better than my face. . . . I wish everyone could look at my hands and see I need you to slow down
or this is the best thing ever or can I please touch or I am so hungry I think my brain is trying to eat itself” (italics in original).

Non-autistic individuals can engage in motor stereotypies that look very similar to those produced by autistic individuals, but when they do, their behaviors are not assumed to reflect deficits in social motivation. For example, Harris et al. (2008) studied 100 non-autistic children referred to a pediatric neurology movement-disorders clinic specializing in tic disorders. These children (on average, 8 years of age) were otherwise typically developing, but engaged in many of the same kinds of stereotypies as autistic children (e.g., hand flapping, rocking), often multiple times a day, and sometimes for several minutes each time. Social motivation was not mentioned as a possible cause. The way in which the very same unusual repetitive motor movements are characterized “appears to depend more on the underlying diagnosis of the patients than the movements themselves” (Edwards et al. 2012, p. 181; see also Leary & Hill 1996).

In one study offering a particularly compelling demonstration of how laypeople interpret motor stereotypies differently depending on diagnosis (Sperry & Symons 2003), mothers of young autistic children watched several 10-second home-movie clips of infants between the ages of 9 and 18 months, and were asked to rate how intentional the infants’ behaviors were (i.e., “On a scale of 1-6, how much do the children mean to do what they are doing;” Feldman & Reznick 1996). Half of the mothers were told that all of the children in the clips had a diagnosis of autism, and half were given no diagnostic information. Unbeknownst to the mothers, in fact, all of these infants had later received a diagnosis of autism. For clips showing a child engaged in stereotyped motor movements (e.g., arm flapping, leg kicking, body rocking), there was a
striking effect of condition: Mothers who had been told that the infants were autistic rated the behavior shown in those clips as less intentional than mothers who had not been given any diagnostic information.

According to autistic individuals, some motor stereotypies are involuntary behaviors and some are intentional, and the same individual may engage in stereotypies for a number of different reasons. But engaging in them does not necessarily have anything to do with one’s interest in connecting with other people.

2.4. Frequent echolalia

Echolalia involves the verbatim repetition of part or all of another’s utterance and can include words and phrases that do not appear to be relevant in the current context—as when one young autistic child, on meeting a therapist for the first time, repeatedly exclaimed, “Got a splinter!” (Prizant 2015). It has been estimated that 75% of autistic children engage in echolalia (Rutter, Greenfield, & Lockyer 1967), and in the DSM-5, it is listed alongside motor stereotypies as an example of a restricted, repetitive pattern of behavior (APA, 2013). To a naïve interlocutor, these violations of conversational conventions can make it appear as though the individual’s utterances are not communicative, and that the individual is therefore not interested in social engagement or communication.

Because echolalic speech is so common in autism and can appear to be meaningless, it (like motor stereotypies) has been a target for behavioral interventions designed to reduce or eliminate it (for a review, see Neely, Gerow, Rispoli, Lang, & Pullen 2016). Indeed, some have argued that
echolalia is not just meaningless, but actually problematic: Some have argued, for example, that repetitions of (apparently) irrelevant words and phrases interfere with language development (Valentino, Shillingsburg, Conine, & Powell 2012) and contribute to communicative breakdowns (Neely et al. 2016). In this section, we argue that echolalia should not be dismissed as meaningless merely because a listener is unable to immediately decipher its meaning. We describe how autistic and non-autistic children and adults use it communicatively—to connect with other people—as well as for self-regulatory purposes.

If a young non-autistic child is asked, “Is your sister bothering you?” and responds, “Bothering you,” this would likely be interpreted as an affirmative reply (“Yes, she is bothering me”). These “frozen phrases” are structurally and perhaps functionally equivalent to echolalic speech, and are seen as playing an important role in language development. Typically developing children use unanalyzed chunks of spoken language to convey meaning (Bretherton, McNew, Snyder, & Bates 1983). In the case of “bothering you,” a young child may not yet be able to separate that phrase into its constituents or know how to slot in a different pronoun, but the child is using that phrase to communicate a meaningful proposition (Bloom 1973; Nelson 1981). Indeed, the use of frozen phrases in typical development is seen as a step on the road to productive speech.

Just as frozen phrases give way to productive multi-word utterances in typical development (Lieven, Pine, & Barnes 1992), echolalia can serve as a stepping-stone to productive use of grammar for speaking autistics (Blanc 2012; Gernsbacher et al. 2016; Manning & Katz 1989; Roberts 2014). A sentence or phrase that starts as fully echolalic can become modified over time as some elements are replaced by others. For example, one autistic child regularly repeated,
“One day in Teletubbyland, all of the Teletubbies were very busy when suddenly a big rain cloud appeared.” Later, this boy (named Bud) described his father’s returning home by saying, “One day in Bud’s house, Mama and Bud were very busy when suddenly Daddy appeared” (Dawson, Mottron, & Gernsbacher 2008).

Non-autistic adults also repeat utterances verbatim for various communicative functions. For example, they repeat what someone else has said to express agreement (e.g., Speaker 1: “Let’s go.” Speaker 2: “Let’s go.”). They use repetition to express incredulity (e.g., after a child asks for ice cream for breakfast, a parent might respond “Ice cream for breakfast?!”), and quote lines from television shows or movies in order to comment on the similarity between the current situation and the one depicted on film (e.g., “No soup for you!” from Seinfeld). In all these cases, the speaker’s use of repetition is intended to be communicative, and a listener who shares the relevant common ground would interpret it as such.

Why is something that occurs regularly in typical development and in non-autistic adult speech often seen as aberrant and meaningless in autism? There are at least three reasons. First, autistics use echolalia more often than non-autistics (van Santen, Sproat & Hill 2013). Second, autistics who engage in echolalia likely also engage in other behaviors that are frequently perceived as meaningless (like motor stereotypies; Section 2.3). Finally, it may be more difficult to decipher the meaning behind a given instance of autistic echolalia.

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9 Note that in one study, the rate of echolalic speech in autistic children was not different from the rate in children with specific language impairment and did not correlate with frequency of other autistic behaviors (van Santen et al. 2013).
This last point about meaning may be the most problematic. The tension between when and whether echolalia should be considered meaningful can be seen even in Kanner’s (1943) original description of autism. Some of the autistic children he described engaged in “parrot-like repetitions” (p. 228) that could not always “be linked up with immediate situations” (p. 227). He considered some of these utterances to be meaningful, as when he inferred that one child “expressed agreement by repeating the question literally, echolalia-like” (p. 220; also p. 243) or that the same child was asking his mother to pull off his shoe even though he said “pull off your shoe” (p. 219). But Kanner considered other examples of echolalia (e.g., “You’ll fall off the bicycle and bump your head;” p. 227) to be meaningless, writing, for example, “None of [the child’s] remarks was meant to have communicative value” (p. 227).

But just because a listener is unable to decipher the meaning of an utterance in a particular context does not mean that the speaker did not have one in mind (e.g., Stiegler 2014). Sometimes, the intended meaning can only be understood by someone who knows the speaker and their history well and is motivated to take the time to carefully study the contexts of use. For example, the child introduced at the beginning of this section, who repeated “Got a splinter!” when meeting a new therapist, had sometime in the past experienced a painful splinter and used that phrase to communicate her anxiety (Prizant 2015). One autistic boy echoed the phrase “UPS [United Parcel Service] is here” as a clever means of getting his father’s attention (Light, Roberts, DiMarco, & Greiner 1998). Another repeated, “Chicken Little thought the sky was falling, but the sky is not falling” when his mother was despondent over the death of a friend.
Being v\textsuperscript{s}. Appearing (Gralow 2008). Listeners who did not know these individuals well or know what was going on in their lives would probably mistakenly consider these phrases meaningless.\textsuperscript{10}

Anecdotal evidence suggests that when an interlocutor imputes meaning to echolalic speech they had previously considered meaningless, the effects can be profound. For example, Suskind (2014) describes how his young autistic son, Owen, would repeatedly say “juicervose,” which no one in the family understood initially. One day, however, Suskind and his wife recognized that “juicervose” was Owen’s approximation of the phrase “just your voice,” a line that figures prominently in \textit{The Little Mermaid}, one of his favorite Disney movies. In that movie, a witch offers a mermaid human legs in exchange for her voice, explaining, “It won’t cost much: just your voice!” Putting these pieces together, the Suskinds concluded that Owen’s use of “juicervose” was an attempt to draw attention to his own lost ability to speak.

Whether they were correct that Owen intended “juicervose” to have this or any meaning is almost beside the point. If they were correct, it was a clear instance of Owen successfully communicating with his family. If they were not correct, it was still a breakthrough: From that moment forward, Suskind (2014) writes, they began actively encouraging Owen to use dialogue from Disney movies to express his thoughts and feelings (and they also communicated with him in the same way). As an adult, Owen now uses non-echolalic speech to communicate, but he continues to recite dialogue from movies to convey particular meanings and to make sense of particular situations—just as non-autistics do. It is impossible to know for sure, but it seems

\textsuperscript{10} Kanner (1946) later described uncovering the meaning behind some of the apparently meaningless echolalic utterances produced by autistic children he observed. He explained that that “whenever such tracing was possible, the utterances, though still peculiar and out of place in ordinary conversation, assume definite meaning” (p. 242).
likely that the Suskind family’s willingness and ability to see meaning in Owen’s echolalia as a child played an important role in his subsequent linguistic, cognitive, and social development.

Indeed, in the literature on typical development, the meaning parents ascribe to their child’s behavior influences how they treat the child, which is thought to have important downstream consequences (e.g., Reddy & Trevarthen 2004). Parents of typically developing infants often react to early vocalizations as if they were intended to communicate something, responding in ways that are thought to promote communicative development (Snow & Ferguson 1977). For example, Gros-Louis, West and King (2014) found that mothers in a Western culture frequently responded to the “meaningless” vocalizations made by their 8- to 14-month-old infants by expanding upon them: If the infant babbled “da-da-da,” the mother might respond with “Da-da is working. I am mama” (p. 392). Gros-Louis et al. found that these kinds of maternal responses predicted an increase in infants’ vocal production. Similarly, treating echolalia as intentional communication is likely to signal to the child that their utterances are meaningful, which may reinforce their desire to communicate.

Some instances of echolalia may not be intended to communicate anything to other people, but this does not necessarily mean that they are meaningless. Like motor stereotypies, some autistics use echolalia as an adaptive, self-regulatory strategy—repeating a phrase to assure themselves that things will be okay, for example (Prizant 2015). This is not so different from the mantras that some non-autistics repeat in order to calm themselves in stressful situations (see, for example, Eddie Murphy’s repetition of, “Keep it together” in the movie Bowfinger). Some autistics have also reported using echolalia as a means of keeping material in short-term memory.
(Higashida 2013), the same strategy non-autistics use when trying, for example, to remember an address or phone number long enough to write it down.

Some autistics have reported that they occasionally find themselves repeating words and phrases involuntarily (Rentenbach & Prislovsky 2012; Robledo et al. 2012). But echolalia is also clearly used by autistics (and non-autistics) communicatively, as a creative means of connecting with other people.

2.5. Summary and key points

We have described four behavioral differences commonly associated with autism: Compared to non-autistic individuals, autistics are less likely to engage in eye contact or point, and they are more likely to engage in motor stereotypies and echolalia. We have explained how each of these behavioral differences has been interpreted by some scientists as reflecting diminished social interest or motivation. Using arguments from logic, existing quantitative data, and the testimony of autistic people themselves, we have described alternative explanations for each behavioral difference. Here we synthesize two key points from the previous sections.

The first is that most of the unusual behaviors documented in autism have also been documented among non-autistic children and adults (Bishop 1989). When non-autistics engage in these behaviors, they are not attributed to deficits in social motivation; to the contrary, they are often considered to be adaptive responses to a particular situation. Take reduced levels of eye contact. As noted, many autistic people do not consistently engage in eye contact. But many non-autistics also refrain from eye contact when they are trying to concentrate or control their emotions.
Similarly, many autistic people repeat words or phrases. But so do typically developing children when they are learning to communicate, and so do non-autistic adults when they are trying to emphasize a point or self-regulate. Finally, most autistics engage in motor stereotypies, rhythmically moving parts of their bodies or engaging with objects in unusual ways. But stereotypies are also not unique to autism: They are ubiquitous in typical development, where they are considered essential to motor development, and common among non-autistic adults, who use them to combat anxiety and boredom.

The second key point is that many autistics have explained that they do not intend their atypical behavior to reflect anything about social interest. For example, they report that averting gaze allows them to concentrate and regulate their emotions, just as it does for non-autistic people. They report that motor stereotypies and echolalia both serve self-regulatory and communicative functions, just as they do in non-autistic people. They describe experiencing an occasional or regular disconnect between movements they would like to produce and those they can actually produce in the moment—a disconnect that could affect their ability to engage in pointing and other behaviors that are conventionally interpreted as indicating social interest.

3. Use of autistic testimony

In Section 2, the explanations we reviewed for several behavioral differences between autistics and non-autistics were many and varied. The social motivation perspective is admittedly more parsimonious in that it proposes that these kinds of behavioral differences can be attributed to a single cause. But parsimonious accounts are favored in science only to the extent that they can explain the available evidence. One readily available source of evidence that the social
motivation perspective does not explain is the testimony of many autistic people who claim to be socially motivated and who offer alternative explanations for why they sometimes behave in ways that suggest they are not. Given that the input of autistic people is not traditionally included in the scientific literature on autism (Jivraj et al. 2014), we anticipate that there may be implicit or explicit concerns about our use of their testimony in this way.

One concern could be that we have focused on autistics who report being socially motivated (e.g., Appendix) without considering others who report that they are not. For example, Temple Grandin has argued that “autistic people tend to be less social” (quoted in Flatow 2006), Sue Rubin (2005) has written, “A room full of people does not intrigue me as much as a toy or object on the other side of the room” (p. 93), and some studies have found that autistics report experiencing less social enjoyment, on average, than non-autistics (Chevallier, Grezes, Molesworth, Berthoz, & Happé 2012). We recognize that just like non-autistic people, autistic people likely vary in how socially motivated they report themselves to be (e.g., Calder, Hill, & Pellicano 2013; Garman et al. 2016). But we have focused on testimony from autistic people who profess an interest in others because we have not seen their perspective or experiences well represented in the scientific literature on autism and because they present a challenge to social motivation accounts of autism.

Furthermore, we believe that attempts to measure whether autistics are, on average, less socially motivated than non-autistics are unlikely to yield data that are useful in theory or practice. Like other kinds of putatively innate motivations (e.g., intrinsic motivation; Ryan & Deci 2000), whether someone is socially motivated at any given point in time depends not just on their innate
predisposition toward social stimuli and interaction, but also on a number of other factors, including the context, the attitudes and behaviors of potential social partners, other competing goals, the individual’s history of successes and failures in similar situations, and so on. We suspect that a lifetime of having their behavior misinterpreted as indicating they are not socially motivated may lead some autistics to withdraw from, and experience little enjoyment in, social situations (see Section 6).

One might also be concerned that we relied on autistic testimony when we described reasons unrelated to social motivation that autistic people sometimes behave in unusual ways. A large body of work shows that people are not very good at explaining their own behavior—sometimes ignoring factors that an experimenter knows are relevant and sometimes emphasizing others that an experimenter knows are irrelevant (e.g., Wilson 2002). We acknowledge that people do not always have insight into the reasons for their behavior. However, as described in Section 2.5, the explanations autistic people offer for the behavioral differences we examined are consistent with objective measures and/or accepted explanations for why non-autistics engage in the same behaviors.

A third concern might be that the explanations unrelated to social interest that some adult autistics provide for their behavioral differences may not apply to autistic children. For example, autistic adults have reported that they find eye contact to be uncomfortable, but this does not necessarily mean that young autistic children (who cannot articulate the reason they do not engage in eye contact) also find it uncomfortable. Indeed, some have argued that a behavioral difference that begins in childhood because of a lack of social interest might persist into
adulthood for different reasons (e.g., Leekam et al. 2011; Moriuchi et al. 2017). At the very least, however, the fact that adult autistics offer explanations unrelated to social motivation for some of their unusual behaviors should lead researchers to consider and examine whether those (or other) explanations might also apply in childhood.

4. Effects of the social motivation perspective on autism research and intervention

The assumption that behavioral differences between autistics and non-autistics that appear to indicate lack of social interest actually do indicate lack of social interest has had unfortunate consequences for how some findings in autism science are interpreted, and for what the targets of intervention in autism have traditionally been.

4.1. Research

Consider, as an example, a recent study by Moriuchi et al. (2017) designed to investigate whether autistic toddlers do not engage in eye contact as often as non-autistic toddlers because they find it aversive (see Section 2.1) or because they do not find eyes engaging or informative. Recall that eye contact is one behavior conventionally assumed to reflect social motivation because it represents an obvious example of orienting toward another person (Chevallier, Kohls, et al. 2012). Moriuchi et al. hypothesized that if autistic toddlers found eye contact aversive, they would look away more quickly if they happened to look at a videotaped actress’s eyes than if they happened to look at her mouth or other stimuli in the scene.\(^\text{11}\) The results did not support the

\(^{11}\) We question Moriuchi et al.’s (2017) hypothesis given the conflicting research about autistic toddlers’ ability to disengage from visual stimuli (e.g., Fischer et al. 2016; Landry & Bryson 2004) and the lack of evidence that the procedure used is actually a valid measure of aversion to eye contact. When latency to disengage is used as a dependent variable in work with non-autistic children, the question is typically how long it takes them to disengage from a central stimulus when a target is presented in the periphery (e.g., Peltola et al. 2009; for a similar procedure with autistic toddlers, see Fischer et al. 2016; Landry & Bryson 2004); the procedure in Moriuchi et al. (2017) did
gaze aversion hypothesis as it was operationalized in that study: Just like non-autistic toddlers, autistic toddlers looked away from eyes as quickly (or slowly) as they looked away from mouths or non-face stimuli.

The authors also hypothesized that whereas non-autistic toddlers would seek out the videotaped actress’s eyes when she was behaving in an especially socially engaging manner, autistic toddlers who were averse to gaze would avoid her eyes at those times. Results again did not support the gaze aversion hypothesis: Autistic toddlers spent less time overall than non-autistic toddlers looking at eyes, but they tended to seek them out at the same times as the non-autistic toddlers. The authors concluded that their results “contradict the hypothesis that children with ASD actively avoid looking at the eyes early in life,” and instead suggest that autistic children have a “passive insensitivity to social signals in others’ eyes” (Moriuchi et al. 2017, p. 33).

We find the second part of this conclusion puzzling. That autistic toddlers in this study tended to seek out the actress’s eyes at the same times as non-autistic toddlers (though less frequently) suggests a sensitivity to social signals, not an insensitivity. It suggests that, like non-autistic toddlers, autistic toddlers were motivated to look at the actress when she was most likely to be providing interesting or important social information. As the authors note, this is not consistent with the prediction one would make if they had an aversion to looking at others’ eyes. But it is not include a peripheral target. Additionally, Moriuchi et al.’s prediction was that autistic toddlers would be faster to disengage from eyes if they found them aversive. But the prediction might have been that if autistic toddlers found eyes aversive, they would be slower to disengage. In work using peripheral targets, typically developing infants are slower to disengage from stimuli that are assumed to be threatening (e.g., a fearful face), not faster (Peltola et al., 2009). Similarly, non-autistic adults who are anxious are slower to disengage from threat-related central stimuli (Fox et al. 2001).
also not consistent with the prediction one would make if they were passively insensitive to social signals in others’ eyes.

Thus, one negative consequence of assuming that autistics are socially uninterested is that it can lead researchers to interpret autistic participants’ behavior as indicating that they are socially uninterested, even though that interpretation is not made about non-autistic participants who behave in the same ways. Additionally, researchers tend to emphasize differences between autistic and non-autistic behavior even though, as in the Moriuchi et al. (2017) study, the similarities may be at least as interesting and important (see Jaswal, Akhtar, & Burack 2016).

4.2. Interventions

At some level, a focus on behavioral differences is understandable; this is what allows diagnoses to be made and support provided. But when differences between two groups are obtained, members of the marginalized group are generally assumed to lack something desirable (Medin, Bennis, & Chandler 2010). Even differences that could be benign or adaptive tend to be interpreted as “deficits” in need of remediation (Akhtar & Jaswal 2013). In autism, the practical effect is that many interventions focus on making autistic people appear more like non-autistics with little consideration of the potential negative consequences of these efforts. These efforts may sometimes have the unintended and ironic effect of undermining their interest in interacting with other people.

Research targeting the reduction or elimination of echolalia has recently been described as “burgeoning” (Stiegler 2014, p. 750) despite the fact that, as described in Section 2.4, echolalia
can serve important communicative functions. The potentially adaptive functions of echolalia do not seem to be considered in these elimination efforts: An exhaustive review of published studies on echolalia interventions noted that “none of the studies reported the function of the target echolalia behavior” (Neely et al. 2016, p. 90). Ignoring the function of echolalia is not just a questionable practice, it is a dangerous one: If someone’s unconventional attempts to communicate are ignored or, worse, discouraged, their motivation to communicate is likely to be reduced (Akhtar, Jaswal, Dinishak, & Stephan 2016; Prizant 2015; Sterponi, de Kirby, & Shankey 2015).

Motor stereotypies are also a common target for intervention, presumably because they are ubiquitous, apparently purposeless, and thought to interfere with social and academic development. But reducing motor stereotypies has not been particularly effective at increasing desired behaviors (Lanovaz et al. 2013), and may result in new undesirable behaviors (Epstein, Taubman, & Lovaas 1985) that parents actually report as more problematic than the original motor stereotypies (South et al. 2005). We hope that some of the techniques that were employed to eliminate stereotypies in the past, including shouting at and shaking autistic children who engaged in rocking behavior (Risley 1968), are no longer used. But parents are still routinely advised to try to eliminate these harmless movements. For example, in a recent op-ed piece in The New York Times, one mother of a young autistic child explained that she was told by therapists, “Try to cut down on his arm flapping” and “Don’t let him spin objects.” She explained, “I drove myself to tears trying. At nap time I resorted to climbing into his crib to snuggle and sing because it was the only way I could get him to stop waving his hands in front of his eyes” (O’Brien 2017).
Autistic individuals have described finding efforts to prevent them from engaging in harmless and adaptive motor stereotypies as both frustrating and aversive (Bascom 2011). It is not difficult to see how an autistic person’s motivation to engage with someone might diminish if that person prevents them from engaging in harmless “stims” that may be soothing, enjoyable, or something that they have no control over.

Autistic children are also regularly instructed to look other people in the eye. There may be circumstances in which learning to make eye contact more frequently can be beneficial. For example, Krstovska-Guerrero and Jones (2016) trained autistic toddlers to shift their gaze from an object to an adult’s eyes and found an increase in other conventional communicative behaviors such as initiating requests and smiling. This, in turn, may have led caregivers of these children to behave in ways that facilitated further social and communicative development. And yet, insisting on eye contact may backfire. For example, Moriuchi et al. (2017, Supplemental Materials, p. 20) suggest that children may be conditioned to find eye contact aversive when adults’ exaggerated bids for eye contact become associated with “non-preferred activities.” Thus, attempting to increase a behavior that is conventionally interpreted as indicating social interest could paradoxically actually undermine that interest.

5. New directions for research and intervention

Social behavior is behavior that an observer perceives to be social. As we have been arguing, just because a given observer fails to see conventional signs of social interest does not mean that someone lacks social interest. In this section, we describe the importance of studying how non-
autistics interpret autistic behavior, and consider possible benefits of helping non-autistics recognize and respond to unconventional ways autistics may show their social interest.

5.1. Who is responsible for altered social interactions?

Recall from Section 2.3 that, in the context of motor stereotypies, Leekam et al. (2011) proposed that autistic infants experience a “self-imposed constrained environment” caused by their “extreme social withdrawal” (p. 577). As noted in that section, we cannot know whether an infant who is perceived to be socially withdrawn is actually socially withdrawn. It is true, however, that an infant who is interested in people but who—because of a neurological condition affecting her perceptual, attentional, and sensorimotor systems—does not frequently smile, coo, or engage in sustained eye contact with her caregivers will not get the same kinds of social opportunities in Western cultures as one who routinely does engage in these behaviors. Crucially, however, this would not represent a “self-imposed” restricted environment; it would represent an environment that became restricted over time as a result of the way the infant was treated by adults who expected her to show her social interest in conventional ways. All social environments arise from an interaction between how a person behaves and others respond. It is simply inaccurate to describe any child’s environment as “self-imposed.”

This is a crucial point because it has important implications for intervention efforts. If an infant’s restricted environment is thought to be “self-imposed” because she is socially withdrawn, then interventions are likely to focus on making her appear less socially withdrawn. For example, Leekam et al. (2011) advocate for “active and intensive intervention [on autistic infants] that acts upon that self-imposed constrained environment to enhance brain development and reduce
stereotypies” (p. 577). Similarly, Dawson (2008) recommends early behavioral intervention to correct the “failure on the part of the [autistic] child to actively engage in early social interaction” (p. 776).

If, however, we take seriously the possibility that an autistic infant’s restricted environment comes about at least in part because caregivers (mis)interpret her unusual behaviors as indicating social withdrawal and so treat her as if she were socially withdrawn, then an important target for intervention should be caregivers’ perceptions of the infant’s behavior. Broadening the range of behaviors seen as indicating social interest might provide alternative ways for autistic infants to gain the experience-dependent stimulation needed to support healthy social, communicative, and cognitive development (e.g., Akhtar et al. 2016; Prizant 2015).

An instructive analogy can be seen in the education of deaf individuals in the United States. When forced to lip-read and speak, deaf individuals have difficulty with both language development and academic achievement (Marschark 2006). However, when exposed to sign language—particularly early in life and from fluent signers—deaf children’s developmental trajectories in those domains more closely match those of their hearing peers (for a review, see Lederberg, Schick, & Spencer 2013). Sometimes the most effective intervention is one that broadens the range of behaviors deemed acceptable by the majority group, accommodating an individual’s unique needs and strengths rather than insisting that they behave in the conventional way (Mottron 2017).

5.2. A path forward
In disabilities other than autism, it is widely recognized that there are unconventional ways that social interest can be expressed. For example, blind infants’ behavior could lead observers to assume they are not socially motivated: They do not orient toward others by engaging in eye contact; they sometimes turn away when others are talking; and they rarely use gestures like pointing, offering, or showing (Pérez-Pereira & Conti-Ramsden 1999). But parents do not assume, on the basis of these behaviors, that their infants are uninterested in social interaction. Parents are not instructed to insist that their children engage in eye contact, pointing, or showing. Instead, parents learn “to be more patient and careful in detecting responses and signs of engagement,” to establish joint attention via touch, and to recognize “idiosyncratic movements/gestures” as bids for experience-sharing (Pérez-Pereira & Conti-Ramsden 1999, pp. 45-47; see also Bigelow 2003; Fraiberg 1977; Matsuda 1985).

Among typically developing children, too, there is evidence that social engagement can be shown in alternative ways. For example, although gaze following is the most commonly studied route to achieving a shared focus on an object, Yu and Smith (2013) found that it was not necessary. In a study of 12-month-old infants and their parents interacting with several toys, infants rarely looked at their parent’s face. But because parents tended to hold and look at a toy when attempting to draw their child’s attention to it, infants could (and did) successfully coordinate visual attention with their parent simply by looking at their parent’s hands. In fact, there was so much redundancy between the hands and the eyes that the authors concluded that, “Current approaches [to joint attention] that concentrate on looks to faces and eyes, and to teaching those looks as parts of intervention programs for individuals with various developmental delays may be making the task harder” (p. 6).
In the case of autism, Ochs and Solomon (2010) pointed out that autistic people “possess a characteristic range of possibilities for social coordination that is shaped not only by their disorder but also by the sociocultural practices of the communities they inhabit and the interlocutors with whom they interact” (pp. 73-74). In ethnographic work observing autistic children in a variety of settings, they found that what they called “autistic sociality” was often limited by interlocutors relying on standard ways of interacting, including face-to-face body alignment and insistence on speech (see also Ochs, Solomon, & Sterponi 2005). Based on our own preliminary work, informed by autistic people and their families, we hypothesize that sociality is also limited when interlocutors fail to recognize and respond to unconventional bids for social connection, including proximity, touch (see also Escalona, Field, Nadel, & Lundy 2002), coordinated movement, echolalia, and rituals.

Investigating unconventional ways autistics may show their social interest will require a multi-pronged approach. One important step should involve further theoretical work on the psychological construct of social motivation itself. As noted earlier, Chevallier, Kohls and colleagues (2012) operationalized social motivation in terms of an individual’s tendency to a) orient toward, b) seek out and enjoy, and c) maintain relations with other people. This definition bears a striking resemblance to some descriptions of extraversion (e.g., Costa & McCrae 1980): “Extraverts have a preference for seeking, engaging in, and enjoying social interactions” (Fishman, Ng, & Bellugi 2011, p. 67). Introverts, by contrast, are described as “withdrawn, retiring, reserved, inhibited, quiet” (McAdams 2000, p. 305)—adjectives that might also be used to describe many autistics. In fact, autistics (and non-autistics with more autistic-like traits) do
score higher on measures of introversion and lower on measures of extraversion than non-autistics (Ozonoff, Garcia, Clark, & Lainhart 2005; Schwartzman, Wood, & Kapp 2016; Wakabayashi, Baron-Cohen, & Wheelwright 2006). Thus, an important question is how what social motivation theorists call “diminished social motivation” relates to what personality psychologists call “introversion.”

This question is important because there is evidence that although introverts may not show their social interest in ways that have traditionally been valued or associated with social interest in Western cultures, many do seek out and enjoy social interactions; those interactions are just different from the ones pursued by extraverts (e.g., smaller groups, less small talk; see Cain 2012). We see an interesting parallel to autism: Like introverts, perhaps autistics show their social interest in unconventional (i.e., non-extraverted) ways. To be clear, we are not arguing that autism can be explained as an extreme form of introversion (see Grimes 2010); much more work would be required to make that case. But clarity and insight could be gained from a thorough examination of how social motivation is related to other psychological constructs.

Research is also urgently needed to identify and characterize the range of behaviors that can signal social interest. For example, interviews with autistic individuals and their families can identify candidate behaviors, and observations can quantify and investigate how they change over time. Experience sampling methods and experimental manipulations can shed light on both the idiosyncratic and common conditions under which those kinds of behaviors occur and what effects they have on different social partners. Cultural comparisons can investigate ways observers’ judgments of social interest may be mediated by cultural expectations, which could
inform debates about the range of behaviors that can demonstrate social interest. Intervention studies can investigate whether caregivers can be trained to see behaviors already in an autistics child’s repertoire as bids for social connection—albeit unconventional ones—and what effect this has on the child, the caregiver, and their relationship.

Proponents of the social motivation perspective are likely to agree that social interactions are reciprocal (e.g., Dawson 2008)—that is, that each member of a dyad influences the other. But theoretical and empirical work in this area has focused primarily on the problems that arise when autistics fail to show their social interest in conventional ways; little consideration has been given to how (mis)interpretations of autistic behavior may contribute to those problems (Dinishak & Akhtar 2013). Investigating and capitalizing on unconventional ways that social interest may be expressed and responded to represents a domain with rich potential and should be a high priority for autism research and intervention.

6. Concluding thoughts

Many autistic people describe themselves as interested in others and motivated to engage with them. Autistic adults and adolescents express a desire for friends (Gillespie-Lynch et al. 2017; Marks, Schrader, & Longaker 2000), autistic children are as likely as non-autistic children to choose to play with someone else rather than alone (Cage, Bird, & Pellicano 2016), and some autistics report experiencing greater loneliness than non-autistics (Bauminger & Kasari 2000; Bauminger, Shulman, & Agam 2003; but see Chamberlain, Kasari, & Rotheram-Fuller 2007). Autistics’ desire for friendship and connection may be frustrated by lack of social skills (e.g.,
Mendelson, Gates, & Lerner 2016), but for many, social interest itself is not lacking. This dissociation between social interest and social skills has also been noted clinically:

[A]t least some high-functioning\textsuperscript{12} adults with ASD have a strong--sometimes even fanatical--interest in what other people feel or think: They spend a great deal of time trying to infer what a certain behavior or utterance means. Often they describe this uncertainty about what is going on in other people’s minds as the greatest stressor in their lives. These adults clearly do not suffer from a lack of motivation to share things psychologically with others, but rather from the conflict between their desire to understand others and their inability to do so adequately. (Verbeke et al. 2005, p. 718)

In the face of this kind of empirical evidence, testimony, and clinical observation, why is there still a stereotype among laypeople that autistics are happiest when left alone (e.g., Huws & Jones 2010)? Why does a popular undergraduate textbook in abnormal psychology continue to claim a central feature of autism is “lack of interest in other people” (Comer 2013, p. 539)? Why is social motivation still considered by many scientists to be a “core deficit” in need of remediation, one that requires the autistic individual to appear more conventionally socially interested (e.g., Dawson 2008; Kohls et al. 2012; Mundy 2016)? We suspect there are at least four reasons.

First, autism has traditionally been considered a social disorder (e.g., Kanner 1943), and so attributing behavioral differences to a deficit in social motivation fits squarely within a very entrenched paradigm. Second, people tend to assume that others are as they act (Gilbert & Malone 1995). Autistics are assumed to lack an interest in others because they rarely engage in some behaviors that non-autistics expect as indicators of social interest (e.g., eye contact and

\textsuperscript{12} The distinction between “high” and “low” functioning is not clear in the autism literature, and these terms should be replaced with more precise ones (Bal, Farmer, & Thurm 2017). Additionally, we consider this terminology offensive because of the negative and uninformed inferences that tend to be made about individuals referred to as “low-functioning.”
pointing), and they regularly engage in behaviors that non-autistics believe indicate a lack of social interest (e.g., motor stereotypies and echolalia). But as we have discussed, alternative, even adaptive, explanations for these behavioral differences are possible.

Third, evidence showing diminished reward processing in autistics compared to non-autistics has been interpreted as providing the neurobiological basis for social motivation accounts of autism. Specifically, the cortical-basal ganglia circuit—considered to be “at the heart of the reward system” (Haber & Knutson 2010, p. 4)—is disrupted in autism (for a review, see Bottini 2018). For example, Scott-Van Zeeland, Dapretto, Ghahremani, Poldrack, and Bookheimer (2010) found reduced response in the ventral striatum to social rewards among autistic compared to non-autistic children. Similarly, Abrams et al. (2013) found diminished resting-state connectivity between areas of the temporal cortex where the human voice is processed and areas of the dopaminergic reward pathway in autistic compared to non-autistic children.

According to social motivation accounts, if reward networks in autistic brains do not respond to social stimuli in the same way they do in non-autistic brains, it follows that autistics do not find social stimuli as intrinsically rewarding as non-autistics do: “It is most likely that the lack of social-seeking tendencies in individuals with ASD is caused by an inability of the ‘wanting’ circuit to activate motivational behaviors, particularly in social contexts” (Kohls et al. 2012, p.

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13 The jury is still out on whether autistics respond differently to social rewards specifically, or rewards more generally (Bottini 2018).
This might explain why autistics are less likely to engage in attempts to seek out, orient toward, or maintain relations with other people (Chevallier, Kohls, et al. 2012).

The problem with this line of reasoning is that, as we have noted, many autistics claim to be very interested in other people. Kohls et al. (2012) acknowledge that some autistics may show greater social interest than others, but they seem to assume that this would be done in conventional ways. For example, in the context of intervention, they write that “[autistic] children who display stronger [conventional] social approach (‘wanting’) and fewer avoidance behaviors at treatment onset are more responsive to early behavioral interventions than are passive and avoidant children” (p. 14). This does not account for the alternative ways in which social interest may be expressed—presumably because those have not yet been widely considered or studied in autism (Section 5)—or for the alternative explanations for why autistics may not engage in conventional approach behaviors (Section 2).

Research is beginning to bridge the gap between neurobiological data, assumptions about autistic people’s social interest (formed on the basis of interpretations of conventional behavioral indicators), and autistics’ testimony about their behaviors. For example, consistent with autistic self-reports about eye contact feeling uncomfortable (see Section 2.1), Hadjikhani et al. (2017) found oversensitivity in the subcortical system when autistic participants were attending to the eye region of neutral and emotional faces. They conclude that, “In everyday life, such oversensitivity may lead to attempts to decrease one’s arousal levels, and first-hand reports

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14 The reward system can be dissociated into “wanting” and “liking” components, which are subserved by distinct but overlapping neural substrates (Berridge & Robinson 2003). Kohls et al. (2012) argue that the “wanting” circuit is specifically impaired in autism, but that the data are inconclusive about whether the “liking” circuit is also disrupted.
suggest that simply avoiding to attend to the eyes of others is one common strategy among individuals with ASD” (pp. 2-3). We hope that the arguments we have outlined in this paper underscore the importance of taking seriously the phenomenological experiences of those being studied.

A final reason for the belief that autistics are not socially interested is related to the self-fulfilling prophecy we alluded to in Section 1. It is possible—perhaps even likely—that for some, “both emotional poverty and an aversion to company are not symptoms of autism but consequences of autism” (Mitchell 2013, p. xv). After repeatedly being ignored or treated as not socially motivated, after repeatedly being told to act in certain ways and not others even when that is not possible, some autistic individuals report experiencing a form of learned helplessness whereby they give up trying to engage with others (e.g., Kedar 2012; Robledo et al. 2012). As one autistic informant explained, “I have been endlessly criticized about how different I looked, criticized about all kinds of tiny differences in my behavior. There’s a point where you say to hell with it, it’s impossible to please you people” (Robledo et al. 2012, p. 6). For this reason, we believe that in research, interventions, and daily interactions, it is far less dangerous to assume that someone is interested in other people and later learn that they were not than to assume that someone is not interested in other people and later learn that they were (see Donnellan 1984).

In conclusion, we have shown that the assumption that many of the behaviors associated with autism indicate that autistic people are socially uninterested is deeply problematic. It does not reflect how many autistic people describe themselves, it does not recognize the many reasons other than lack of social interest why autistic people may behave in unusual ways, and it can
have unintended negative impacts on how they are studied and treated. Understanding and supporting autistic individuals will require taking autistic testimony seriously, continuing to investigate explanations that are not related to social motivation for their unusual behaviors, and studying and capitalizing on unconventional—even idiosyncratic—ways in which they express their social interest.
APPENDIX

Autistics describe being socially interested

**Blackman (2005):** “It may be that the social deficits which are the cornerstone of an autism spectrum diagnosis tell us far more about the person who made them markers for such a diagnosis than about the child whom he observes. . . . [T]he whole testing procedure is somehow actually constructed on whether the tester observed the person to socialise in a way the tester understood to be socialisation” (p. 149).

**Burke (2005):** “Teachers can help me mollify my desire for friends. You can give students a chance to know me” (p. 250).

**Drew (2017):** “You might have been told that people with autism do not want social or romantic relationships, but this is a myth. While it is true that many of us struggle to create or maintain them, this does not mean that we do not want them. I have met some people with autism who, as a result of their experiences of repeated failure, have decided not to pursue friendships or relationships and focus on spending their lives on their own, but this is a rarity” (p. 127).

**Frugone (2005):** “Nobody would have bet I could become the social person that inside me I wanted to be” (p. 195).

“Glenn” **(quoted in Marks et al. 2000):** “I want to be known as just someone who, uh, someone who works hard and also, someone who likes to be around others” (p. 12).
**Harris (2015):** “Motivated as I was to find a place of belonging among my peers, I did not give up but started to talk to and hang around a group of ‘popular’ girls” (p. 41).

**Higashida (2013):** “I can’t believe that anyone born as a human being really wants to be left all on their own… The truth is, we’d love to be with other people. But because things never, ever go right, we end up getting used to being alone … Whenever I overhear someone remark how much I prefer being on my own, it makes me feel desperately lonely” (p. 27).

**Kedar (2012):** “[E]xperts deduce that because of my autism I am not a social person and that I like objects more than people. This is a big misconception” (pp. 99-100).

**Page (2009):** “Learning to make connections with people—much as I desperately wanted to—was a bewildering process, for they kept changing, and I felt like an alien, always about to be exposed” (p. 7).

**Prince-Hughes (2004):** “Many people, again lay and professional alike, believe that all people with autism are by definition incapable of communicating, that they do not experience emotions, and that they cannot care about other people or the world around them. My experience, both personally and with others like me, is that in many cases quite the opposite is true” (p. 31).

**Rentenbach & Prislovsky (2012):** “Many times, autistics revert to isolation by default rather than preference. It is infinitely easier to back away and not try to be included instead of oafishly
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stepping in and attempting to convey your intent to be a part. Loneliness is the most predominant side effect of our unique design” (p. 39).

Sequenza (2012): “Once I meet people or when I know I will meet people who know me only through my writings, my anxiety level is so high, I can act in very strange ways. I can look very childish and silly and I am very self-conscious about this. I can also seem uninterested, but this is only a self-preservation mask. I find it hard to communicate even if I have a lot of things I want to say” (p. 114).

Suskind (2014): “The way people see autistic folks is that they don’t want to be around other people. That’s wrong. The truth about autistic people is that we want what everyone else wants, but we are sometimes misguided and don’t know how to connect with other people” (p. 366).

Tammet (2006): “People with Asperger’s syndrome do want to make friends but find it very difficult to do so. The keen sense of isolation was something I felt very deeply and was very painful for me” (p. 78).

Triplett (one of Kanner’s [1943] original case studies, quoted in Donvan & Zucker 2010): “I just wanted those boys to think well of me.”

Yergeau (2012): “I wish you wouldn’t interpret my silence as silence. My silence is, in fact, a compliment. It means that I am being my natural self. It means that I am comfortable around
you, that I trust you enough to engage my way of knowing, my way of speaking and interacting” (p. 208).
References

http://dx.doi.org/10.1073/pnas.1302982110

http://dx.doi.org/10.1111/j.1749-818x.2007.00014.x

http://dx.doi.org/10.1111/j.1750-8606.2008.00044.x

http://dx.doi.org/10.1037/a0029851

http://dx.doi.org/10.1177/0956797616647520

http://dx.doi.org/10.1007/s10803-007-0509-7


http://dx.doi.org/10.1016/j.tics.2012.02.007


http://dx.doi.org/10.1016/j.dr.2010.10.001


http://dx.doi.org/10.1080/02674649366780271


http://dx.doi.org/10.1016/j.tics.2009.01.005


http://dx.doi.org/10.1016/j.rasd.2007.09.006


http://doi.org/10.1017/S0954579408000370


http://dx.doi.org/10.1002/mds.23994

http://dx.doi.org/10.1016/j.tics.2009.12.005

http://dx.doi.org/10.1007/BF00910648

http://dx.doi.org/10.1023/A:1014896707002

http://dx.doi.org/10.1016/S0163-6383(96)90008-9

http://dx.doi.org/10.1016/S0163-6383(81)80032-X

http://dx.doi.org/10.1111/desc.12386

https://doi.org/10.1080/17588928.2010.527434


https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4266404/  
https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4260421/  
http://dx.doi.org/10.1111/jcpp.12706  
http://dx.doi.org/10.1146/annurev-linguistics-030514-124824  
http://dx.doi.org/10.1111/j.1750-8606.2008.00039.x  
http://dx.doi.org/10.1037/0033-2909.117.1.21  
http://dx.doi.org/10.3389/fpsyg.2017.00438  
http://dx.doi.org/10.1007/s10803-007-0369-1
[http://dx.doi.org/10.3758/BF03211385](http://dx.doi.org/10.3758/BF03211385)


[http://dx.doi.org/10.1111/j.1467-7687.2007.00636.x](http://dx.doi.org/10.1111/j.1467-7687.2007.00636.x)


[http://dx.doi.org/10.1177/014272379301303804](http://dx.doi.org/10.1177/014272379301303804)


[http://dx.doi.org/10.1007/978-1-4899-2456-8_6](http://dx.doi.org/10.1007/978-1-4899-2456-8_6)


Frith, 207-42. Cambridge University Press.

http://dx.doi.org/10.1017/CBO9780511526770.007


https://doi.org/10.1371/journal.pmed.1000316


http://dx.doi.org/10.1080/09687591003701231


http://dx.doi.org/10.1080/15248372.2016.1199633


http://dx.doi.org/10.1007/s10803-017-3027-2


http://dx.doi.org/10.1111/j.1469-7610.2004.00304.x


http://dx.doi.org/10.1016/j.infbeh.2016.05.003


http://dx.doi.org/10.1016/j.bbr.2006.08.023


http://dx.doi.org/10.1016.S0021-9924(97)00087-7


http://dx.doi.org/10.1075/gest.5.1.11lis


http://dx.doi.org/10.1111/j.1467-7687.2004.00349.x
http://dx.doi.org/10.1111/j.1551-6709.2011.01228.x

http://dx.doi.org/10.1111/j.1469-7610.2012.02547.x

young children with autism spectrum disorder. *Adapted Physical Activity Quarterly* 31:

MacDonald, R., Green, G., Mansfield, R., Geckeler, A., Gardenier, N., Anderson, J., Holcomb,
http://dx.doi.org/10.1016/j.ridd.2006.01.004

Language Teaching and Therapy* 5: 249-61.
http://dx.doi.org/10.1177/026565908900500301

students with Asperger’s syndrome: Personal stories and how they can inform practice.
*Journal of the Association for Persons with Severe Handicaps* 25: 3-17.
http://dx.doi.org/10.2511/rpsd.25.1.3

http://dx.doi.org/10.1080/09541440500216028


https://dx.doi.org/10.1037/a0027446


http://dx.doi.org/10.1111/j.1548-1352.2009.01082.x


http://dx.doi.org/10.1177/1461445605054406


http://dx.doi.org/10.1177/1362361313487028


http://dx.doi.org/10.1111/1467-7687.00139


http://dx.doi.org/10.1023/A:1025850431170


https://doi.org/10.1177/1073191104273132

http://dx.doi.org/10.1002/aur.1910


Being vs. Appearing 77


http://dx.doi.org/10.1177/0145445514540914


http://dx.doi.org/10.1016/j.ridd.2004.11.005


http://dx.doi.org/10.1016/j.jaac.2011.12.017


http://dx.doi.org/10.1037/0012-1649.28.4.614


http://dx.doi.org/10.1901/jaba.1968.1-21


Soke, G. N., Rosenberg, S. A., Hamman, R. F., Fingerlin, T., Robinson, C., Carpenter, L.,


http://dx.doi.org/10.1023/A:1024454517263


http://dx.doi.org/10.1044/2015_AJSLP-14-0166


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