The Theory of Mind Atlas

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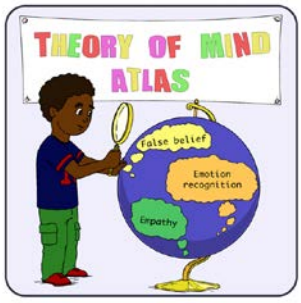
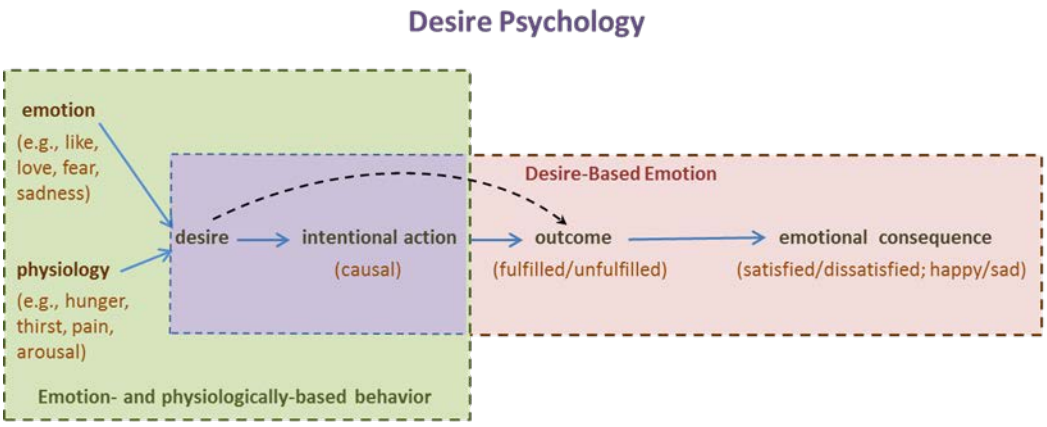


Item 59: My child understands that people are happy when they get what they want.

Subscale(s): Early

This item is intended to tap **desire-based emotion** which refers to the understanding of the causal relationship between desires and emotions: "the fulfillment of a desire results in a positive emotion, whereas its frustration elicits a negative emotion" (Rieffe, Meerum Terwogt, Koops, Stegge, & Oomen, 2001, p. 25). Desire-based emotion is part of 'desire psychology' (a.k.a. 'naïve psychology'; 'simple desire psychology'; Wellman, 1993; Wellman & Woolley, 1990) which involves understanding the links from desire, to intentional action, to outcome, and finally to the emotional consequences of outcome. For example, Stuart wants a cookie (desire), he reaches for a cookie (intentional action), he gets the cookie (outcome), and he is happy (emotional consequence). In this example, intentional action is a mediating force in the sating of desires but it need not be (Astington, 1993). Stuart might want a cookie but there are none in the house so he does nothing and the desire goes unfulfilled until, by a fortuitous event, his wife comes home with a box of cookies. Consequently, desire-based emotion often, but need not involve intentional causation. A simplified diagram of desire-psychology reasoning (adapted from Wellman & Bartsch, 1998) is presented in the Figure below. Note that the notion of desire psychology is broader than desire-based emotion (the focus of this discussion; refer to the pink box) in that it also includes an understanding of emotion-based behavior (i.e., understanding how emotions drive behavior; see description of item 4) and physiologically-based behavior (i.e., how physiological states drive behavior; see description of item 1) which is represented in the green box.



There is abundant evidence that around age 2 (with samples ranging from 14 months to 3 years), children understand desire-based emotion and can accurately predict emotional consequences when another's desire and the situational outcome are known (i.e., others are judged as 'happy' if the outcome was wanted and 'sad' if it was not) (Astington & Gopnik, 1991; Cassidy, 1998; Flavell, Flavell, Green, & Moses, 1990; Hadwin & Perner, 1989; Harris, Johnson, Hutton, Andrews, & Cooke, 1989; Repacholi & Gopnik, 1997; Wellman, 1993; Wellman & Bartsch, 1988; Wellman & Wooley, 1990; Yuill, 1984; Ziv & Frye, 2003). As such, there is good rationale for the construal of desire-based emotion as an early emerging theory of mind capacity. The same appears to be true for a broader 'desire-psychology' and, despite spirited debate surrounding the *nature* of children's understanding of *intentional* action, even very young children are adept at explaining and predicting behavior in the context of simple desires (i.e., likes, dislikes, wants) (e.g., Wellman, 1993; Wellman & Woolley, 1990). They also appear to understand something about the subjectivity of desire: that others' desires can differ from their own (a.k.a. 'diverse desires')[1] and that desires can vary within in the same person across time (a.k.a. 'desire change') (Cassidy, 1998; Flavell et al., 1990; Harris et al., 1989; Repacholi & Gopnik, 1997; Wellman & Bartsch, 1988; Wellman & Woolley, 1993). Thus, an understanding of desire-based emotion appears to emerge by age 2 and be firmly established by age 3 at which point they are disrupted only under strongly biasing conditions (e.g., having atypical desires or desires that violate cultural-norms; Rieffe et al., 2001).

The same is *not* true for the reasoning about thoughts and beliefs which is a more advanced theory of mind competency. It isn't until approximately age 4-years that children acquire a 'belief-desire psychology' (Wellman, 1993) which rests not only on an ability to reason about desire, action, and outcome but also other's internally represented beliefs and knowledge states and to understand how desires and beliefs are intertwined. Empirical support for this developmental sequence - from first grasping desire and only later belief - is extremely robust, appears to be universal in typical development (Avis & Harris, 1991), and is sourced from independent lines of research in developmental psychology (e.g., see our discussion of desire mental state terms [items 53,54] and cognitive mental state terms [items 7, 10, 39]). In fact, very young children are sometimes referred to as 'desire-psychologists' (Wellman, 1993) because "they appear to rely heavily on the construct of desire and rarely (if ever) recognize the role of beliefs when reasoning about human action" (Repacholi & Gopnik, 1997, p. 12).

Understanding of Desire in ASD

A few studies have assessed the comprehension of desire-based emotion in ASD. Tan and Harris (1991) found that children with ASD were just as able as IQ-matched neurotypical children in the ability to identify objects and situations that were desirable to them and recall and reassert these desires if unfulfilled. Peterson and Wellman (2005) found that the understanding of diverse desires was early emerging and intact in their sample with high-functioning ASD. Similarly, Baron-Cohen (1991) found that

[1] Although, as Astington (1993) has empirically demonstrated, "understanding that desires may be different for different people isn't the same as understanding that what is *desirable* may be different for different people" (p. 43). That is, when desires are not explicitly stated ("Jane wants a cookie") nor inferred from action ("Jane ate a cookie, why did she do that?), young children have shown egocentric tendencies regarding desire attribution. For example, when shown two books (a children's book and an adult's book) and asked what book an unfamiliar adult (a tall, bearded male) would chose, the majority of 3-year-olds say the adult would chose the child's book whereas 4- and 5-year-olds are far less likely to make this mistake.

children with ASD did not differ from a group of IQ-matched children with intellectual disability when asked to predict how a story character would feel when a desire was fulfilled or unfulfilled. This has lead some researchers to conclude that "autistic children have…at least a basic understanding of …desire" (Tan & Harris, 1991, p. 170). An important caveat, however, is that these studies explicitly stated desires or did not control for children's own desire preferences. As Phillips, Baron-Cohen, and Rutter (1995) explain, earlier studies suggest that children with ASD can understand desire-based emotion "because they could predict emotions based on the satisfaction or frustration of a person's expressed desire. However…this understanding of the satisfaction conditions of desire is fragile, and does not extend to situations in which information about goals is only implicit in the context" (p. 166). Under such conditions, persons with autism appear to experience difficulty understanding diverse desires and desire change (Phillips et al., 1995; Broekhor, Ketelaar, Stockman, van Zijp, Bos, & Rieffe, 2015).

Generally speaking, individuals with ASD tend to be stronger in their understanding of desires compared to beliefs. This is consistent with the developmental progression seen in neurotypical children and research demonstrating a tendency of children with ASD to explain and predict behavior in terms of desire (as opposed to thoughts and beliefs; e.g., Tager-Flusberg, 1992). Still, their "concept of desire may stem from a very limited concept: knowing that people like different things and are happy when they get them" (Phillips et al., 1995, p. 167). Desire understanding in ASD also appears to be in line with mental age and, when disrupted, has been attributed to a conceptual or motivational, rather than executive function, deficit (Baron-Cohen, 1991; Broekhof et al., 2015; Rieffe, Meerum Terwogt, & Stockmann, 2000).

Understanding of Desire in ADHD

We are aware of only one study specifically examining the understanding of desire-based emotion in ADHD. Downs and Smith (2004) compared children with ASD, children with attention-deficit hyperactivity disorder and oppositional defiant disorder (ADHD/ODD), and typically developing and found no group differences in children's ability to predict emotions on the bases of whether desires were or were not satisfied. It is important to note, however, that results are likely due to ceiling effects with all three groups achieving near perfect performance. As such, additional research is needed to clarify whether, to what degree, and under what conditions, children with ADHD may be at risk for poor desire-based emotion understanding.

Understanding of Desire in DoHH

A few studies have assessed the comprehension of desire-based emotion in children who are DoHH. For example, de Villiers and colleagues (cited in de Villiers, 2005) reported that "deaf children are good at predicting simple emotional reactions from stereotypical situations" (p. 291). Similarly, Peterson and colleagues (Peterson, Wellman, & Lui, 2005; Peterson, Wellman, & Slaughter, 2012) found that the understanding of diverse desires (i.e., predicting the food choice of a story character when the character's preference differs from one's own) was the earliest emerging of several theory of mind competencies tested (e.g., others were diverse beliefs, false beliefs, understanding emotional display rules). This is expected from a developmental standpoint and confirms the notion that "like typically developing children, an understanding of desire precedes corresponding understanding in the realm of belief" (Peterson et al., 2005, p. 513).

Although the developmental sequence is typical, there appears to also be a significant developmental lag in desire reasoning in children who are DoHH (with mixed evidence for a detectable lag for deaf children fitted with cochlear implants; Ketelaar, Rieffe, Wiefferink, & Frijns, 2012; Remmel & Peters, 2009). Using a sample of oral deaf children (ages 4-12) and a comparison of language-matched hearing children, Peterson (2003) reported that children with hearing loss experienced an approximate 5 year delay in their understanding of atypical diverse desires (e.g., a child who wants carrots instead of candy). Peterson (2003) concluded that understanding desires was a developmental precursor to false belief understanding and that the developmental lag was attributable to restricted exposure to familial conversations or overhearing in other contexts that elucidated the atypical diverse desires. In summary, understanding of desire-based emotion in stereotypical situations tends to be a strength in children who are DoHH as this understanding appears to be less dependent on complex language and more accessible from social interaction (de Villiers, 2005; Rieffe & Meerum Terwogt, 2000). Nonetheless, deaf children "may need a systematically organized conceptual framework of possible reasons why a person could have *atypical* affective reactions (loving carrots while hating candy), to be able to confidently predict how such unexpected taste preferences will translate into behavior" (pp. 189-190).

Interestingly, Rieffe, Meerum Terwogt, and Smit (2003) also found that DoHH children may develop a different rationale for emotional responses to an unsatisfied desire. Compared to age-matched hearing children, DoHH children in their study tended to concentrate more on the outcome of loss (which evoked sad sentiments) and less on the factors that cause the outcome (which evoke anger especially when the situation was controllable and the negative outcome preventable). As Rieffe et al. (2003) explained:

> "…deaf children tend to concentrate primarily on the fulfillment of desires in their emotion predictions and explanations, whereas they neglected the factors that had led to the negative outcome. Also in contrast with hearing children, they ignored the controllability of the situation. Possibly, deaf children keep their message short and simple to minimize a potential misinterpretation and they might hold on to this out of routine. Another explanation is that deaf children lack more advanced theory of mind capacities due to the limited means of communication they are faced with in a hearing environment. Consequently, they have restricted opportunities to learn from their own and others' experiences in this respect" (p. 159).

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