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Two-Year-Olds Distinguish Pretending and Joking

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Abstract

While children understand intentions to joke and pretend by 2 or 3 years, it is unclear whether they distinguish these intentional acts. Using a normativity paradigm, we found ($N=72$) 2-year-olds protest against jokes more than pretending, suggesting, for the first time, they distinguish these acts. Furthermore, toddlers protested more generally after pretend than literal or joke contexts, but only if intentional cues were used. Additionally, children objected more to joking than pretending after pretend and literal contexts, but not after joke contexts. Thus toddlers distinguish the intentional nature of pretending and joking. Furthermore, a pretend intentional context establishes specific rules to be followed, while a joke intentional context allows an open space to perform various types of acts.

Keywords: Pretend, Joke, Wrong, Action, Normativity, Cultural Evolution

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From infancy, humans understand what typical, or normative, acts look like (e.g., Hunnius & Bekkering, 2010; Kochukhova & Gredebäck, 2010; Reid, et al., 2009). However in a world which requires flexible thinking to push forward new innovations, humans must also understand the value of atypical acts – those which may appear to be wrong compared to the norm (e.g., Hoicka & Gattis, 2008; Kim, 2006; McAdam & McClelland, 2002; Mesoudi, Whiten, & Laland, 2004). Even more, humans must understand that different types of wrong acts have different meanings – pretending, jokes, lies, metaphors, and irony are all wrong, but people produce these different wrong acts for different reasons (Hoicka & Gattis, 2008; Hoicka, Jutsum, & Gattis, 2008; Leekam, 1991). Without the ability to navigate this complex world containing both normative and wrong acts, it would be difficult to know when to learn, bond, trust, or imagine (e.g., Carpenter, Akhtar, & Tomasello, 1998; Harris & Kavanaugh, 1993; Lynch, 2002; Sutherland & Friedman, 2012).

One question is whether young children really distinguish different types of wrong acts, each with their own meaning, or whether they view all wrong acts as the same. Research using verbal tasks found that from around 7 or 8 years, but not younger, children differentiate irony from lies (Andrews, Rosenblatt, Malkus, Gardner, & Winner, 1986; Winner & Leekam, 1991). Other verbal tasks found children distinguish joking and lying from around 5 or 6 years (Leekam, 1991; Sullivan, Winner, & Hopfield, 1995), and pretending and lying from around 4 years (Taylor, Lussier, & Maring, 2003). As well as requiring verbal comprehension and production skills (since lying was used as a comparison to the other types of intentions) most of these tasks required children to understand second-order mental states (e.g., intending for someone else to believe/not believe information). These task demands would make such a task impossible for 2-year-olds to pass. By using an action-based task instead of a verbal task,

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and reducing the socio-cognitive demands, younger children may distinguish different types of wrong acts.

Two types of wrong acts that young children encounter on a regular basis are pretending and joking. Pretense begins to develop as early as 15 months, and continues to develop and change until around 4 years (e.g., Bosco, Friedman, & Leslie, 2006; Harris & Kavanaugh, 1993; Howes & Matheson, 1992; Howes, Unger, & Seidner, 1989; McCune-Nicholich, 1981; Onishi, Baillargeon, & Leslie, 2007). Humor begins to develop in the first year, and continues to develop and change throughout childhood (e.g., Addyman & Addyman, 2013; Hoicka & Akhtar, 2011, 2012; Hoicka & Gattis, 2008; Hoicka, et al., 2008; Hoicka & Wang, 2011; Loizou, 2005; McGhee, 1979; Mireault, et al., 2012; Mireault, et al., 2014; Reddy, 2001; Sroufe & Wunsch, 1972). From 3 years, pre-schoolers understand intentions to pretend (e.g., Rakoczy, Tomasello, & Striano, 2004). Children copy actions which are technically wrong, such as “coloring” with a marker with the cap still on, if cued as pretending rather than cued as trying. From 2 years, they distinguish intentions to pretend from trying after receiving training (Rakoczy & Tomasello, 2006). From 2 years toddlers understand humorous intentions (Hoicka & Akhtar, 2011; Hoicka & Gattis, 2008). Toddlers copy wrong actions, such as putting a hat over one’s eyes, when cued as a joke versus when cued as a mistake. Both pretending and joking involve the cognitive ability to distinguish when an act is normative or wrong. However, unlike lying, the extra demands are limited (see Hoicka & Gattis, 2008). For joking, at its most basic, one must recognize that a wrong act was intentionally performed, and perhaps understand the act was meant to be playful (e.g., Hoicka & Gattis, 2008). For pretending, one must also understand that the wrong act is right in a possible world, i.e., that if the counterfactual world was true, the act would be right (e.g., Nichols & Stich, 2003).

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Additionally, recent research suggests 16-to 24-month-olds distinguish when their parents pretend or joke (Hoicka & Butcher, in press). Across two studies, parents acted out specific joke and pretend acts for their toddlers. For instance, they might pretend to drink from an empty cup, or they might joke that they are drinking by putting a cup of water to their elbow, following typical instances of joking and pretending in this age group. Even though both acts were technically wrong, toddlers showed more belief through their actions (e.g., repeating target actions) during pretend versus joke contexts. However these behaviors were driven, at least in part, by parents' behaviors, as children's dis/belief was expressed more often than not within 5 seconds of parents' corresponding dis/belief. Thus the ability to distinguish joking and pretending must be assessed in a purely experimental setting. Thus if a non-verbal paradigm was used, focussing on two simpler forms of wrong acts, pretending and joking, it may be possible to determine whether young children distinguish different types of wrong acts. This would suggest they have some understanding of their underlying meanings.

A growing body of research demonstrates that from 2 years children understand a great deal about normativity. They expressly state when one person does an act which violates the current schema. Research found 2- and 3-year-olds protest, critique, and teach when others act wrong as a mistake (Rakoczy, Warneken, & Tomasello, 2008), or even when others violate a pretend schema, e.g., if a sponge has been established to be a pretend bread roll, children protest when it is being used as another object, including a sponge (Rakoczy, 2008; Wyman, Rakoczy, & Tomasello, 2009). Children may reinforce wrong acts in the pretend tasks because they have a deep understanding of pretense, including the idea that a wrong act must represent a normative act. Alternatively, children may enforce the last intentional action they saw with an object (even if a wrong action), without fully understanding *why* someone would perform these wrong actions.

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To determine whether young children really understand the meanings behind different types of wrong acts, or whether they simply understand that sometimes we do things wrong on purpose, without understanding why, we must directly compare how young children treat two types of wrong acts. Pretending and joking are ideal as children come across these acts in everyday interactions from toddlerhood (pretending) or infancy (joking), and so should be familiar contexts for 2-year-olds. In this study we took advantage of the types of responses children give in normativity tasks (i.e., protesting; Rakoczy, 2008; Rakoczy, et al., 2008; Wyman, et al., 2009) to determine, for the first time, whether young children distinguish pretending and joking. An Experimenter (E1) either pretended or joked with the child. Then another experimenter (E2) entered the room and asked to play. E1 left the room and then E2 pretended and joked (all different actions to those of E1). Crucially, we ran two versions of this task. One condition involved E1 giving cues that she was pretending (saying she was pretending; sound effects) or joking (saying she was joking; laughter), and E2 also giving cues (pretend: sound effects; joking: laughter). In the other condition, E1 and E2 gave no clear cues they were joking or pretending, i.e., they just smiled no matter what they did.

Since intentional cues allow 2-year-olds to understand intentions to pretend (with training), and joke (Hoicka & Akhtar, 2011; Hoicka & Gattis, 2008; Rakoczy & Tomasello, 2006), we expected children to distinguish the intentional contexts when cues were used, but not when no cues were used. This would indicate that intentional cues allow children to understand the intentions, and hence the meanings, behind the wrong actions. Since pretending provides a normative structure (e.g., Wyman, et al., 2009) and joking encourages creativity, and hence openness to ideas (Ziv, 1983), we predicted toddlers might object more in general after E1 expressed intentions to pretend versus intentions to joke. Alternatively, if toddlers view both pretend and joke intentional contexts as situations invoking specific norms to pretend or joke respectively, we would expect toddlers to object to joking more than

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pretending after a pretend context was established, but we would expect the opposite pattern after a joke context was established.

We also ran two follow-up studies to better understand our main results. In the first study, E1 acted literally, while E2 joked and pretended (with cues). This was to determine whether children distinguish pretending from literal intentional contexts. In the second study, E1 pretended (with cues), while E2 also pretended (with cues). However, half of E2's actions were exactly the same as E1's, and half were different, to examine how specific norm-expectations are.

Study 1a

The goal of the first study was to determine whether 2-year-olds distinguish pretending and joking. We chose a naturalistic design, where both experimenters provided cues that they were pretending (e.g., saying, "I'm pretending...", sound effects) or joking (e.g., saying "I'm joking...", laughter), to give children the best possible chance of making this distinction. We also tested a separate group of children on a less naturalistic design where no cues were given (since parents generally do give cues that they are joking or pretending, Hoicka & Butcher, in press; Hoicka & Gattis, 2012; Hoicka, Jutsum, & Gattis, 2008; Lillard, et al., 2007; Lillard & Witherington, 2004; Mireault, et al., 2012; Reissland & Snow, 1998) to determine whether children responded to the actions only, or the intentions in relation to the action (signalled by cues). If only actions are important, we would expect the same results across both conditions with and without cues. If cues are important to understanding the intentions, we would expect interactions between the cues and contexts.

Method

Participants. There were 58 two-year-olds ($M = 30$ months, 16 days, $SD = 3$ months, 15 days, $Range = 24$ months, 13 days – 35 months, 15 days, 26 male). One of the parents did not give the child's exact date of birth. Forty-three children were Caucasian, 2 were of

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mixed ethnicity, and 13 parents did not report their child's ethnicity. Thirty-seven children lived in England, and 21 lived in Scotland. Parents had a Postgraduate degree (17), Undergraduate degree (18), High School diploma (7), or not reported (16). One additional participant was excluded due to non-cooperation and one was excluded due to experimental error. Participants were recruited from parent and toddler groups, posters, online advertising on parent websites, and a Bounty Pack mail-out (where parents' addresses were bought from a company). Children were randomly assigned to each condition. The study was approved by the Psychology Department's ethics committee, and parents signed a written consent form.

Materials. The objects comprised a tea set including a teapot, tea cups, saucers, side plates, a plastic knife, teaspoon, dishwashing bowl and sponge. Sessions were video-recorded with a Sony Handycam.

Design. The experiment was a between-subjects and within-subjects design. The between-subjects independent variables were whether the initial context involved joking or pretending, and whether or not the experimenters gave cues to joking or pretending throughout the experiment. The within-subjects independent variable was whether the test actions involved joking or pretending. Each participant was trained in one of two contexts: pretending, which involved four pretend actions, or joking, which involved four joke actions. Pretend actions were designed to resemble prototypical pretense in early development, and, importantly, not to look like jokes (e.g., McCune-Nicolich, 1981). Similarly, jokes were designed to resemble prototypical jokes in early development, and, importantly, not to look like pretend actions (e.g., Hoicka & Akhtar, 2012). This was to ensure the studies captured the essence of joking and pretending without confounding the two. Specifically, we did not want to use a joke that looked like pretending, or vice versa. Each child was then tested on two pretend trials followed by two joke trials, or vice versa. Thus for half the children the test actions initially matched the context, and for half they did not. Importantly, compared to

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previous normativity tasks, the test trial actions were all different to the context actions, whether contexts and test trials matched or not. This was to ensure children responded to the nature and intentions of the contexts and test trials (i.e., that they expressed pretending or joking) rather than determining whether children match the exact same wrong actions (see Hoicka & Akhtar, 2011, for a discussion). A second independent variable was whether the experimenters gave cues that they were joking or pretending, or not. For half the children, the experimenters gave cues, and for the other half, they did not. The dependent variable was whether children objected to or corrected the action demonstrated by the second experimenter.

Procedure. Each session was conducted by two experimenters. At the beginning of the session both experimenters engaged the child in play until children were comfortable. Toys used at this stage were not similar in any way to the toys used during the actual experiment. Once this warm-up stage was over, the experiment began.

Experimenter 2 (E2) stated she had to leave the room for a moment and did so. Then experimenter 1 (E1) brought out the tea set. In the pretend context of the Cues condition, E1 said, “Let’s play a game with the tea set! I’m going to pretend with the X [e.g., teacup]”, and then performed a pretend action (e.g., pretending to drink from teacup, see Appendix A, supplementary materials), and smiled. E1 then said, “Can you do it?” and the child was encouraged to have a turn. This was repeated for a total of four pretend actions. In the joke context of the Cues condition, E1 said, ‘How about we be really silly? Let’s be really silly with the tea set!’ E1 then stated, “I’m going to joke with the X [e.g., teacup]”, and then performed a joke action (e.g., putting a teacup upside down on her head, see Appendix A) and laughed. E1 then said, “Can you do it?” The child was then encouraged to have a turn. This was repeated for a total of four joke actions. Regardless of what children did, they were given the same feedback: “Good job”.

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After four actions were demonstrated, E2 entered the room and requested to join in their game. E1 accepted and then left the room saying, “I just need to pop out for a moment – I’ll be right back.” E2 performed two pretend actions followed by two joke actions, or vice versa. Before each action E2 said, “Look at what I can do!” and then performed the action, e.g., using the knife to cut the “cake” (really a block, pretend action); or putting the knife behind her ear (joke action; see Appendix B for a full list of actions). E2 made sound effects and smiled after pretending, and laughed after joking. Please note that all test actions were new compared to the actions during training so that participants would not have seen them before in the original context. If the child did not object while E2 performed the action, E2 asked, “Am I playing right?” If the child responded, “yes”, E2 moved onto the next trial. If the child responded “no” or did not respond, E2 asked, “What should I be doing?” and the child was given the opportunity to demonstrate. These prompts were used to encourage every opportunity for children to object, and were used regardless of context or test trial actions. E2 used the same script whether the action involved pretending or joking, and whether it matched the original context or not. Regardless of the feedback children gave, they were given the same positive generic feedback at the end of each trial, e.g., “Good job”.

The No Cues condition was the same as the Cues condition, except when E1 performed either a joke or pretend action, she said, “Look what I can do”, then performed the action, then smiled. E2 followed the same script as the Cues condition, except she never gave cues that she was joking or pretending, and smiled after performing an action, regardless of whether it involved joking or pretending. Therefore children might assume that experimenters were ignorantly making mistakes when joking, even though they were happy (see Hoicka & Akhtar, 2011). This is also possibly the case for pretending. E2 was blind to the goals of the study, as well as which condition the child was in.

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Coding. All sessions were coded from videotape. The coding system was based to some extent on Rakoczy (2008). If children objected to E2's behavior (e.g., saying, "No", or "Stop") immediately, *and* dictated what they ought to do (e.g., modelling another behavior), the trial received a score of 4. If children immediately objected *or* corrected E2, the score was 3. If children objected *and* corrected after a prompt ("Am I playing right?") the score was 2. If children objected *or* corrected after a prompt, the score was 1. If there was no objection or correction the score was 0. Seven (13%) of the videos were coded for agreement. The inter-rater reliability was excellent, weighted *Cohen's Kappa* = 0.98.

Results & Discussion

The data were skewed, therefore we analyzed data using non-parametric statistics. The dependent variables for all analyses were whether children ever objected/ corrected or not. We modeled the likelihood of responses using logit mixed effects models with the LME4 package (Bates, Maechler, & Dai, 2008) in R (R Development Core Team, 2009; see Hoicka & Akhtar, 2011; and Jaeger, 2008, for details on how to use this statistic). For each analysis, we first built a base model, which included an intercept, and Participant as a random variable. Initial analyses found no effects or interactions of Trial Number and Prompting (i.e., whether children were prompted, or not, in the case that they spontaneously objected).

See Figure 1 for the percentage of children who objected, by Cues (Cues, No Cues), Training Context (Pretend, Joke), and Test Trial Actions (Pretend, Joke). We show information about the percentage of objections which were spontaneous versus prompted. However, initial analyses found that using spontaneous objections only gave a weaker overview of the data than using all objections, therefore we focus on all objections here. The best model (*log-likelihood* = -93.60, *N* = 232) found children were significantly more likely to object when test trials involved joke actions, *Odds-Ratio*, *OR* = 5.50, *p* = .0002, when the

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first pair of test trials mismatched the training trials, $OR = 4.21, p = .0416$, and there was an interaction of Cues and Context, $OR = 59.92, p = .0044$.

To follow up the interaction, we tested the Cues and No Cues conditions separately. The best model for the Cues conditions ($log-likelihood = -48.68, N = 120$) found children were significantly more likely to object when test trials involved joke actions, $OR = 4.38, p = .0087$, when a pretend context was originally established, $OR = 9.83, p = .0052$, and when the first pair of test trials mismatched the training trials, $OR = 4.77, p = .0508$. There was also an interaction of Order and Context, $OR = 4.77, p = .0275$.

To follow up the interaction of Order and Context we tested Pretend and Joke Contexts separately. The best model for the Pretend Context with Cues ($log-likelihood = -61.57, N = 60$) found children were significantly more likely to object when test trials involved joke actions, $OR = 3.96, p = .0439$, and when the first pair of test trials involved joke actions, $OR = 11.64, p = .0020$. See Figure 2 for the percentage of children who objected, by Order, in the Pretend Cues condition.

The base model for the Joke Context was not improved by Action, Order, or the interaction of these. Therefore children in the Joke Context objected and corrected equally across actions and orders.

The best model for the No Cues conditions ($log-likelihood = -39.61, N = 112$) found children were more likely to object when test trials involved joke actions, $OR = 21.12, p = .0116$. Planned follow-up analyses looking at each Context on its own found neither Pretend nor Joke Contexts on their own were improved by Action.

Overall, across conditions, children objected to joke actions more than pretend actions, suggesting children view joke actions as more wrong than pretend actions in general. This is in line with theory suggesting joking is more wrong than pretending (Hoicka & Gattis, 2008).

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Cues were also important. While children in the cues condition could distinguish joke and pretend intentional contexts, children in the no cues condition could not. Cues may thus be important for helping children to determine the intention behind E1's game, while a lack of cues may have made the intention behind the game unclear. In particular, the joke condition with no cues may have just looked like a series of mistakes rather than the set-up of a game (see Hoicka & Akhtar, 2011; Hoicka & Gattis, 2008). The pretend context without cues could have also been interpreted as mistakes (see Rakoczy & Tomasello, 2006; Rakoczy, et al., 2004).

There was a general effect of context within the cues conditions such that children objected more overall in the pretend condition with cues than the joke condition with cues. It is important to note that there was no effect of context in the no cues condition, suggesting cues are important to establishing the intentions and hence meanings behind the actions. One possibility is that pretending sets up a normative situation where children not only expect E2 to perform pretend actions, but to perform the same pretend actions as E1 (e.g., Rakoczy, 2008; Wyman, et al., 2009). A second possibility is that children thought of the pretend context with cues as being literal rather than pretending, leading children to try to reinforce norms more generally. In contrast, joking might provide a situation where the goal is to violate norms, therefore anything and everything might be accepted to a greater degree.

A third possibility is that children objected more overall to the pretend context because they expected E2 to establish trust by initially pretending as well, and for half of the children, this was not the case. An order effect found children who participated in the pretend context with cues condition protested more overall if E2 initially joked. This suggests children judged that E2 was not trustworthy if she initially could not match her actions to the original intentional context. Children may have judged E2 as generally incompetent once she started performing jokes when the goal was to pretend, and children may have found it

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difficult to forgive E2, even when she started following the rules of the game. Alternatively, once E2 violated the rules of the game, children may have considered E2 to be incompetent, and thus held her to a higher standard when eventually pretending, expecting her to do the exact same actions to show true competency.

Interestingly, order effects were not found in any other condition. In the no cues conditions, this may be because children did not understand the intentional context, since no cues were given (Rakoczy, Tomasello, & Striano, 2006). In the joke condition with cues, it may be the case that children were accepting of all actions as joking gives permission to do anything, whether it violates norms or not.

Study 1b

Study 1a found that children in the pretend context with cues objected more compared to children in the joke context with cues. One possibility is that children thought the pretend actions were in fact literal, and so were reluctant to accept violations of literal acts. This is unlikely as children responded differently when a pretend context was set up without cues. However, to rule out this possibility, in Study 1b, we examined whether children distinguish a literal context with cues from the pretend and joke contexts with cues in Study 1a. We also sought to determine whether children object more to joke than pretend actions when the initial set up is literal, and hence a separate intentional context altogether.

Method

Participants. There were 14 two year olds ($M = 28$ months, 14 days, $SD = 3$ months, 15 days, $Range = 24$ months, 24 days – 34 months, 23 days, 8 male). Nine children were Caucasian, 3 were of mixed ethnicity, and 2 parents did not report their child's ethnicity. All children lived in England. Parents had a Postgraduate degree (5), Undergraduate degree (4), High School diploma (3), or not reported (2). No participants were excluded. Participants were recruited as in Study 1a.

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Materials. The objects were the same as Study 1a, with the addition of water and rice cakes.

Design. The experiment was a between-subjects (compared to the cues conditions of Study 1a) and within-subjects design. Each participant was trained in the literal context, which involved four literal actions. Each child was then tested on two pretend trials followed by two joke trials, or vice versa. The dependent variable was whether children objected to or corrected the actions demonstrated by the second experimenter.

Procedure. This was the same as Experiment 1a, except the initial context was literal. E2 stated she had to leave the room for a moment and did so. Then E1 brought out the tea set and said, “Let’s have a snack now” and then performed a literal action (e.g., literally drinking water from teacup, see Appendix A), and smiled. E1 then said, “Can you do it?” and the child was encouraged to have a turn. This was repeated for a total of four literal actions. Regardless of what children did, they were given the same feedback: “Good job”. After four actions were demonstrated, the experiment continued as in the Cues condition of Study 1a.

Coding. Coding was the same as Study 1a. Three (21%) of the videos were coded for agreement. The inter-rater reliability was perfect, $k = 1.00$.

Results & Discussion

See Figure 1 for the percentage of children who objected, by Action. We ran an analysis combining data from the Cues condition (Joke Context, Pretend Context) of Study 1a and the Literal Context condition from Study 1b to determine whether children responded differently when a literal context was first established. The best model ($\log\text{-likelihood} = -77.40$, $N = 176$) found children were significantly more likely to object or correct when test trials involved joke actions, $OR = 5.04$, $p = .0006$. Difference contrasts, comparing Literal to both Pretend and Joke Contexts, found children were more likely to object or correct when a

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Pretend versus Literal Context was established, $OR = 4.24$, $p = .0371$. However, there was no difference between the Literal and Joke Contexts.

We also examined whether children objected to or corrected joke actions more than pretend actions when a literal context was established. The best model ($\log\text{-likelihood} = -23.17$, $N = 56$) found children were more likely to object or correct when test trials involved joke actions, $OR = 7.25$, $p = .0389$. There was no order effect.

Study 1b shows toddlers also object more to jokes than pretending when a literal context has been initially set up. This gives some support to the view that children in Study 1a may have thought E1 was being literal rather than pretending in the pretend condition with cues. However, combining studies 1a and 1b demonstrates that pretend contexts are not viewed as literal contexts. Children object or correct more often after the pretend context with cues than the literal context with cues. This may suggest pretending provides a special normative context where children are expected to replicate specific pretend actions, or perform pretend actions more generally. It may seem surprising that children are more open after a literal context has been set up - one that is theoretically more normative than a pretend context. However, most of our lives are literal, and so a literal context may not mark out anything special, i.e., it may not mark out that the rules of a game are being established. Therefore children may make no expectations of a new person when the initial person has just acted normally. In contrast, a pretend context may mark out a specific time to play according to a set of normative rules (Rakoczy, 2008; Wyman et al, 2009), while a joke context may mark out a specific time to play, but to avoid following any rules (Ziv, 1983).

Study 2

In Study 1, E2 always performed different actions to E1, even if they followed the same intention. In previous research on norms in pretend play the test trials compared the same pretend action that E1 performed to a pretend action E1 had not performed, and

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children objected more to the pretend action E1 had not performed (Rakoczy, 2008). Alternatively, E2 either displayed an intention to pretend as E1 did, or to act literally, and then in both conditions demonstrated a literal action, that was different to the last pretend action E1 had performed (Wyman, et al., 2009). Children objected more when E2 intended to match E1's intention to pretend, but performed a different action, rather than when she did not intend to match her intentions. One question this raises is whether children in previous research objected more to different actions because they violated the intention to pretend more generally, or because they violated the intention to perform specific actions. Similarly, perhaps children in the pretend context of the cues condition in Study 1a objected more overall simply because all actions, pretend and joke, were different to the original actions set up in the initial context. If pretending provides a special normative situation where children must follow specific actions, then we would expect toddlers to object and correct more in response to E2 performing different pretend actions compared to the same pretend actions as E1. However, Study 1a suggests children objected more to pretending when E2 initially joked. Therefore it is also possible that children in Study 1a objected to any action more, overall, due to children being untrusting of someone who initially went against the intentional context of the game (to pretend) rather than the fact that the specific actions did not match. If this is the case, and the overall intention to pretend is more important than the exact pretend actions displayed, we would expect no difference between same and different pretend actions.

Method

Participants. There were 14 two year olds ($M = 28$ months, 11 days, $SD = 3$ months, 2 days, $Range = 24$ months, 7 days – 33 months, 0 days, 9 male). Eleven children were Caucasian, 1 was Asian, and 2 were of mixed ethnicity. All children lived in England. Parents had a Postgraduate degree (2), Undergraduate degree (8), High School diploma (3), or not reported (1). No participants were excluded. Participants were recruited as in Study 1a.

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Materials. The objects were the same as Study 1a.

Design. The experiment was a within-subjects design. All participants were trained in a pretend context which involved four pretend actions (with cues). Each child was then tested on two pretend trials that were identical to the initial context, and then two pretend trials that were different to the initial context, or vice versa (all with cues). Thus for half the children the test actions initially matched the context, and for half they did not. The dependent variable was whether children objected to or corrected the actions demonstrated by the experimenter during test trials.

Procedure. The initial context was set up by E1 in the same way as the pretend context with cues in Study 1a. The different pretend test trials were those performed by E2 in Study 1a (with cues). The same pretend test trials were two of the trials that E1 performed (see Appendix B)

Coding. Same as Study 1a. Three (21%) of the videos were coded for agreement. The inter-rater reliability was perfect, $k = 1.00$.

Results & Discussion

Children objected on none of the Same trials, and 10.7% (CI = 0%-21.43%) of the Different trials. There were no effects of Similarity or Order (Same First, Different First). Therefore toddlers do not object more to different pretend actions than the exact ones modelled. This suggests pretending does not set up a context where children expect others to perform the exact same actions. Instead, this suggests children follow the general intentional context (that of pretending) rather than specific actions. Thus it is likely that children objected more overall in the pretend context with cues in Study 1a because, for half the children, E2 initially violated the general intentional context of the game. Indeed, it is interesting to note that the percentage of objections to different pretending is quite similar in the pretend condition with cues when E2 first pretends (see Figure 2), and Study 2. This

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further lends support that the order effect was crucial in interpreting the findings for Study 1a. It is also likely that in past research (Rakoczy, 2008; Wyman, et al., 2009) children objected more to a different action because it violated the underlying intention of the game, rather than because it was simply different to the original.

General Discussion

Distinguishing Pretend and Joke Actions

Study 1 shows 2-year-olds distinguish two types of wrong actions: pretending and joking. Thus children do not view these types of acts as the same. When all conditions were combined, and when the pretend with cues and literal with cues conditions were analysed on their own, children objected to or corrected joke actions more than pretend actions. This suggests children found joking to be more wrong overall than pretending. This falls in line with previous definitions of pretending and joking. While pretending is technically wrong, it is right in one's imagination (e.g., Hoicka & Gattis, 2008; Nichols & Stich, 2003). In contrast, joking, at its most basic, need only be wrong (Hoicka & Gattis, 2008). These data also converge with naturalistic data demonstrating both parents and toddlers show more belief in pretense versus joking, even though both are technically wrong (Hoicka & Butcher, in press).

A question remains as to how children distinguished these action types. First, they may have done this based on the cues given during the initial contexts and test trials. This might be the case if children only objected more to joking than pretending in the pretend and literal contexts with cues. However, Study 1a also found that children objected more to joke than pretend actions in the joke and pretend contexts when no cues were given (when analysed together). Therefore, it is not the case that cues were required to make this distinction. Given the results of the no cues conditions, children must have distinguished joke and pretend actions based on the actions themselves to some extent. Indeed, joke actions

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looked less canonical than pretend actions. This was an intentional part of the design as the actions were meant to reflect typical instances of joking and pretending, and in naturalistic settings, joke actions do appear to be more wrong than pretend actions (e.g., McCune-Nicolich, 1981; Hoicka & Akhtar, 2012).

Cues and Intentions

While toddlers could distinguish joke and pretend actions on their own, the intentional cues also mattered. Children distinguished joke and pretend contexts in Study 1a if cues were given, but they did not do so when no cues were given. In particular, in the cues conditions, children objected more overall after a pretend context had been set up compared to a joke context. This was likely due to order effects, where children objected most of all if E2 initially joked after E1 pretended, even if she went back to pretending in then end. Additionally, they were more likely to object to joke than pretend actions in the pretend context with cues, but not in the joke context with cues. This suggests cues are important in helping children determine others' intentions. Therefore being exposed to pretend or joke actions alone was not enough for toddlers to accept that the intention of the game was to joke or pretend.

Past research found the word “pretend” helps children identify acts of pretense (Rakoczy, et al., 2006), and pretend cues more generally allow toddlers to identify intentions to pretend (Rakoczy & Tomasello, 2006; Rakoczy, et al., 2004). Therefore the language and cues could have signalled to children that E1 intended to pretend, and set up a pretend game. Similarly, past research found laughter allows toddlers to distinguish jokes from mistakes when actions are the same (Hoicka & Akhtar, 2011; Hoicka & Gattis, 2008). Study 1 converges with past research showing that when a pretend intentional context is established, children not only copy pretend actions more (Rakoczy, et al., 2004), and reject literal actions more (Wyman, et al., 2009), but also expect others to match the intentional context. It also

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converges with past research showing that when a humorous intentional context is established, children not only copy wrong actions more (Hoicka & Akhtar, 2011; Hoicka & Gattis, 2008), but also protest against them less.

Study 1 suggests children tracked the intentions behind the contexts, rather than the specific actions only. This may suggest children not only distinguish intentions to pretend from trying (Rakoczy, et al., 2004), and humorous intentions from mistakes (Hoicka & Gattis, 2008), but also distinguish two types of intentions to do the wrong thing, joking and pretending, from 2 years. This is therefore potentially the earliest point at which children understand that people can intend to do the wrong thing for different reasons, earlier than distinguishing lying from joking, pretending, or irony from lies (Andrews, et al., 1986; Leekam, 1991; Sullivan, et al., 1995; Taylor, et al., 2003; Winner & Leekam, 1991). This in turn indicates that young children distinguish the meanings behind different types of intentions, showing a deeper understanding of intentions beyond only understand that acts can be intentional or unintentional (e.g., Carpenter, et al., 1998; Sakkalou & Gattis, 2013).

Normative vs. Permissive Environments

One of our original predictions was that we may find an interaction of contexts and actions in the cue conditions. Within the pretend context with cues, children objected to jokes more than pretending. However we did not find that children objected more to pretending than joking in the joke context with cues. This suggests children did not construe pretend and joke intentional contexts as situations invoking specific norms to pretend or joke respectively. Instead, children interpreted the intentions more broadly. When a pretend context was introduced with cues, children were more likely to object to actions in the test trials than if either a literal or joke context with cues had been introduced. These findings suggest a pretend context should be treated seriously. Children were not only more likely to object to joke actions after a pretend context had been established, but they were also more likely to

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object to pretend actions, in particular if E2 performed joke actions first. This converges with evidence that pretend contexts help children to practice normative structures and learn and generalize information in the real world (e.g., Hopkins, Dore, & Lillard, 2015; Rakoczy, 2008; Sutherland & Friedman, 2012, 2013; Weisberg & Gopnik, 2013; Wyman, et al., 2009). Therefore, in the current study, toddlers may have objected to such a great extent during the pretend context with cues because the intentional context dictated learning about serious information, and so introducing norm-violating information could have been seen as violating the underlying intentional context of learning.

In contrast, after a joke context with cues, anything goes. Whether E2 pretended or joked during test trials, children were less likely to object to E2 overall. Children were also no more likely to object to joke than pretend actions, or vice versa. Joke intentional contexts may signal a space in which norms may be violated, allowing any type of action, pretend or joke, to be accepted to a greater degree. This converges with evidence that joking contexts prime people to be more creative (e.g., Ziv, 1983). Thus not only do young children distinguish pretending and joking, but these two types of wrong acts may help form the bases of two different aspects of cultural evolution: transmission and innovation (e.g., Mesoudi, et al., 2004). Pretending may help transmit culture to children, while joking may allow children to accept innovation (and perhaps innovate themselves). Future research should explore these possibilities.

It is intriguing that a pretend context should elicit more normativity than a literal environment, which, technically, adheres to norms to a greater extent than pretending. One way to explain this is that most of our lives involve acting literally. Therefore, when toddlers saw E1 act literally, it may have created no expectations as to how E2 should act. They may have thus objected more to joke than pretend actions due to the actions themselves, rather than the intentional contexts, as in the no cues conditions.

Same vs. Different Actions

In previous studies on normativity and pretense (e.g., Rakoczy, 2008; Wyman, et al., 2009), the question was whether children objected more when E2 claimed to follow the same intentional (pretend) context as E1, but did a different action to that modelled by E1. In Study 1, the pretend and joke test actions were all novel compared to the actions in the initial contexts. Therefore the pretend test trial actions were different to the pretend context actions. Thus children might not have expected E2 to do just any pretend actions to appropriately join in the game. Rather, children may have expected E2 to do the same specific pretend actions E1 had modelled. This could explain why children objected in the pretend context with cues more than the joke context with cues overall. However, Study 2 found children did not object more when E2 performed different pretend actions rather than the same pretend actions as E1, suggesting that it is not the specific actions that count, but the general intentional context. This suggests the results of past research on pretending and normativity were not necessarily led by children rejecting E2's actions because they were not exactly the same as E1's (e.g. Wyman, et al., 2009), but instead gives support to the idea that children were following rules to match intentions to pretend more generally. This also lends support to the idea that it was the order effect, when E2 joked before pretending after E1 pretended, that best explains why children objected so much in the pretending with cues condition.

Trust

The results of the pretend context with cues in Study 1 suggests that if E2 initially performed actions following the same intentions as E1, children were more likely to accept E2's general competence, even when she later performed actions following a different intention type. In contrast, if E2 initially performed actions following different intentions to E1, children were more likely to reject E2's general competence, even when she later performed actions in line with the original context. Therefore E2's initial ability to follow a

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type of intentional game structure had longer term consequences for children's faith in E2. This finding has interesting parallels to the literature on Trust in Testimony where children continue to mistrust an informant who was previously inaccurate (e.g., Harris & Koenig, 2006; Koenig & Harris, 2005). Given that pretending may constitute an environment for learning (e.g. Hopkins, et al., 2015; Sutherland & Friedman, 2012, 2013; Weisberg & Gopnik, 2013), trust may be of particular importance during a pretend versus joking, or even literal context.

Conclusions

The current studies are the first to find children distinguish pretending and joking. Children do so in three ways. First, children were more likely to reject joke actions than pretend actions overall suggesting children view joke actions as more wrong than pretend actions. Second, children were more likely to reject any actions after a pretend context versus a joke context, or even a literal context. However, this was only the case when intentional cues were used, and was driven by an order effect in which children objected in particular when E2 first joked after E1 pretended. This suggests children distinguish the intentional nature of pretending and joking, indicating they may understand the meaning behind different types of wrong acts. This also suggests a pretend context establishes specific rules to be followed, while a joke context allows an open space to perform various types of acts. Finally, children did not object more when E2 performed pretend actions which were the same or different to E1, suggesting it is the intentional context which matters, rather than the specific actions.

References

- Addyman, C., & Addyman, I. (2013). The science of baby laughter. *Comedy Studies*, 4(2), 143-153. doi: 10.1386/cost.4.2.143_1
- Andrews, J., Rosenblatt, E., Malkus, U., Gardner, H., & Winner, E. (1986). Child'en's abilities to distinguish metaphoric and ironic utterances from mistakes and lies. *Communication and Cognition*, 19(3-4), 281-297.
- Bates, D., Maechler, M., & Dai, B. (2008). lme4: Linear mixed-effects models using S4 classes [Computer software manual]. Available from <http://lme4.r-forge.r-project.org/> (R package version 0.999375-23).
- Bosco, F. M., Friedman, O., & Leslie, A. M. (2006). Recognition of pretend and real actions in play by 1-and 2-year-olds: Early success and why they fail. *Cognitive Development*, 21(1), 3-10. doi: 10.1016/j.cogdev.2005.09.006
- Carpenter, M., Akhtar, N., & Tomasello, M. (1998). Fourteen- through 18-month-old infants differentially imitate intentional and accidental actions. *Infant Behavior & Development*, 21(2), 315-330. doi:10.1016/S0163-6383(98)90009-1
- Harris, P. L., & Kavanaugh, R. D. (1993). Young children's understanding of pretense. *Monographs of the Society for Research in Child Development*, 58(1), R5-&. doi: 10.2307/1166074
- Harris, P. L., & Koenig, M. A. (2006). Trust in testimony: How children learn about science and religion. *Child Development*, 77(3), 505-524. doi: 10.1111/j.1467-8624.2006.00886.x
- Hoicka, E., & Akhtar, N. (2011). Preschoolers joke with jokers, but correct foreigners. *Developmental Science*, 14(4), 848-858. doi: 10.1111/j.1467-7687.2010.01033.x
- Hoicka, E., & Akhtar, N. (2012). Early humour production. *British Journal of Developmental Psychology*, 30(4), 586-603. doi: 10.1111/j.2044-835X.2011.02075.x

Distinguishing Pretending and Joking

- Hoicka, E., & Butcher, J. (in press). Parents produce explicit cues which help toddlers distinguish joking and pretending. *Cognitive Science*.
- Hoicka, E., & Gattis, M. (2012). Acoustic differences between humorous and sincere communicative intentions. *British Journal of Developmental Psychology*, *30*(4), 531-549. doi: 10.1111/j.2044-835X.2011.02062.x
- Hoicka, E., & Gattis, M. (2008). Do the wrong thing: How toddlers tell a joke from a mistake. *Cognitive Development*, *23*(1), 180-190. doi: 10.1016/j.cogdev.2007.06.001
- Hoicka, E., Jutsum, S., & Gattis, M. (2008). Humor, abstraction, and disbelief. *Cognitive Science*, *32*(6), 985-1002. doi: 10.1080/03640210801981841
- Hoicka, E., & Wang, S.-h. (2011). Fifteen-month-old infants match vocal cues to intentional actions. *Journal of Cognition and Development*, *12*(3), 299-314. doi: 10.1080/15248372.2010.542215
- Howes, C., & Matheson, C. C. (1992). Sequences in the development of competent play with peers – social and social pretend play. *Developmental Psychology*, *28*(5), 961-974. doi: 10.1037//0012-1649.28.5.961
- Howes, C., Unger, O., & Seidner, L. B. (1989). Social pretend play in toddlers – Parallels with social play and with solitary pretend. *Child Development*, *60*(1), 77-84. doi: 10.1111/j.1467-8624.1989.tb02697.x
- Hunnius, S., & Bekkering, H. (2010). The early development of object knowledge: A study of infants' visual anticipations during action observation. *Developmental Psychology*, *46*(2), 446-454. doi: 10.1037/a0016543
- Jaeger, T. F. (2008). Categorical data analysis: Away from ANOVAs (transformation or not) and towards logit mixed models. *Journal of Memory and Language*, *59*(4), 434-446. doi: 10.1016/j.jml.2007.11.007
- Kim, K. H. (2006). Can we trust creativity tests? A review of the Torrance tests of Creative

Distinguishing Pretending and Joking

Thinking (TTCT). *Creativity Research Journal*, 18(1), 3-14. doi:

10.1207/s15326934crj1801_2

Kochukhova, O., & Gredeback, G. (2010). Preverbal infants anticipate that food will be brought to the mouth: An eye tracking study of manual feeding and flying spoons.

Child Development, 81(6), 1729-1738. doi: 10.1111/j.1467-8624.2010.01506.x

Koenig, M. A., & Harris, P. L. (2005). Preschoolers mistrust ignorant and inaccurate

speakers. *Child Development*, 76(6), 1261-1277. doi: 10.1111/j.1467-

8624.2005.00849.x

Leekam, S. R. (1991). Jokes and lies: Children's understanding of intentional falsehood. In A.

Whiten (Ed.), *Natural theories of mind: Evolution, development and simulation of everyday mindreading*. (pp. 159-174). Cambridge, MA: Basil Blackwell.

Lillard, A., Nishida, T., Massaro, D., Vaish, A., Ma, L., & McRoberts, G. (2007). Signs of pretense across age and scenario. *Infancy*, 11(1), 1-30. doi:

10.1207/s15327078in1101_1

Lillard, A. S., & Witherington, D. C. (2004). Mothers' behavior modifications during pretense and their possible signal value for toddlers. *Developmental*

Psychology, 40(1), 95. doi: 10.1037/0012-1649.40.1.95

Loizou, E. (2005). Infant humor: The theory of the absurd and the empowerment theory.

International Journal of Early Years Education, 13(1), 43-53.

Lynch, O. H. (2002). Humorous communication: Finding a place for humor in communication research. *Communication Theory*, 12(4), 423-445. doi:

10.1111/j.1468-2885.2002.tb00277.x

McAdam, R., & McClelland, J. (2002). Sources of new product ideas and creativity practices in the UK textile industry. *Technovation*, 22(2), 113-121. doi: 10.1016/s0166-

4972(01)00002-5

Distinguishing Pretending and Joking

- McCune-Nicolich, L. (1981). Toward symbolic functioning – Structure of early pretend games and potential parallels with language. *Child Development, 52*(3), 785-797. doi: 10.2307/1129078
- McGhee, P. E. (1979). *Humor: Its Origin and Development*. San Francisco: WH Freeman.
- Mesoudi, A., Whiten, A., & Laland, K. N. (2004). Perspective: Is human cultural evolution Darwinian? Evidence reviewed from the perspective of *The Origin of Species*. *Evolution, 58*(1), 1-11.
- Mireault, G. C., Crockenberg, S. C., Sparrow, J. E., Pettinato, C. A., Woodard, K. C., & Malzac, K. (2014). Social looking, social referencing and humor perception in 6-and-12-month-old infants. *Infant Behavior and Development, 37*(4), 536-545. doi: 10.1016/j.infbeh.2014.06.004
- Mireault, G., Poutre, M., Sargent-Hier, M., Dias, C., Perdue, B., & Myrick, A. (2012). Humour perception and creation between parents and 3- to 6-month-old infants. *Infant and Child Development, 21*(4), 338-347. doi: 10.1002/icd.757
- Nichols, S., & Stich, S. P. (2003). *Mindreading: An Integrated Account of Pretence, Self-Awareness, and Understanding Other Minds*. Oxford: Clarendon Press/Oxford University Press.
- Onishi, K. H., Baillargeon, R., & Leslie, A. M. (2007). 15-month-old infants detect violations in pretend scenarios. *Acta Psychologica, 124*(1), 106-128. doi: 10.1016/j.actpsy.2006.09.009
- Rakoczy, H. (2008). Taking fiction seriously: Young children understand the normative structure of joint pretence games. *Developmental Psychology, 44*(4), 1195-1201. doi: 10.1037/0012-1649.44.4.1195
- Rakoczy, H., & Tomasello, M. (2006). Two-year-olds grasp the intentional structure of pretense acts. *Developmental Science, 9*(6), 557-564. doi: 10.1111/j.1467-

Distinguishing Pretending and Joking

7687.2006.00533.x

- Rakoczy, H., Tomasello, M., & Striano, T. (2004). Young children know that trying is not pretending: A test of the "behaving-as-if" construal of children's early concept of pretense. *Developmental Psychology, 40*(3), 388-399. doi: 10.1037/0012-1649.40.3.388
- Rakoczy, H., Tomasello, M., & Striano, T. (2006). The role of experience and discourse in children's developing understanding of pretend play actions. *British Journal of Developmental Psychology, 24*, 305-335. doi: 10.1348/026151005x36001
- Rakoczy, H., Wameken, F., & Tomasello, M. (2008). The sources of normativity: Young children's awareness of the normative structure of games. *Developmental Psychology, 44*(3), 875-881. doi: 10.1037/0012-1649.44.3.875
- Reddy, V. (2001). Infant clowns: The interpersonal creation of humour in infancy. *Enfance, 53*(3), 247-256.
- Reid, V. M., Hoehl, S., Grigutsch, M., Groendahl, A., Parise, E., & Striano, T. (2009). The neural correlates of infant and adult goal prediction: Evidence for semantic processing systems. *Developmental Psychology, 45*(3), 620-629. doi: 10.1037/a0015209
- Reissland, N., & Snow, D. (1996). Maternal pitch height in ordinary and play situations. *Journal of Child Language, 23*(2), 269-278. doi: 10.1017/S0305000900008795 #
- Sakkalou, E., & Gattis, M. (2012). Infants infer intentions from prosody. *Cognitive Development, 27*(1), 1-16. doi: 10.1016/j.cogdev.2011.08.003
- Sroufe, L. A., & Wunsch, J. P. (1972). Development of laughter in the first year of life. *Child Development, 43*(4), 1326-&. doi: 10.2307/1127519
- Sullivan, K., Winner, E., & Hopfield, N. (1995). How children tell a lie from a joke – The role of 2nd-order mental state attribution. *British Journal of Developmental Psychology, 13*, 191-204. doi: 10.1111/j.2044-835X.1995.tb00673.x

Distinguishing Pretending and Joking

- Sutherland, S. L., & Friedman, O. (2013). Just pretending can be really learning: Children use pretend play as a source for acquiring generic knowledge. *Developmental psychology*, 49(9), 1660. doi: 10.1037/a0030788
- Sutherland, S. L., & Friedman, O. (2012). Preschoolers acquire general knowledge by sharing in pretense. *Child Development*, 83(3), 1064-1071. doi: 10.1111/j.1467-8624.2012.01748.x
- Taylor, M., Lussier, G. L., & Maring, B. L. (2003). The distinction between lying and pretending. *Journal of Cognition and Development*, 4(3), 299-323. doi: 10.1207/s15327647jcd0403_04
- Team, R. D. C. (2009). R: A language and environment for statistical computing [Computer software manual]. Vienna, Austria. Available from <http://www.R-project.org>.
- Weisberg, D. S., & Gopnik, A. (2013). Pretense, counterfactuals, and Bayesian causal models: Why what is not real really matters. *Cognitive science*, 37(7), 1368-1381. doi: 10.1111/cogs.12069
- Winner, E., & Leekam, S. (1991). Distinguishing irony from deception – Understanding the speaker's 2nd-order intention. *British Journal of Developmental Psychology*, 9, 257-270. doi: 10.1111/j.2044-835X.1991.tb00875.x
- Wyman, E., Rakoczy, H., & Tomasello, M. (2009). Normativity and context in young children's pretend play. *Cognitive Development*, 24(2), 146-155. doi: 10.1016/j.cogdev.2009.01.003
- Ziv, A. (1983). The influence of humorous atmosphere on divergent thinking. *Contemporary Educational Psychology*, 8(1), 68-75. doi: 10.1016/0361-476x(83)90035-8

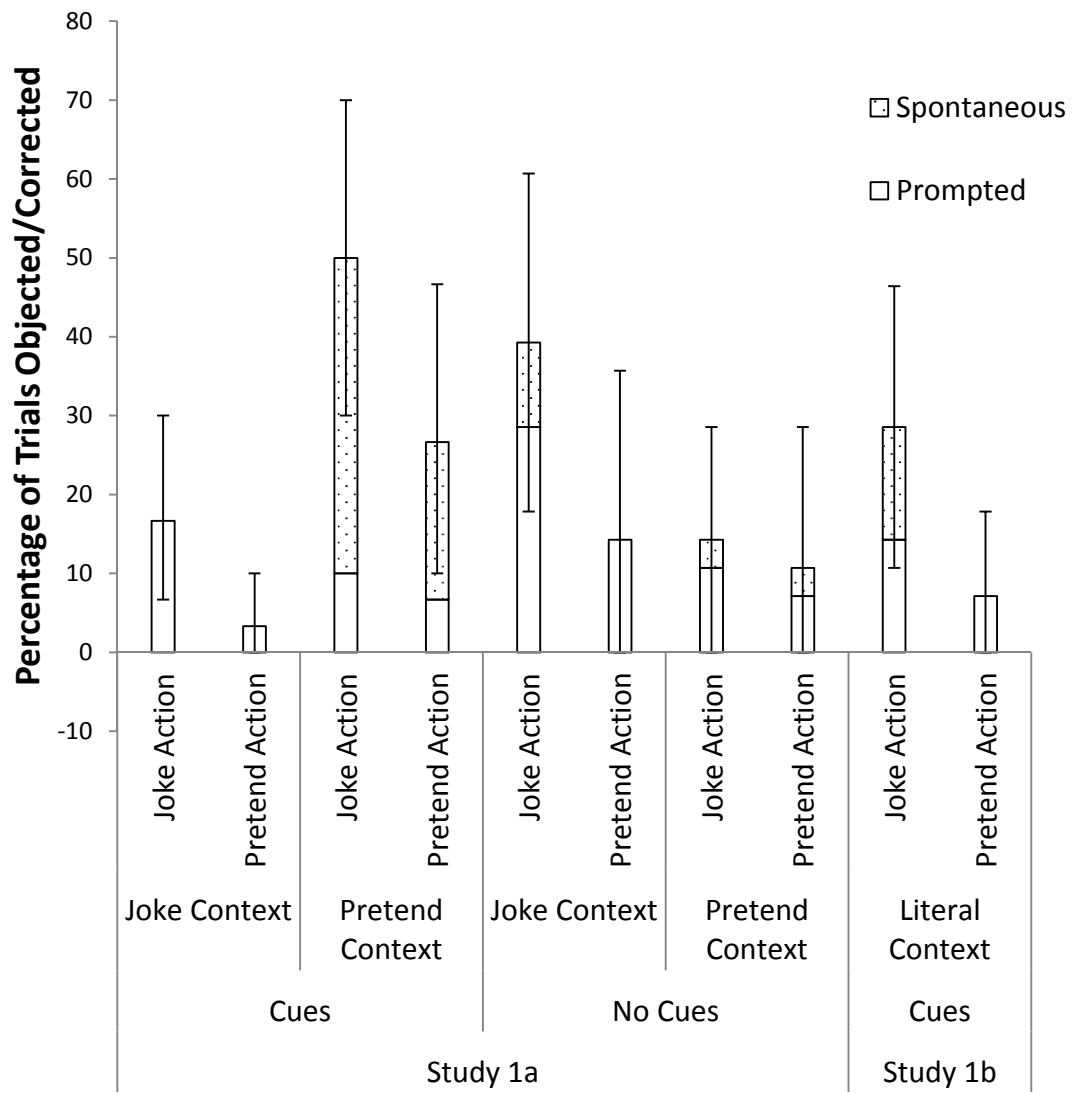
Figure Captions

Fig 1. Percentage of trials children objected or corrected by test actions, contexts, and cues in Studies 1a and 1b. Error bars represent 95% confidence intervals of spontaneous and prompted objections and corrections combined.

Fig 2. Percentage of trials children objected or corrected by test actions and order in the pretend context with cues condition in Study 1a. Error bars represent 95% confidence intervals of spontaneous and prompted objections and corrections combined.

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Figure 1



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Figure 2

