

Children's Concepts of Institutional Groups

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Abstract

Although previous research has examined children's beliefs about what allows an individual to join an existing group, it is unknown what children believe makes a group exist at all, and what makes a set of individuals remain a group over time. Adults conclude that a group persists if members still recognize themselves as a group; it is less important for the group members to continue performing the same function. The present study investigated children's beliefs about the relative importance of collective recognition and function. Like adults, children (N = 118, ages 4-9) prioritized collective recognition over function. Losing either collective recognition or function disrupted a group's existence; however, losing collective recognition fully terminated a group's existence whereas losing function did not. Thus, the results reveal developmental continuity in intuitive theories of institutional groups. However, we cannot make strong conclusions about our youngest age group, who exhibited noisy responses even on control questions.

Keywords: institutional groups, social groups, conceptual development, intuitive theories

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1. Introduction

On March 14th, 2020, Peter Salovey, president of Yale University, announced that for the remainder of the spring semester, no physical classes would take place. All students were asked to immediately leave campus and stay home. Later, in a message to the community, Salovey cited the American Revolution as perhaps the only other occasion in Yale College history that warranted its closing. Like most other universities in the country, Yale transitioned to online classes and remote learning in an effort to slow the global pandemic of COVID-19. And yet the semester continued, though the students and staff would never meet again. What allows individuals, isolated in separate homes throughout the world, to be considered a continuation of Yale University? Here, we examine children's intuitive beliefs about group continuity as a window into the nature of social groups and the properties that ground their existence.

1.1 Groups as institutions

Institutional groups are stable, cooperative, and socially constructed entities (Noyes & Dunham 2019). They vary in scale, from book clubs to professional companies, from academic departments to nation-states. When we consider how an entity exists, its nature, and what underlies its persistence over time, we are considering its causal structure. Institutional entities have previously been assumed to lack causal structure (Keil, 1998), but philosophical theories suggest causal beliefs underlie their mental concepts. Most concretely, since institutions are products of social arrangements, and not born from inherent qualities, they are logically causal in nature (Guala, 2016, Searle, 2010). Given then, that institutional groups are ordinary concepts with social, causal underpinnings, they offer insight about broader social reasoning and intuitive human concepts and can serve as an important test case for theories of conceptual representation (Noyes & Dunham 2019).

1.2 Dual-character institutional groups

Following distancing measures due to COVID-19, how is it possible for Yale to persist? How can it continue as an institutional group, despite the fact that its campus is currently unused and its members never physically meet? One reason you might think a group persists over time is because it continues to perform the same function. For example, after the transition to remote methods of learning, students and teachers at Yale continued to conduct classes over Zoom, some of them even on the same schedules. Students continued to do classwork and teachers continued to provide feedback. Final exams and papers were written and conducted from home. If you believe the purpose of Yale is to educate students, you might conclude that as long as the educational function of the university is maintained, it continues to exist. In other words, the continuity of Yale's function could explain why it exists even after its members physically disbanded.

Another reason you might think a group persists over time is because its members (or third parties) agree it does. The students and staff of Yale still feel and express that they are members of the institution, even though they no longer meet. They still feel obligated to one another to arrive on time to virtual meetings, to respect deadlines, and to continue the group roles they previously held. Without a physical place to be, however, and with students no longer tied to traditional grades, what compels everyone to appear in front of webcams and coordinate learning? You might intuit that a sense of commitment to one another is driving these behaviors. This sense of obligation, this shared commitment, is tied to the mutual agreement that the group exists. This is known as collective recognition. One might argue that the function of Yale, which includes performing research and traditionally grading students, is currently disrupted, but the collective recognition of Yale's members is maintained—and this underlies the continuation of its existence.

Though Yale has changed tremendously during this unprecedented time, it is doubtful anyone believes Yale no longer exists. We don't question the university's continuation. But it is not immediately obvious whether Yale's current existence is primarily due to the functions she continues to realize or because of the commitments she retains among her members; the relative weights of these dual features seem debatable. Recent research aligns with such intuitions, and suggests that an institutional group is a dual-character concept, meaning that it possesses two distinct senses at once (Noyes & Dunham 2019). One sense relies on the collective recognition of the group, and the other relies on its function. In order for institutional, social entities to exist, continuity of recognition or function must be maintained.

1.3 Institutional group persistence in adults

Recent studies have tried to parse the relative centrality of these two properties of social groups, and their importance regarding group existence. Researchers found that for default judgments of group existence, adults consistently rely on collective recognition. They believe a group continues to exist if its members or a relevant third-party demonstrate continued collective recognition. But function is not entirely irrelevant. Adults' attitudes reflect that social groups are, indeed, dual-character in nature, and when asked whether a group *truly* exists, study participants rely on function over collective recognition (Noyes & Dunham 2019). Therefore, the "true" judgement of a group is grounded in the group's function, which is tied to the reason for the group's existence.

In sum, the collective recognition determines the group's "technical" existence while realization of the group's function corresponds with its "true" existence. These intuitive theories predict that an entity such as Yale University will persist as long as people continue to recognize it. However, if Yale severely strays from its mission statement, dramatically changes its policies, or begins to

function in an entirely different way, some may conclude that the “true” Yale no longer exists. Given that adults believe institutional groups require, at the very least, ongoing recognition, and, in another sense, realization of some expected function, we turn now to the mental origin of these conceptual theories, and their development over time.

1.4 Development of social group understanding

Groups are basic units of social organization. Overall, children believe that most groups depend on human beliefs and practices rather than natural or biological properties (Rhodes, 2013; Rhodes, Leslie, Tworek, 2012; Noyes & Dunham, 2017). That is, children believe that most groups are created by people (Rhodes, 2013; Noyes & Dunham, 2017; Shutts, Roben, & Spelke, 2013). Children believe that groups function as coalitions, expecting group members to cooperate, affiliate, refrain from harm, and share norms (Rhodes, 2013; Rhodes & Chalik, 2013; Noyes & Dunham, 2017; Schmidt, Rakoczy, & Tomasello, 2012; Shutts, Roben, & Spelke 2013).

What is less clear from previous work is what children believe makes a set of individuals count as a group and persist as one over time. Adults believe that groups exist because of their collective recognition. Specifically, they believe that a group continues to exist as long as its members or relevant third parties recognize the individuals as a group. Consistent with this, children concluded that an individual could only join a group when they and the group members collectively recognized their membership (Noyes & Dunham 2017).

However, the identity of an individual as a member of a group is distinct from the group identity as a whole. Other studies have found developmental changes in children’s reasoning about groups. For example, in a study that pitted patterns of friendship against explicit rules about group

membership, young children (ages 4-5) prioritized friendship as central to group membership, whereas older children prioritized the group's agreed-upon rules (Noyes & Dunham 2019). This could suggest that what looked like young children relying on collective recognition in previous studies was actually a reliance on indicators of friendship.

Evidently, even though young children are able to understand and use constitutive rules, they rely on friendship over rules to make judgments about membership when the two factors are posed against one another (Noyes & Dunham 2019). Although all children believe group membership is mutual and social, preschoolers and kindergarteners believe social groups are based on relational behaviors, while six-year-olds perceive them to be based on constitutive rules. This research suggests a developmental change in social group understanding, from a default conceptualization as a pattern of interaction, to a rule-based institutional concept by age six, one that more closely matches adult conceptualizations of institutional social groups (Noyes & Dunham 2019).

1.5 Current study

Based on the previous study of group membership, and the observed developmental shift in conceptualization of social groups, this study aimed to further test children's understanding of social groups. Specifically, we investigated the relative centrality of collective recognition and function to children's group concepts. To test their centrality, we used transformation paradigms. A transformation paradigm uses selective elimination to test the importance of properties; it presents an entity in an initial state, then performs specific changes, and asks participants to re-evaluate the original entity. If a change in property leads participants to conclude that the group no longer exists, then the property must be central to group existence (Rips, 1989; Keil, 1989). The more central a

property is to the underlying causal structure of an entity, the more strongly its change will affect judgments about the entity.

We predicted that older children (8-9) and adults would prioritize collective recognition over function; a group whose function has changed can remain a group, whereas a group whose collective recognition has changed is no longer a group. Furthermore, we predicted that children would value these factors differently than adults when assessing institutional group existence, implying a developmental dependency. Specifically, we predicted that young (4-5) children would prioritize both function and collective recognition, viewing both as equally important to the persistence of a group. We made no specific predictions about children ages six to seven.

2. Methods

2.1 Participants

One hundred and eighteen children ages 4 to 9 ($M_{\text{age}} = 80.0$ months; $SD_{\text{age}} = 21.5$ months; 64 girls) completed the study. These included nineteen 4-year-olds, twenty-one 5-year-olds, fourteen 6-year-olds, twenty-two 7-year-olds, fifteen 8-year-olds, and twenty-seven 9-year-olds. Participants were recruited from schools and museums in the New Haven area and were predominantly white. Participants excluded due to developmental disability or those falling outside the relevant age range (4-9 years) were replaced to meet the full designated sample.

2.2 Design and Procedure

We used a within-subject design; each participant responded to all conditions. The full script is available in an online supplement (<https://osf.io/mnrbg>). We introduced children to a novel institutional group, depicted as a club of four children diverse in race and gender.

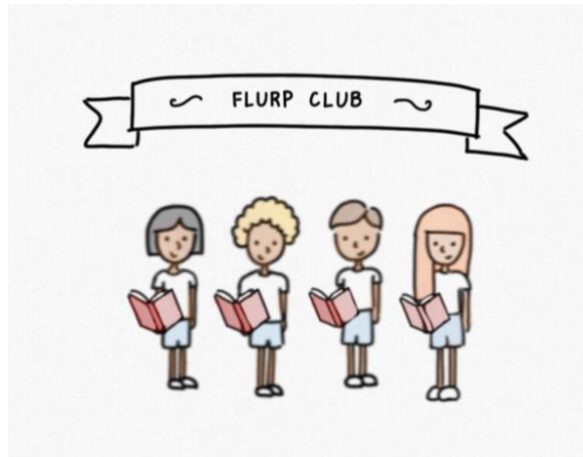


Figure 1. Example of visual information introducing the novel institutional group to children.

As part of the introduction to the novel institutional group, participants were told the name of the club, and the club's function and collective recognition were established with illustrations and explanations. Each club (Flurp, Vawnsie, Wug, or Zazz) was started for the purpose of an activity (reading, baking, cleaning, or fishing) and all members agreed to the group's rules and had an explicit commitment to one another. They were depicted in a common space of relevant setting, engaging in their designated activity and helping one another. Next, children were told that an entire year had passed; they would now revisit the original club.

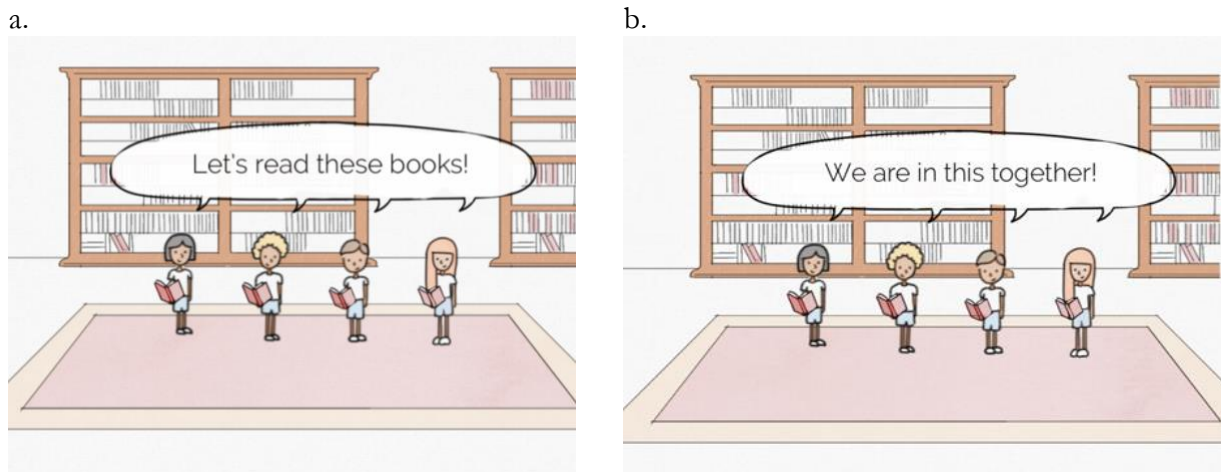


Figure 2. Example of visual information provided to children. The characters are shown in the library, performing their group function of reading (a), and expressing mutual commitment to one

another, to their rules, and to a shared sense of purpose (b). All illustrations are reinforced by explicit information from the verbal script.

Then, after the time jump, participants saw knockout of either the original function or collective recognition of the club, or saw both eliminated, or neither. When only the function of the group was lost, the group never saw each other again, and never performed the same activity as before, but they still agreed to their rules and still felt that they were part of something together. When only the collective recognition of the group was lost, the members continued to use the same setting at the same time to perform the original activity, but they eliminated their rules and no longer felt that they were part of something together.

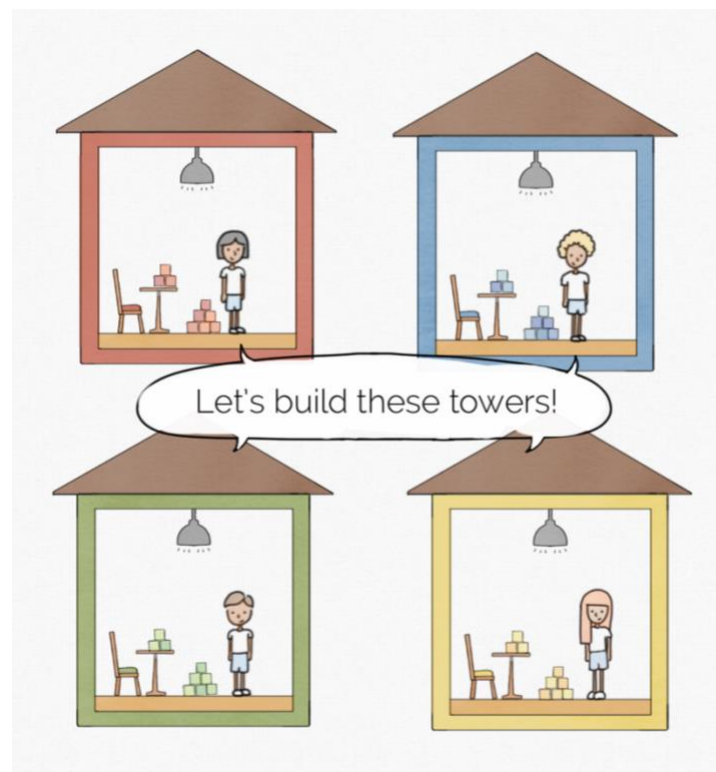


Figure 3. Example of visual information provided to children for the function knockout condition. The club members are shown now in their separate homes, and no longer performing the original club activity. They maintain a shared sense of obligation and commitment to one another, given that collective recognition has been preserved in this condition.

Conditions in which both or neither of the factors were eliminated served as controls. In the case that neither factor was eliminated, there was no difference in script or depiction after the time jump, aside from the children's clothing, which changed to help signify the passage of time.

Finally, participants were asked if there was still the [Zazz] club or if there was no [Zazz] club anymore. This occurred four times for each of the four conditions. Each participant saw every club, and each participant responded for every condition. Order of conditions, clubs, and factor presentation (function or collective recognition), as well as combinations of clubs and conditions, was randomized.

2.3 Data Collection

Data collection was conducted in person and on an individual basis with child participants. The materials were presented to children on an iPad via Qualtrics. An experimenter read a verbal script out loud and navigated through the illustrations for the child. Children responded by either pointing to the screen or providing verbal "yes" or "no" answers to questions, and the experimenter entered the responses into Qualtrics accordingly. The experimenter was not blind to hypotheses. The survey flow was randomized by the Qualtrics software.

3. Results

3.1 Analysis

To analyze results, we used a multi-level model, nesting trial types (function or collective recognition) within participants. In the model, we used age as a continuous variable, ranging from 4 to 9, but we report results in age groupings to most effectively display meaningful results. The outcome variable is measured as the average number of trials children report that the club no longer

exists (after function or collective recognition was knocked out). This measures how causally central each factor is perceived to be with regard to the existence of the social group.

We analyzed children's responses using a linear model with function (present vs. absent), collective recognition (present vs. absent), and age (continuous, 4-9) as predictors. There was a significant effect of function, $b = .36$, $SE = .053$: children said a group had terminated more often when the group's original function changed ($M = .47$) than when it had not ($M = .11$). There was a significant effect of collective recognition, $b = .56$, $SE = .052$: children said a group had terminated more often when the members stopped recognizing themselves as a group ($M = .67$) than when they continued to do so ($M = .11$). There was a significant effect of age, $b = .11$, $SE = .039$: children were more likely to report the group had ended with age.

These effects were qualified by a significant interaction between age and recognition ($b = .11$, $SE = .05$, $p = .03$). In the conditions where members still recognized their group membership, children said the group had terminated less with age ($b = -.10$, $SE = .02$, $p = .001$). In the conditions where members did not recognize their group membership, there was no significant change with age ($b = .0297$, $SE = .03$, $p = .37$). There was a second significant two-way interaction between collective recognition and function ($b = -.23$, $SE = 0.05$, $p = .001$). There was no significant three-way interaction.

Of the two-way interactions observed, the interaction between collective recognition and age was likely a result of the noisiness of the youngest age group. The youngest children were more likely to report the group had ended in the Neither condition, even though no property was knocked out. Older children, when presented with cases in which recognition was preserved, were *less likely* to say

the group had ended, but the younger children, with diminished discretion, continued to report that the group had ended. It is unlikely that the finding reflected a true developmental trend.

The interaction between recognition and function reflected the mediating effect of recognition preservation or knockout on the effect of function. More specifically, when recognition was knocked out, knocking out function disrupted the group only somewhat ($b = 0.119$, $SE = .048$, $p = .016$). However, when recognition was preserved, the disruption of knocking out function was more evident ($b = 0.356$, $SE = .05$, $p < .001$). Collective recognition mattered so much that a robust effect of function appeared only when collective recognition was left intact; otherwise recognition knockout overshadowed function knockout.

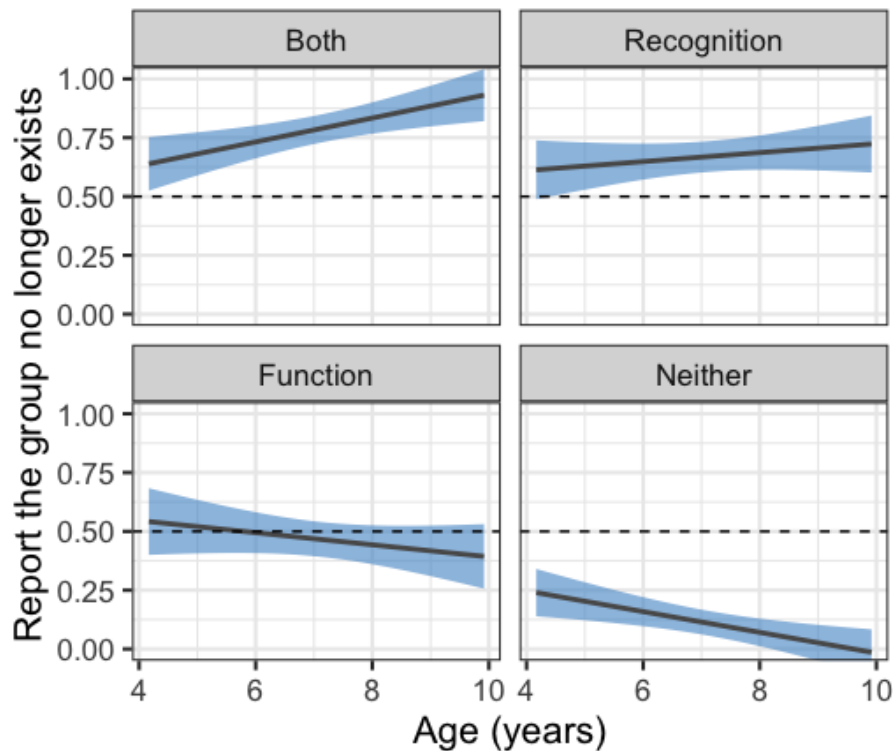


Figure 4. Results by condition. How often children report that there is no club anymore, following knockout of both properties (Both), knockout of collective recognition only (Recognition), knockout of function only (Function), or knockout of neither property (Neither). Midline is chance performance and shaded regions show within-subject error bars reflecting a 95% confidence interval (Cousineau 2005).

Across all ages, children always responded that the group ended at a rate above chance in the Both knockout condition and in the Recognition knockout condition. In the Function knockout condition, their responses were always at chance, and in the Neither knockout condition, they were always below chance (Figure 4).

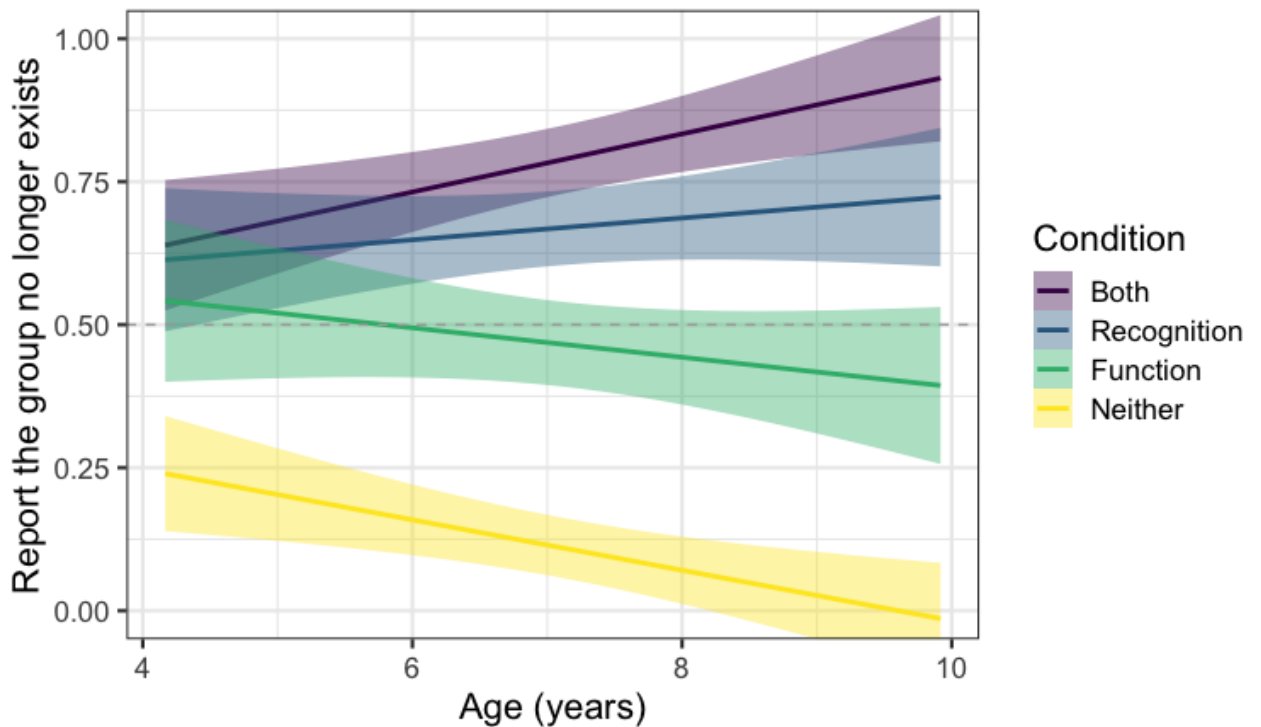


Figure 5. Results combined. How often children report the group no longer exists. Conditions correspond with knockouts, e.g. “Both” represents knockout of both recognition and function. Midline is chance performance and shaded regions show within-subject error bars reflecting a 95% confidence interval (Cousineau 2005).

The results for the Both and Recognition conditions overlapped (Figure 5). In these knockout conditions, children above the age of 6 were more likely to say the group ended than in the Function knockout condition. Across all ages, the Function condition corresponded with the group ending more often than the Neither condition, although the Function and Neither conditions mirrored one another. The youngest children were equivalently noisy in both of these conditions (Figure 5). As a result of this noisiness, data from the youngest group is unreliable for making developmental

predictions. According to the responses of older children, however, we observe trends that align with developmental continuity, rather than developmental change.

4. Discussion

4.1 General Discussion

Although we predicted substantial developmental change, we found continuity. Our predicted developmental end state held even among the youngest age group. Specifically, we found that all children believed a group existed as long as it had both recognition and function, and that a group no longer existed if both properties were knocked out. Losing either collective recognition or function disrupted a group's existence; however, losing collective recognition fully terminated a group's existence whereas losing function did not. These results correspond with patterns of adult responses (Noyes & Dunham 2019).

We predicted a decrease in importance of function with age, such that younger children would prioritize collective recognition and function equally. Consistent with this prediction, there was no significant difference between collective recognition and function among the 4-5-year-olds; there was a non-significant decrease with age in children's tendency to say losses of function terminated a group ($p = .084$). However, there was a parallel decrease with age in children's tendency to say an unchanged group had terminated. Younger children appeared globally noisier and closer to chance for all conditions. Therefore, our results offered weak evidence for substantive developmental change.

What the results do favor is the importance of both collective recognition and function to group concepts across development. In all age groups, losses of collective recognition and function disrupted the group more often than the baseline condition. Furthermore, children above the age of

six showed similarity to adult responses, prioritizing recognition over function, and reflecting the essential quality of recognition for group persistence. However, we cannot make strong conclusions about our youngest age group, who exhibited noisy responses even on control questions.

4.2 Limitations

The noisiness of the responses of younger children inhibited strong conclusions about this age group. We suspect the narrative was verbally out of reach given its abstractness and complex syntax. The “Neither” condition is practically a comprehension check, and 25% of the youngest children failed it – saying a group had terminated even when nothing had changed. None of the 8 to 9-year-olds made this error. Given that this study aims to investigate developmental changes in conceptualization, it is critical that all participants understand the materials equally well, and the youngest children were evidently at a disadvantage.

Another related limitation of this study is its lack of explicit comprehension questions. For the sake of minimizing demand during the task, these questions were omitted, and control conditions were tested by way of the double knockout, or “both,” and “neither [knockout]” conditions. This allowed us to quantify the baseline comprehension of our participants, but in some ways, it obscured the findings of the experimental conditions.

Finally, a major limitation of this study is its strict assumption about the function of a club. For this study, we defined the function knockout by explaining that the club members never saw each other again, and no longer spent time in the shared environment they previously frequented. They never performed the original club activity. However, the group members, given that their collective recognition was maintained, all began the same new activity as one another in their separate homes.

Some children may have interpreted this as a preservation of the club's function, especially since initial group functions were to perform arbitrary leisurely activities.

4.3 Future Directions

In the future, we hope to adapt the materials to make them more accessible for preschoolers and kindergarteners. More specifically, we plan to incorporate an explicit reason or justification for the group's change beyond the mere passage of time. Other improvements to streamline the script and edit visualization materials might enhance comprehension among this age group, which would help clarify developmental changes and reduce the noise within the data.

Furthermore, given that 4- and 5-year-olds may be largely unfamiliar with clubs, we hope to replicate this study with more accessible institutional groups, such as athletic teams or schools. Not only are these groups ones that 4- and 5-year-olds have personal experience with, but also, because they serve functions that fulfill external needs (to compete against opponents or educate a population) children may have less difficulty perceiving their properties of function and collective recognition.

Alternatively, social groups like book clubs or fishing clubs largely solve internal problems of coordinating activities for mutual enjoyment, and they represent functions and agreements which are more nuanced and perhaps more ambiguous. Additionally, groups like teams and schools are larger in size, and previous work shows that children may rely more on constitutive rules with larger institutional groups (Noyes & Dunham 2019). The shift towards institutional concepts may occur with increasing group size as individual relationships become minimized (Tomasello et al., 2012).

The results of this study suggest developmental continuity, rather than the developmental change that was observed in studies of changing group membership (Noyes & Dunham 2019). However,

children are once again engaging with social groups as institutional kinds, and show a robust appreciation for collective recognition as a causal property of the group concept. Another next step might be to probe the depth and strength of the children's reliance on collective recognition as a marker for group existence. Are children able to distinguish a group's "technical" existence from its "true" existence, just as adults? Are children more sensitive to collective recognition by a relevant third party than by the internal validation of group members to one another? These questions might motivate future studies of children's concepts of institutional groups, and might offer further insight about the origins of group cognition.

4.4 Concluding Remarks

Although institutional group cognition may seem very abstract, the current global pandemic offers a uniquely concrete, albeit solemn, look into our reasoning about group persistence. Around the world, schools, businesses, and religious institutions have continued to work remotely, while individual group members remain isolated in their homes—just as the illustrations of this very study depict. As we adjust to new methods of collaborating, learning, working, and worshipping, we are called to reflect upon the institutional groups that support our lives.

It is remarkable to see the adaptability and resilience of so many groups during this time, even as their functions, curtailed by new restrictions to keep our communities safe, must be revised with each passing day. It is evident that, in addition to our intended collective functions, the agreement we have amongst ourselves, and the commitment we feel towards one another, keeps us going, as individuals and as groups. Both intuitively and empirically, we find that the persistence of institutional groups depends on function, but more importantly, on collective recognition—and that we understand this from a very young age.

Acknowledgements

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