Respect or Fear: Investigating Infants Expectations of Social Learning from contrasting

leadership styles. A pilot study.

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Bacheloroppgave i psykologi

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Stavanger, 29.04.24

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Antall ord: 4227

Abstract

This study investigates whether infants expect subordinates "the red characters in figures 1-4" to learn from leaders, and not from bullies who use force and intimidation. It examines infant ability to differentiate between respect-based and fear-based social power, and how these representations influence their learning expectations. 14 Japanese infants aged 20-24 months participated in a between-subjects design conducted in a controlled laboratory setting. Participants were randomly assigned to observe animations depicting either a leader (respect-based power) or a bully (fear-based power). The experiment consisted of three phases, the Character Familiarization Phase, where infants were introduced to either a leader or a bully; the Label Familiarization Phase, where the main agent (The yellow character in figures 1-3) labeled a novel object as "Toma"; and the Test Phase, where infant reactions were measured as subordinates used a different label to the novel object "Mappi", in the absence of the main agent. Results revealed that in the leader condition, infants showed significantly longer looking times when the subordinates used a label different from the one introduced by the leader (Mean = 54.09 seconds, SD = 11.13), compared to the Bully Condition where the looking times were not significantly different when subordinates adhered to or deviated from the bully's directives (Mean = 35.74 seconds, SD = 16.52). These findings indicate that infants had strong expectations for subordinates to follow the respected leader example, suggesting a recognition of and preference for learning from respect-based power. Conversely, the lack of significant differences in the bully condition suggests that infants do not expect learning to occur under fear-based power. The study provides evidence that infants anticipate learning behaviors more from figures who display respect-based power.

Keywords: infant cognition, social power, learning, leadership, developmental psychology.

Introduction

Research in infant social cognition has found that from a very young age, infants possess a rich and sophisticated understanding of their social environments Ting et al., 2020). Studies show that infants are far from passive observers; instead, they are actively engaged in understanding social interactions and the behaviors of those around them. For instance, infants have been shown to distinguish between different types of social power, as respect-based power typically shown by leaders and fear-based power exhibited by bullies (Margoni et al., 2018).

Infant ability to process complex social cues extends to understanding fairness and the intentions behind actions (Sloane et al., 2012) and (Woodward, 2009). Research shows that even very young children can detect fairness in resource distribution, reflecting a fundamental aspect of social cognition (Bian, et al., 2018). These studies highlight the depth of infant social knowledge and their capacity to form nuanced social expectations based on their observations of how individuals are treated within their social groups (Hamlin, 2013a). Research with preverbal infants and toddlers demonstrates that even at this early stage, children show surprisingly sophisticated and flexible moral behaviors and evaluations. This supports the theory that moral sensibilities about fairness and retribution are not solely learned but might be fundamental and early-emerging components of human nature.

This research reveals that infants are not only capable of making moral evaluations based on their observations but also act on these evaluations in socially meaningful ways. For example, infants have shown a preference for characters who help others over those who hinder, reflecting an early preference for prosocial behavior over antisocial actions (Hamlin, 2007, 2013b). Additionally, these moral evaluations are nuanced and reflect a deep engagement with the social world. Infant responses suggest that they can understand the intentions and outcomes of actions (Hamlin, 2013b), favoring those who actively promote cooperative and helpful interactions.

Studies have shown that even at an early age, infants are not just passive in social interactions but are actively engaged in the social hierarchies around them. For example, Margoni et al. (2018) explored whether 21-month-old infants could distinguish between respect-based power, as that of a leader, and fear-based power, like that of a bully. Their findings suggest that infants recognize these different forms of social power and adjust their expectations of other behaviors accordingly. Infants expected continued obedience to the absent leader, indicating their understanding of respect-based power. However, they did not have a strong expectation when it came to the bully commands once the bully was absent, demonstrating an early sensitivity to the nature of fear-based power.

Recent advancements in developmental psychology highlight infant capabilities to distinguish between different forms of social authority. Infants can differentiate respect-based power, typically associated with legitimate leaders, from fear-based power, characteristic of bullies. This differentiation is crucial as it suggests that infants respond differently based on the nature of power exerted by an individual. In the study by Margoni et al. (2018), infants were shown scenarios where characters either displayed leadership (respect-based power) or bullying (fear-based power). The infants looking times were measured. In the leader condition, infants expected the protagonists to continue obeying the leader after her departure. This expectation was quantified by significantly longer looking times at the disobedience event compared to the obedience event. The average looking time for the disobey event was 43.49 seconds, significantly longer than the 34.05 seconds for the obey event. In the bully condition, instead, infants viewed the outcomes of obedience or disobedience to the bully as equally plausible, showing no significant preference between looking times for disobedience and obedience, 41.44 seconds and 45.08 seconds, respectively. These results show that by 21 months of age, infants not only recognize different types of social power but also adjust their expectations based on the nature of that power. This agrees with the premises of Violation of Expectation (VoE), where longer looking times indicate an event has defied an infant's expectation, suggesting a complex cognitive processing of social dynamics and power relations. This differentiation between respect-based and fear-based power supports the relevance of further investigating how early-emerging social cognition might affect learning processes in early childhood.

Despite significant advances in understanding how infants represent different types of power, there remains a substantial gap in our knowledge regarding how these early recognitions shape infant expectations about social learning and behavior. Current research has effectively demonstrated that infants can distinguish between respect-based and fear-based power, but it is less clear how these distinctions influence their learning expectations. Specifically, there is a lack of empirical data on what children aged 20-24 months expect to learn from interactions where respect-based leadership or bully leadership is demonstrated.

Do infants expect people to learn from respected leaders but not necessarily from bullies, who prevail over others using physical force and intimidation?

This is the main research question this thesis is addressing. Understanding this could provide deeper insights into the foundations of social cognition and the developmental trajectory of learning behaviors in response to different social authorities.

Substantial research into infant and child social cognition suggests that infants and children not only perceive social hierarchies but also respond differently based on the type of power exhibited by social agents (Thomsen, 2020). Leaders, characterized by their higher competence and commitment to the group, are likely to inspire emulation and learning through imitation (Henrich & Gil-White, 2001). This phenomenon is thought to be rooted in evolutionary pressures that favored mechanisms facilitating cultural transmission and skill acquisition, crucial for group survival and success (Boyd & Richerson, 1985). Instead, the authority of coercive dominants, which is established through fear, results in compliance driven not by admiration but by the immediate need to avoid negative outcomes. Power dynamics are less likely to foster constructive learning or voluntary imitation. Subordinates' reactions under coercive power are motivated by the avoidance of consequences rather than by a genuine engagement with the content or actions being modeled.

The Present (Pilot) Study

The objective of our study is to understand how infants, aged 20 to 24 months, expect people to learn from respected leaders but not necessarily from bullies. We investigate this by observing infants' reactions to animations depicting a leader or a bully and testing infants' expectations about whether a group of subordinates would learn vs. not learn from the agent (leader or bully).

Our study included 14 Japanese infants who met strict participation criteria to ensure the integrity of the data. These criteria included the absence of excessive fussiness, attentiveness during sessions, and no parental interference. The experiment proceeded with participants who successfully completed all phases of the procedure without any technical errors.

Please note that this is an *ongoing study* with two data collections running in parallel, one in Kyoto, Japan, and one in Stavanger, Norway. The planned sample size is 40 infants in Japan and 40 additional infants in Norway (20 per condition). I have worked in the Stavanger Baby and Child Lab as a research assistant to recruit and test infant participants. However, in Norway we did not reach enough participants to be analyzed, and thus I will focus here on the first 14 participants that were so far included in the project in the Japan site.

For this project, we used the Violation-of-Expectation (VoE) paradigm, which is a well-established method in developmental psychology used to study how infants form and adjust their expectations based on their understanding of the world (Margoni et al., 2023). VoE tasks typically present infants with scenarios that agrees or conflict with their cognitive expectations. These expectations could span various domains, as physical, psychological, sociomoral, or linguistic norms. By measuring how infants react to these scenarios specifically, whether they look longer at unexpected outcomes researchers infer the presence and nature of the infants expectations. The mechanism used by VoE is that infants possess a working model of the world, which they use to predict outcomes. When presented with a scenario that violates this model, the unexpected nature of the event leads to increased

looking times. This response is interpreted as a sign of surprise and cognitive processing, indicating that the infant is trying to reconcile the observed outcome with their existing knowledge. Infants thus will likely show extended looking times to unexpected social outcomes "indicative of their surprise and anticipation of normative behavior" (Surian et al, 2020).

We employed a between-subject design to clearly distinguish the effects of two types of social power on infant expectations. Infants were randomly assigned to one of two conditions: one where infants were familiarized with an individual displaying respect-based power (*leader condition*), and one where familiarized with an individual displaying fare-based power (*bully condition*). Next, in each condition, infants saw the main agent (leader or bully) labeling a novel object as "Toma" (a novel word) in front of three subordinates. Last, in the test phase, infants observed the subordinates using a different label, "Mappi", to name the object in the absence of the main agent (leader or bully). We measured infants' looking times during the test phase and compare them between conditions.

Main Hypothesis

We hypothesized that infants would show prolonged looking times in the test phase of the leader condition compared to the bully condition. That is, we hypothesized that infants would show a reaction of surprise when subordinates use a different label than the one used by the leader. This would indicate an expectation that subordinates would follow the teaching of a respected leader. It was hypothesized that shorter looking times in the bully condition would reflect a lack of expectation in that condition.

Method

Participants

The study included 14 Japanese infants aged 20 to 24 months who met participation criteria. These criteria ensured that the infants could complete the experiment without parental interference, did not show excessive fussiness, inattentiveness, drowsiness, or hyperactivity during the sessions, and produced data free from technical errors. Participants were selected from a general population sample. Only data from infants who completed all tasks were included to ensure consistency and reliability in the findings. One additional infant was excluded due to excessive activity during the test trials.

Seven infants were included in each experimental condition (leader, bully). All guardians provided written informed consent, and the ethical review board approved the study. Participants were exposed to a series of animations designed to show distinct types of social power dynamics, specifically examining how infants perceive and react to figures of authority represented as leaders and bullies.

Design

The present study is using a between-subject experimental design. This approach was selected to clearly distinguish the effects of different types of social power on infants expectations. Infants were randomly assigned to one of two conditions: Leader Condition: infants were shown animations where a central character, portrayed as a leader, was consistently greeted with respect and obedience by subordinates; Bully Condition: the central character, acting as a bully, instilled fear and obedience through intimidation and negative actions. Each condition was crafted to present unique social dynamics through a series of animated interactions involving the central character and three subordinates, ensuring a controlled environment to observe infant reactions.

The experiment was structured in three sequential phases to progressively establish and then examine infants expectations. Character Familiarization Phase, Label Familiarization Phase, and Test Phase.

Character Familiarization Phase. During this first phase, infants were presented with animations that introduced them to the central figures of the study: a leader representing respect-based power or a bully demonstrating fear-based power, depending on the condition. The animations were crafted to distinctly convey these power dynamics, relying on cues to establish the characters roles. In the leader condition, infants were introduced to a social structure where a leader was respected and heeded by subordinates. This scenario involved subordinates interrupting their play to show deference to an entering figure of authority, signaling a recognition of respect-based power and setting an expectation for learning from positive social cues (see Figure 1). In the bully condition, in contrast, the bully asserted its power through intimidation, by disrupting the play and eliciting compliance through fear.

Label Familiarization Phase. Following the character familiarization phase, the animations continued with the main character (leader or bully) labeling a novel object "Toma" in front of the three subordinates. This interaction was done for determining if infants would expect subordinates to learn about the object based on the agent's teaching.

Test Phase. The agent is now absent from the scene and the subordinates refer to the object as "Mappi", instead of "Toma". This test sought to discern if infants expected subordinates to maintain the learned behavior as modeled by a leader, in contrast to potentially disregarding what was demonstrated by a bully.

We counterbalanced across participants the order of words used as labels (Mappi first and Toma second vs. Toma first and Mappi second).

Variables Measured

The study utilized the VoE method to understand infant looking times as a measure of their expectations regarding social dynamics. Dependent Variable: looking time defined as the duration of time infants focused on the animated scenario during test trials. Looking times were recorded by trained observers using a specialized computer program (PyHab, an add-on for PsychoPy), with video recordings serving as a supplementary verification tool to ensure data accuracy. Independent Variable: condition (leader, bully). Looking times were recorded by observers stationed in the lab: when an infant focused on the screen, an observer would start the timer, stopping it as soon as the infant looked away. This procedure ensured real-time, precise tracking of each infant engagement with the stimuli. All sessions were video recorded to allow for later verification of the looking times, ensuring the reliability and accuracy of the collected data.

Apparatus and Procedure

The study was conducted in a controlled laboratory environment, specifically arranged for conducting developmental psychology experiments with infants. The main setup was a high-resolution computer monitor, sufficiently large to display the animated videos. These visuals were carefully designed to be engaging, capturing the infant attention effectively. Apparatus configuration, the display booth was designed with a good view to ensure optimal visibility of the animations for the infants. A strategically placed curtain at the front could be adjusted between trials. This feature was instrumental in redirecting the infant focus, and setting a clear boundary between each segment of the experiment.

Prior to the start of each trial, infants were comfortably seated on the caregiver lap at a carefully measured distance of one meter from the monitor. This distance was chosen to promote the best possible visibility and to facilitate accurate eye-tracking measurements. To maintain the integrity of the infant responses, parents were given precise instructions to remain silent and to keep their eyes closed during

the experiment. This was to ensure that the infant reactions were only based on the animated stimuli, free from parental influence or other cues.

The observation process was carried out by two trained observers, strategically positioned out of the infant sightline to avoid influencing their behavior. Each observer used a button press system to log the duration of the infant attention to the screen. The primary observers recordings were central to the analysis, with a high degree of interobserver reliability ensuring the dependability of the data.
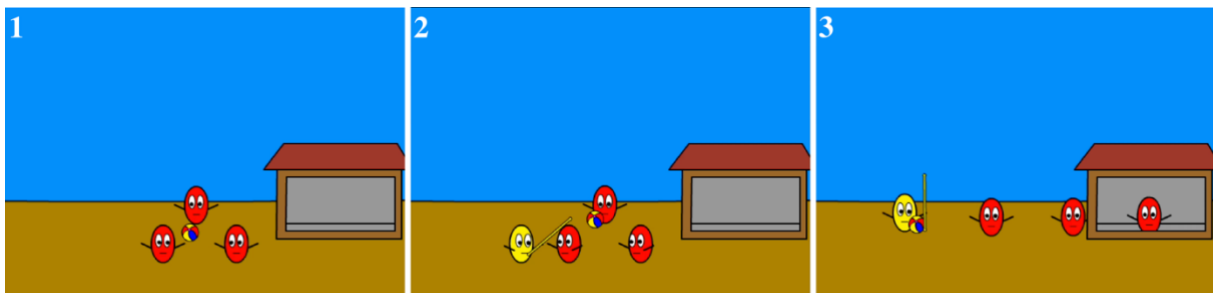
Figure 1

Leader Familiarization Phase: Respect-based Power.
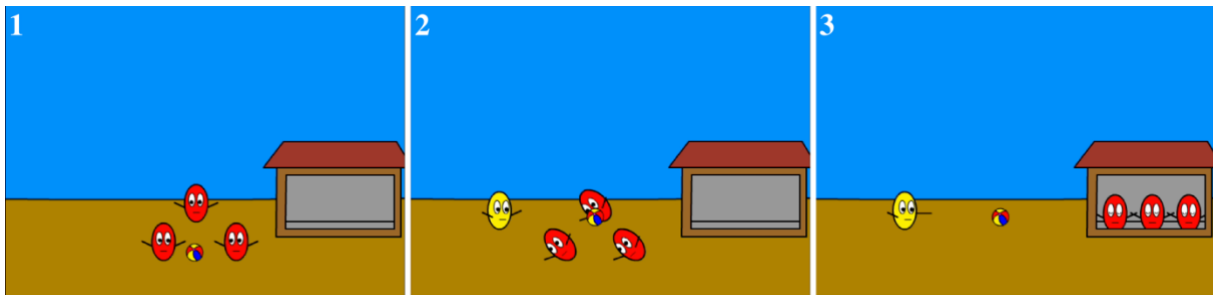
Note. In this animation, three subordinates come out of a house and joyfully connect with a ball, forming a ring. Their play is paused when a yellow figure enters, prompting them to stop and bow, a gesture of respect towards this leader. Following the leaders instruction that its bedtime, the subordinates obediently return to the house and close their eyes, showing they follow the leaders directions.
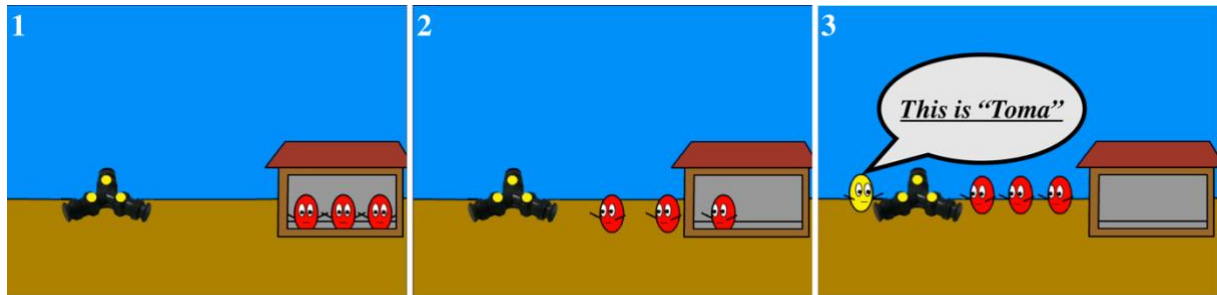
Figure 2

Bully Familiarization Phase: Fear-based Power.

Note. This scene begins with three subordinates playfully tossing balls to each other. Their interaction is disrupted when a yellow figure enters and takes a ball after tapping two subordinates on the head, asserting dominance. The subordinates then retreat and head back into the house, leaving the ball behind, their eyes remaining open.
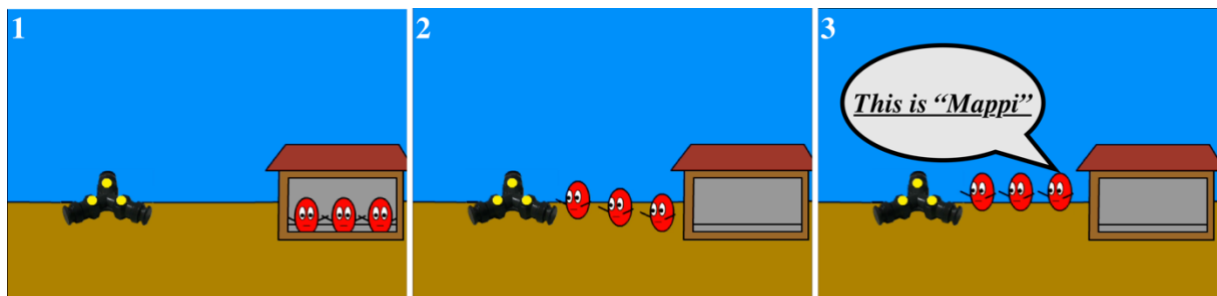
Figure 3

Label Familiarization Phase.

Note. The animation shows the three subordinates stepping outside their house to find an unfamiliar object. As they gather around it, a yellow figure approaches neutrally and points to the object, declaring, "Look here, this is Toma"

Figure 4

Test Phase.

Note. The subordinates leave the house, approach the novel object, and say, "Oh, this is Mappi.". The main agent is not present is this clip.

Results

We first ran an independent samples t-test to examine differences in looking times between the leader and bully conditions in the first test trial. We found a significant difference in looking times between the leader and bully conditions (M = 54.09, SD = 11.13, and M = 35.74, SD = 16.52, respectively), $t(12) = 2.44$, $p = .031$, *Cohen's d* = 1.30. Next, we analyzed average looking times across the 4 test trials, and found similar results, $t(12) = 2.16$, $p = .052$, *Cohen's d* = 1.15 (leader condition: M = 43.78, SD = 7.19; bully condition: M = 33.13, SD = 10.89; see Figure 5).

Infants in the leader condition exhibited significantly longer looking times, when subordinates deviated from the linguistic label introduced by the leader, using an alternative term for the novel object. Extended engagement shows that infants had strong expectations for behavioral consistency in scenarios where authority is respected. The data agrees with the hypothesis that infants anticipate subordinates to follow to the norms set by leaders. The shorter looking times in the bully condition suggest that infants do not hold as strong expectations for consistency following demonstrations of fear-based power. This implies a differential cognitive processing based on the nature of the power exerted. The longer looking times in the leader condition likely indicate surprise or unexpected behavior when the established consistency in labeling was breached. According to the VOE, reactions are indicative of infants surprise, agreeing with our hypothesis that infants are more likely to expect and learn from agents displaying respect-based power. These findings suggest that infants can react differently to variations in social power dynamics, showing early developmental sensitivity to respect-based versus fear-based influences.

Figure 5

Raincloud Plot of Mean Looking Times.

Note. Features a raincloud plot that represents the distribution and mean looking times during the test phase for infants, both the bully and leader conditions. Individual observations are depicted as dots within the plot. Green Dots: Represent data points from the bully condition. Orange Dots: Represent data points from the leader condition.

Discussion

The study aimed at, to ask whether infants expect people to learn from respected leaders but not necessarily from bullies. Our hypothesis was that infants between the ages of 20-24 months would have different expectations of learning from agents who shows respect-based power compared to those who display fear-based power. The results from this study indicate that infants aged 20-24 months shows distinct expectations for the behavior of authority figures, differentiated by the nature of the authority respect-based versus fear-based. Infants exhibited prolonged looking times when interacting with scenarios involving leaders, affirming the hypothesis that they anticipate consistent and normative behaviors from figures who shows respect-based power. This observation agrees with the findings by Margoni et al. (2018), which documented that infants have heightened expectations for individuals who display positive and authoritative behaviors, reflective of respect-based power dynamics.

The reduced looking time in the bully condition suggest a diminished expectation of behavioral consistency from figures exerting fear-based power. This agrees with much of prior infant research Thomsen, L. (2020). which posits that even at a young age, children are sensitive to the intentions and motivations behind actions, influencing their expectations and cognitive responses to authority. These findings elucidate the nuanced capabilities of infants to not only recognize different types of social power but also to form specific expectations based on these distinctions. The study extends our understanding of how infants perceive and react to power dynamics, highlighting an intrinsic ability to evaluate the fairness and consistency of behaviors displayed by authority figures. (Sloane, et al,. (2012). This early discernment could play a crucial role in shaping their future social interactions and learning processes.

Implications and Future Directions

Implications: The study points to the importance of positive role modeling in early childhood settings. Educational strategies and parenting practices that obtain respect can create a good and predictable learning environments, which are vital for healthy cognitive and social development.

Future Research Directions: More research is needed to see if cultural contexts affect infant representations of and reactions to different forms of authority or if instead these early-emerging expectations are universal and built in us by evolution. Cross-cultural studies could widen our insights into whether these findings are universal or if there are culturally specific patterns of social learning.

Conclusion

This study has provided insights on how infants understand and respond to different types of social power, highlighting early cognitive skills that are essential for social learning. By carefully examining infant reaction to respect-based and fear-based power, the findings offer a deep look into the developmental processes that guide social behavior and how children recognize authority. Infants showed a clear expectation for consistency and adherence to established norms when faced with respect-based power. These results support the idea that infants not only recognize respect-based authority but also expect consistent adherence to the norms set by the figures. The strong reactions to deviations in these scenarios suggest that respect-based power is a good way in shaping infant expectations about social interactions and learning. This also shows an early understanding that commands driven by fear do not necessarily lead to stable social norms or expected behaviors. These findings add to our understanding of social learning, showing how the type of social power affects the observational learning process.

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