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The present research examined children's understanding of social rank (i.e., status, power) and investigated the degree to which social rank and gender biases drive children's evaluations of people. Study 1 examined whether children distinguish between different kinds of social rank (i.e., status, power) across early to middle childhood. Sixty-eight 5- to 10-year-olds were shown sets of characters described with status, power, or neutral rank information. Overall, children showed age-related improvements in their abilities to attribute status or power to the appropriate characters, although this improvement was especially apparent for status. Study 2 investigated whether children's evaluations of others demonstrated a bias in favor of high status characters, gender in-group characters, or high status characters from a specific gender category (e.g., high status boys). Seventy 5- to 10-year-olds were presented with and asked questions about sets of characters that varied in status and gender (i.e., high status boy vs. low status girl; high status girl vs. low status boy). Interestingly, the combination of high status *and* gender in-group membership drove children's preferences. This research was the first to examine if children perceive multiple dimensions of social rank distinctively or instead perceive social rank as a unitary concept. This involved consideration for other developmental skills and abilities that might underlie social rank conceptualization. Further, this research included other areas of children's development (e.g., gender) to explore their potential impact on how children use social rank to guide their social decision making. Both studies have implications for why children might perceive leadership positions or other highly ranked roles as more or less suitable for themselves and other people.

CHILDREN'S EMERGENT BELIEFS ABOUT SOCIAL RANK AND GENDER

by

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CHAPTER I: GENERAL INTRODUCTION

Social rank signifies influence over another person or group of people, often obtained through status or power (Blader & Chen, 2014; Magee & Galinsky, 2008). The developmental literature suggests that social rank is detectable in early childhood (e.g., Heck, Shutts, & Kinzler, 2022), but it is unclear if or when children distinguish between multiple forms of social rank (i.e., status, power). Children might conceptualize social rank as a multidimensional concept, such that they differentiate status and power. Alternatively, social rank might be conceptualized as a unitary concept, such that children fail to distinguish status versus power and instead focus on the general influence evoked through social rank. In fact, children's conceptualizations of social rank likely shift with age due to changes in developmental abilities, such as abstract reasoning or mental state understanding. To broaden existent knowledge about children's conceptualizations of social rank, Study 1 was the first to explicitly examine whether children distinguish status and power. Notably, social rank overlaps with other social categories that are psychologically salient by early childhood. Indeed, gender is perceptually discriminable and labeled, leading children to perceive it as a relevant, but immutable, social category (Bigler & Liben, 2007). Study 2 examined how children use social rank in comparison to gender to make evaluations about others. The novel design of Study 2 allowed for the detection of a putative bias in favor of highly ranked people, gender in-group people, *or* highly ranked people from a specific gender category (e.g., high status boys). Both dissertation studies provide new insight into children's beliefs about social inequalities, which can reveal what factors influence whether children perceive themselves and others as suited for highly ranked roles.

In the sections below, social rank is defined in the context of the current dissertation, followed by an introduction to Study 1 and Study 2 in the context of children's developmental

abilities. Importantly, these abilities provide a potential explanation for why children's conceptualizations of social rank as multidimensional or unitary might shift with age (Study 1). Emerging developmental skills can also inform why social rank and gender might hold distinct value for children's social evaluations about others at different ages (Study 2).

Defining Social Rank: Social Status and Social Power

This dissertation centered on two forms of social rank: social status and social power. Each represent distinct ways that someone can obtain social rank and thus influence over others. Both forms of social rank can inform how children think about leaders and respond to social rank-based inequalities, including whether different impressions form for leaders who arise through status versus power. For example, the coercive nature of power in comparison to status might lead children to perceive leaders that arise through status as more legitimate, benevolent, or impactful to followers. This might lead to a diminished need to rectify a status based inequality compared to a power based inequality. Children's emergent status and power understanding might also shape the behaviors that children adapt (e.g., status versus power evoking behaviors) when they decide to pursue a leadership position.

For this dissertation, status was defined as voluntary deferral from others due to respect, admiration, and perceived social value (e.g., Anderson et al., 2015; Blader & Chen, 2014; Heck, Bas, & Kinzler, 2022; Magee & Galinsky, 2008). Conversely, most developmental studies define status through a variety of proxies, including wealth (e.g., Olson et al., 2012; Shutts et al., 2016), ability (e.g., Nesdale et al., 2004; Nesdale & Flessler, 2001; Yee & Brown, 1992), popularity (e.g., Coie & Dodge, 1983; Lease et al., 2002), and social categories (e.g., Elenbaas et al., 2016; Rizzo & Killen, 2018). For example, wealth studies present children with new versus old homes or toys and ask children to match individuals to those objects (e.g., Shutts et al., 2016).

Ultimately, this leaves unclear if children perceive wealth differences as indicative of respect, admiration, and social value differences. Conversely, popularity work involves peer nominations that convey some elements of status (Hymel et al., 2014; Lease et al., 2002): for example, children are asked who everyone likes to be around or has good ideas for things to do, which connotes admirability and respect.

For this dissertation, power was defined as forceful control over resources and outcomes (e.g., Fiske, 2010; Fiske & Berdahl, 2007; Fiske et al., 2016), which follows past developmental research that illustrates power through resource control, goal achievement, and permission setting scenarios (Charafeddine et al., 2015; Cheng et al., 2021; Gülgöz & Gelman, 2017). Importantly, status and power are correlated but distinct, as they can lead to disparate outcomes (e.g., Blader & Chen, 2012; Magee & Galinsky, 2008). For example, status orients people toward more perspective taking, while power is associated with egocentric behaviors (e.g., Blader & Chen, 2012; Blader et al., 2016; Hasty & Maner, 2019; Smith & Magee, 2015). However, these findings are derived from research with adults. Most developmental studies do not probe whether children understand status and power as distinct, despite differential impact on people's behavior and potential implications for how children perceive different kinds of leaders or respond to social inequalities. Children's cognitive and social abilities can provide some insight into why children might conceptualize social rank as a multidimensional (i.e., distinguish status and power) or unitary (i.e., do not distinguish status and power) concept.

Social Rank Understanding in The Context of Development

Children's abstract reasoning abilities might underlie whether they perceive social rank as a multidimensional or unitary concept. Status involves abstract terms that are not as physically apparent as power (Heck, Bas, & Kinzler, 2022). Power can be depicted with physically salient,

concrete cues (e.g., controlling resources, such as snacks or prizes) that likely make power-based influence particularly noticeable to children from an early age. Indeed, past work suggests that children recognize who does and does not have power in different scenarios by preschool age (e.g., Charafeddine et al., 2015; Gülgöz & Gelman, 2017). Conversely, status relies heavily on others' impressions, such as the respect they prescribe onto someone or the social value that they perceive in someone. This might not be as easily depicted with physical, concrete cues.

Therefore, status understanding might emerge later than power understanding, following parallel improvements in abstract reasoning that entail less reliance on physical cues.

For example, if people follow someone, an interpretation of status would require children to perceive following as a symbol of respect or admiration (status). That same behavior could also symbolize forced control over resources and outcomes (power). By contrast, forceful control over resources might be shown by having someone distribute snacks in the manner that they choose, which arguably represents power more directly than a potentially ambiguous symbol. Consequently, and as suggested by past research (e.g., Gülgöz & Gelman, 2017; Heck, Bas, & Kinzler, 2022; Kajanus et al., 2020), the ability to detect and understand power likely emerges in early childhood, but status detection and understanding likely emerges around middle childhood. As a result, social rank might be conceptualized as a unitary concept in early childhood and become multidimensional with age, due to the ability to distinguish status from power.

Additionally, status relies on others' perceptions, which necessitates the ability to understand others' mental states. By 5 years of age, children make rapid advancements in mental state understanding, including a recognition that others hold distinct beliefs that guide their behaviors (see Wellman & Liu, 2004, for review). However, it is not until 7 to 9 years of age that children reach higher order mental state understanding, such that they understand that people can

hold distinct beliefs about *another* person's thoughts and behaviors (e.g., Miller, 2009; Perner & Wimmer, 1985). Consequently, and in relation to the current dissertation, a 5-year-old might struggle to perceive status after being told about someone's respect and admirability toward a third party (e.g., character A thinks that character B is respectable and admirable). In fact, this ability might not emerge until middle childhood. Therefore, detection and understanding of status, along with other forms of social rank, will likely improve with age to encourage a multidimensional conceptualization of social rank in middle childhood. Nevertheless, it is unclear if this will persist in a context that presents multiple forms of social rank simultaneously.

Whether children can distinguish status and power might ultimately rely on the ability to recognize that identical outcomes can arise from disparate methods. A reliance on outcomes likely encourages a unitary conceptualization of social rank due to a lack of consideration for the distinct ways that social rank can be obtained (i.e., status, power). By contrast, attention to the methods of achieving an outcome likely encourages a multidimensional conceptualization of social rank. Past developmental research focuses on whether children recognize status or power differences between highly and lowly ranked individuals (e.g., Charafeddine et al., 2015; Cheng et al., 2021; Enright et al., 2020; Gülgöz & Gelman, 2017; Kajanus et al., 2020). However, this only signifies that children recognize who has influence, rather than whether status and power are perceived and understood as distinct ways of obtaining influence as an outcome.

Outside of social rank, other developmental literature finds that preschoolers primarily rely on outcomes to guide their evaluations of others, yet by 5 to 7 years of age children integrate outcome with intention information (e.g., Helwig et al., 2001; Zelazo et al., 1996). More broadly, this suggests that children are better able to prioritize an outcome and the factors that contributed to that outcome with age. Importantly, recognizing the role of intention does not necessarily

equate to the ability to distinguish status and power as distinct ways of obtaining influence. Given the differences in abstract versus physical representations of status versus power, along with progressions in mental state understanding with age, the ability to recognize disparate ways of obtaining influence might not be sufficient for children to distinguish status versus power and therefore suggest a multidimensional rather than unitary conceptualization of social rank. Other biases in children's social reasoning provide further explanation for why children might perceive social rank as a multidimensional or unitary concept.

Children exhibit a positivity bias (Boseovski, 2010) that could potentially impact how they detect and understand status versus power and therefore conceptualize social rank as a multidimensional or unitary concept. For example, children overextend positive characteristics across domains (e.g., Heyman et al., 2003). If children assume that any positive characteristic is synonymous with or indicative of status or power, then a limited understanding of status and power would be suggested, as niceness, friendliness, and other positive characteristics are not necessarily indicative of respect, admiration, and social value, or control over resources and outcomes. This would limit children's abilities to perceive differences between status and power, which would indicate a unitary conceptualization of social rank. By contrast, an ability to distinguish positive characteristics from status and power entails a better understanding of both forms of social rank and perhaps a perception of social rank as multidimensional. Relatedly, past work suggests that children do not systematically distinguish between well-liked and popular peers until about 8 years of age (Lease et al., 2020). In parallel, the positivity bias also tapers off as children progress through middle childhood (see Boseovski, 2010). Thus, it is probable that children will only reach a comprehensive understanding of status and power in middle to late childhood, given the potential that younger children might assume any positive characteristic is

indicative of social rank. Consequently, children in middle childhood might have a multidimensional conceptualization of social rank, while younger children might have a unitary conceptualization of social rank. In addition to positivity, children also show a variety of gender biases that might shift perceptions of, or value attributed to, social rank.

The Value of Social Rank vs. Gender in the Context of Development

Social rank is often exhibited in children's everyday environments through gender hierarchies that prioritize men over women (e.g., Eagly & Karau, 2002; Ridgeway, 2001). Among adults, gender roles lead to the perception of men as competent and agentic, but women as warm and communal (Eagly & Wood, 2012; Fiske et al., 2002; Fiske et al., 2007; Glick & Fiske, 1999). Consequently, men are associated with status and power to a greater extent than women (e.g., Fiske et al., 2016). This makes it difficult for women to obtain highly ranked roles (e.g., leadership roles) and, once obtained, women are often judged more harshly than men in identical roles (Eagly & Karau, 2002; Heilman & Okimoto, 2007; Rudman et al., 2012; Vial et al., 2016). When women deviate from gender expectations and obtain a highly ranked or leadership role, they are often met with negativity, backlash, and perceptions of illegitimacy (Rudman et al., 2012; Vial et al., 2016). However, these patterns are found primarily among adult populations. The developmental origins of these patterns are uncertain. For this dissertation, status was investigated in relation to gender, rather than power or both status and power. This decision was informed by children's impressions of the power characters in Study 1.

Theories regarding how children perceive and interact with social categories can provide some insight into how children might understand status in comparison to gender and therefore help explain why children might exhibit preferences for men in high status roles. Developmental Intergroup Theory outlines mechanisms that lead children to categorize specific social groups

(Bigler & Liben, 2007). Specifically, perceptual discriminability, labeling, proportional group size, and implicit use of gender categories lead to psychological salience that elicits categorization and subsequent stereotyping (Bigler & Liben, 2007). Importantly, this allows children to give meaning to the gender categories that they perceive, which can lead to biases and essentialist beliefs (Bigler & Liben, 2007). Indeed, 5-year-olds exhibit a variety of gender in-group biases (e.g., Halim et al., 2014; Ruble et al., 2006) and endorse essentialist beliefs that depict gender as an immutable, inherent category, such that category members share non-obvious properties (e.g., Ruble et al., 2006; Taylor et al., 2009). This dissipates through middle childhood (e.g., Ruble et al., 2006; Taylor et al., 2009). By comparison, children also exhibit a bias in favor of high status people by preschool age, but they do not necessarily view status as an inherent property (e.g., Enright et al., 2020; Mandalaywala, Lei, et al., 2020). This is likely because status is not as psychologically salient to children as gender.

Despite early detection of status by preschool age (Enright et al., 2020; Mandalaywala, Tai, & Rhodes, 2020), the mechanisms outlined by Developmental Intergroup Theory are not fully captured by status, at least not to the same extent as gender. Specifically, status is seldom labeled explicitly, nor is it as perceptually discriminable as gender. Other factors, such as proportional group size, might apply to children's understanding of status, although not necessarily by early childhood. It is only at about 8 years of age that children recognize status as a characteristic that is often attributed to rare, small groups (Heck, Bas, & Kinzler, 2022). Consequently, it follows that status is likely not as psychologically salient to children as gender, at least until middle childhood. Although past research suggests a bias among children in favor of high status people by preschool age (e.g., Enright et al., 2020; Mandalaywala, Tai, & Rhodes, 2020), this bias might ultimately be weaker than children's gender biases. This might be

especially true in early childhood, given that children's biases and essentialist beliefs about gender weaken through middle childhood (e.g., Ruble et al., 2006; Taylor et al., 2009). By contrast, children's understanding of status is expected to become more comprehensive in middle childhood due to the reasons outlined in the sections above. In turn, status biases might overcome gender biases, or compound with gender biases, among older children.

Past literature can provide additional insight into whether children might prioritize status, gender, or both to guide impressions about others. Preschoolers assign boys with more status and power than girls (Charafeddine et al., 2020; Mandalaywala, Tai, & Rhodes, 2020), and pick boys as more likely to lead than girls (e.g., Mandalaywala & Rhodes, 2020; Santhanagopalan et al., 2022). Thus, children overcome the psychological salience of gender and subsequent in-group biases in favor of a status hierarchy that favors boys over girls. However, other research demonstrates that it is not until late childhood that children rank novel jobs illustrated with primarily men as more prestigious than the same job illustrated with primarily women (Liben et al., 2001). This suggests that for the current dissertation, younger children might rely on familiar, gender in-group biases to guide their evaluations about others, whereas older children might compound their gender and status beliefs to ultimately favor boys in high status positions.

The Present Dissertation

First, this dissertation investigated whether children conceptualize social rank as a unitary or multidimensional concept across 5 to 10 years of age. To do this, Study 1 discerned whether 5- to 10-year-olds distinguished between status and power, with implications for children's leadership beliefs. Children's social rank conceptualizations might also demonstrate what factors impact whether children perpetuate an inequality. This could relate to the development of a social dominance orientation, defined as the extent to which someone perpetuates and legitimizes

social rank due to the belief that some groups are dominant, superior, or more valuable than others (e.g., Pratto et al., 2000; Pratto et al., 1994). Among adults, higher social dominance orientation is associated with increased prejudice against marginalized groups and conservatism (e.g., Duriez & Soenens, 2009; Pratto et al., 1994; Pratto et al., 2000; Wilson & Sibley, 2013). Thus, children's beliefs about and responses to social rank inequalities could inform their later political beliefs (Heck et al., 2021; Patterson et al., 2019).

Study 2 of the dissertation examined whether 5- to 10-year-olds prioritized status, gender, or a combination of both to guide their social judgements about others. Study 2 has implications for what factors might shape children's future interests in leadership positions and other highly ranked roles. For example, by 6 years of age, girls demonstrate less interest in games described for children that are "really, really smart" compared to games for children that "try really, really hard" (Bian et al., 2017). Thus, by early elementary school, children are likely cognizant of the kinds of roles ascribed to men versus women, including roles related to competence and agency, which are related to perceived social rank (e.g., Fiske et al., 2016). Importantly, the perceived relations between the roles of men versus women in social rank contexts impact the kinds of interests that children believe are appropriate for themselves and worth pursuing (Block et al., 2018). For example, by 6 years of age, girls endorse communal traits more than boys, while boys endorse agentic traits more than girls (Block et al., 2018). The extent to which communal values are endorsed relates to whether children report a family versus career orientation (Block et al., 2018). Therefore, how much children value social rank in comparison to gender to guide their evaluations of others can elucidate what information drives their impressions of other people, along with impressions of themselves, their abilities, and their aspirations.

CHAPTER II: STUDY 1 INTRODUCTION

Study 1: Do Children Distinguish Between Status and Power?

Recent developmental literature reveals that by early childhood, children can determine who has status or power (e.g., Charafeddine et al., 2015; Cheng et al., 2021; Enright et al., 2020; Gülgöz & Gelman, 2017; Heck, Bas, & Kinzler, 2022; Kajanus et al., 2020). However, these studies either present status or power in isolation or ask children which character in a leader-follower dyad has influence over another character, rather than an examination of whether children understand differences in how influence can arise (i.e., via status or power). Study 1 examined the extent to which 5- to 10-year-olds distinguish status versus power, given that both forms of social rank ultimately result in influence over other people. This allowed for clarification of whether children recognize differences in the process by which influence is obtained (i.e., *how* did this person obtain influence?), which would suggest a multidimensional conceptualization of social rank, rather than the mere recognition of influence as an outcome (i.e., which person does or does not have influence?), which would suggest a unitary conceptualization of social rank.

For Study 1, 5- to 10-year-olds were introduced to two trios of characters, each of which included a character with status, a character with power, and a character with neutral rank (i.e., no explicit social rank information provided). Children were then asked a variety of status, power, general rank (i.e., influence without specification of how that influence was obtained), and knowledge questions to test the limits of their status versus power understanding. The developmental findings reviewed below reflect some age-related differences relevant to children's understanding of status versus power, including the facets of each rank type that might become increasingly relevant with age.

Status and Power Understanding Among 5- to 7-Year-Olds

Although 5- to 7-year-olds might be able to determine basic rank-based dynamics (e.g., who is a follower, who is influential), it is expected that they will primarily focus on the influence exerted by those with high rank, rather than consideration for how that influence was obtained. Given that status and power are distinct ways of obtaining influence (e.g., Blader & Chen, 2014), young children's ability to distinguish status from power will likely be limited and suggest a unitary conceptualization of social rank.

Although preschoolers can determine who holds status, past work predominantly includes a singular component of status presented one at a time (e.g., Enright et al., 2020). For example, one study depicted status by explaining that someone is listened to voluntarily by others, which could arguably suggest the respect component of status (Enright et al., 2020). A fuller representation of status would instead present additional context, such as detailing that others listen to the person in question because the person is knowledgeable and thus socially valuable. Consequently, the current developmental literature leaves unclear whether young children fully understand status as a construct that involves respect, admiration, and social value that is conferred by others (e.g., Blader & Chen, 2014; Magee & Galinsky, 2008).

Relatedly, 5-year-olds can determine who holds power (e.g., Charafeddine et al., 2015; Gülgöz & Gelman, 2017; Kajanus et al., 2020; Terrizzi et al., 2019), such as through depictions that involve resource control, goal achievement, permission granting, and norm setting. However, it is not until later childhood that children identify power in additional ways that closely parallels adults (e.g., Gülgöz & Gelman, 2017). Additionally, the previously mentioned studies that involve status or power do not directly compare both and occasionally use the terms status and power interchangeably. Therefore, it is uncertain if young children will distinguish

status versus power in a context that presents both concurrently to therefore suggest a multidimensional conceptualization of social rank.

One factor that might help young children distinguish status from power is social value established through perceived competence, such as by exhibiting knowledge in a specific domain (e.g., Anderson et al., 2015; Fiske et al., 2016). By 5 years of age, children are attuned to ability differences between themselves and others (Bigler et al., 2001; Nesdale et al., 2004; Nesdale & Flessler, 2001) and distinguish between who is and is not knowledgeable in specific contexts through a variety of cues (e.g., Lutz & Keil, 2002; Marble & Boseovski, 2020). Young children's ability to determine who is sufficiently capable or knowledgeable entails that they will likely recognize who is socially valuable in a particular context. Nevertheless, status also includes respect and admiration, in addition to social value. Thus, young children might still struggle to differentiate status from power, suggesting a unitary conceptualization of social rank.

Status and Power Understanding Among 8- to 10-Year-Olds

Compared to 5- to 7-year-olds, it is expected that 8- to 10-year-olds will likely become increasingly aware of *why or how* influence is obtained, which implies an enhanced ability to differentiate status from power and therefore implies a multidimensional understanding of social rank. Indeed, recent findings suggest improved understanding and differentiation of status versus power through middle and late childhood (e.g., Heck, Bas, & Kinzler, 2022; Heck, Shutts, & Kinzler, 2022; Kajanus et al., 2020), although past studies examine status and power in separate scenarios rather than presenting both forms of social rank concurrently. Regardless, and compared to younger children, older children will likely attend to whether someone is respected and admired, in addition to whether someone holds social value through perceived knowledge. Further, and as mentioned previously, respect and admirability are more abstract concepts than

control over resources and outcomes, as the latter can be depicted more concretely and might therefore be understood earlier in childhood (Heck, Bas, & Kinzler, 2022). Still, children's understanding of power will likely also progress with age. Past work illustrates that 7- to 9-year-olds decipher power from depictions that involve giving orders, which entails an understanding of power that resembles how adults understand power (Gülgöz & Gelman, 2017). Additionally, as children progress through middle childhood, they also exhibit stronger preferences for prestigious (e.g., status) over dominant (e.g., power) individuals (Cheng et al., 2021; Kajanus et al., 2020), which further suggests improved differentiation of status versus power.

As noted previously, another area of age-related change involves the ability to distinguish likeability or other positive attributes from status or power. Young children often extend positive characteristics across domains, although this diminishes with age (e.g., Cain et al., 1997; Heyman et al., 2003). Given that obtaining influence over others might be construed positively, it is possible young children will assume any positive characteristic is indicative of status or power. Thus, hearing that someone is nice might imply that they have status or power. Conversely, older children might be better able to recognize that positive attributes do not always equate to status or power. In fact, past developmental findings centered on sociometric status among peers illustrate how children's understanding of popularity becomes more complex throughout middle childhood (e.g., Hymel et al., 2014; Lease et al., 2002; Lease et al., 2020). For example, by about 8 years of age, children distinguish between peers that are well liked and peers that are popular (although there are also peers that are both well-liked and popular; see Lease et al., 2020). This provides further evidence that only older children in the current study will be able to successfully understand that likeability is not necessarily synonymous with status or power, akin to findings with adults (e.g., Anderson et al., 2015). One reason this might arise is due to a stronger

understanding of status and power that suggests a multidimensional conceptualization of social rank among older children compared to younger children.

The Current Study

Study 1 sought to clarify the extent to which 5- to 10-year-olds differentiate between two forms of social rank: status and power. Children were read two stories that each presented three characters in a novel game context. In each story, one character was depicted with status using cues that signified respect, admiration, and social value through knowledge (i.e., status character). Another character was depicted with power through cues that denoted control over resources and outcomes (i.e., power character). The final character was described with positive characteristics (e.g., likeable), without any explicit mention of social rank, along with limited knowledge in the novel game context (i.e., neutral rank character). Inclusion of the neutral rank character allowed for detection of whether children had a propensity to choose the most likeable character in response to the various measures described below, rather than effective consideration for the status or power information provided. Also, the neutral rank character was not presented with low status or power because the purpose of the current study was to see how much children distinguish between different forms of social rank (i.e., status vs. power), rather than differences within a specific rank type (e.g., low status vs. high status or low power vs. high power). Afterward, children were asked a series of questions related to status, power, general rank (e.g., did not require one to distinguish how influence was obtained), and knowledge. As mentioned previously, knowledge alone does not capture all features of status and therefore the knowledge measures were considered separately from the status measures.

For the status and power measures that required participants to choose between the three characters presented in each story, a main effect of age group was anticipated. These questions

were scored to determine whether children endorsed the characters consistent with the measure (e.g., chose status characters for the status questions across stories). Eight- to 10-year-olds were expected to correctly endorse the status characters for the status questions. By contrast, 5- to 7-year-olds were expected to lack systematicity in their responses. Further, both age groups were expected to endorse the power characters for the power questions, but 8- to 10-year-olds were anticipated to outperform 5- to 7-year-olds. For the status and power measures that required participants to provide a rating for each character, an interaction between age group and character type was predicted. Specifically, only older children were expected to provide high ratings for the status characters in response to the status measures and power characters in response to the power measures. Conversely, younger children were expected to rate both the status and power characters highly for the status measures, along with the power measures. Thus, only older children were expected to differentiate status from power due to their stronger, multidimensional understanding of social rank, at least in comparison to younger children.

The general rank and knowledge measures required participants to provide a rating for each character, but only a main effect of character type was predicted. Specifically, both age groups were anticipated to endorse either the status or power characters for the general rank questions, but not the neutral rank characters. This was predicted because the general rank measures only required children to determine whether a character had influence, rather than how that influence arose. Further, both age groups were expected to endorse the status character for the knowledge measure, as it was one element of status expected to be salient to young children.

Two supplementary measures were used to explore children's impressions of individuals with status, power, and neutral rank. Children reported how much they desired to befriend each character and made trait attributions about each character. A main effect of character was

expected for both supplementary measures: children were expected to make fewer positive judgments about the power characters in comparison to the status or neutral rank characters due to the force evoked in the descriptions for the power characters. Importantly, the supplementary questions allowed for the ability to speculate about whether children's response patterns were driven by extreme like or dislike toward a specific character.

CHAPTER III: STUDY 1 METHOD

Participants

An a priori power analysis for an “ANOVA: Repeated measures, between factors” statistical test was used to determine sample size. The following parameters were inputted to G*Power: effect size $f = .25$, $\alpha = .05$, 80% power, 2 groups (age group), and 4 measurements (each question type: power, status, general rank, knowledge), and a correlation of .3. The power analysis suggested a sample size of 62.

Participants were recruited from one of three sources: a database of families interested in contributing to developmental research ($n = 56$), word of mouth (e.g., Facebook, Twitter, family, friends; $n = 3$), and ChildrenHelpingScience.com ($n = 9$). The COVID-19 pandemic necessitated the use of the latter two sources.

In total, 68 children participated through Zoom due to COVID-19 restrictions. Three children were excluded. One of these children failed the comprehension check questions ($n = 1$; 9-year-old girl) and the remaining two children did not finish the session ($n = 2$; 5-year-old boys). Consequently, data from only 65 participants were analyzed. This included 31 younger children (5- to 7-year-olds; 16 girls, 15 boys; $M = 6.00$ years, $SD = .89$ years) and 34 older children (8- to 10-year-olds; 16 girls, 18 boys; $M = 8.88$ years, $SD = .84$ years). Participants recruited from ChildrenHelpingScience.com received a \$5 Amazon e-gift card after participation. All other participants received a virtual activity pack (e.g., coloring pages, crafts, visual search activities) as a thank you for their participation.

The sample included 53.8% White participants, 7.7% Black participants, 13.8% Asian participants, 1.5% Middle Eastern or North African participants, 6.2% mixed race, and 16.9% who preferred not to respond. Further, 3.1% of the sample identified as Hispanic or Latinx.

Nearly half the sample (41.5%) reported a family income of over \$120,000. The remainder of the sample consisted of the following income brackets: 13.8% reported \$90,000-\$120,000, 9.2% reported \$60,000-\$90,000, 3.1% reported \$40,000-\$60,000, 7.7% reported \$25,000-\$40,000, 1.5% reported \$15,000-\$25,000, and 23.1% preferred not to respond.

A fillable PDF version of the informed consent form was sent to parents via email. Parents either signed the form electronically (n = 41) or printed, scanned, and emailed the form back to the researcher (n = 19). Parents who had trouble accessing the PDF consent form were sent a Qualtrics version to complete (n = 6). Verbal consent was obtained from parents who did not return either a PDF or Qualtrics version of the consent form prior to the session (n = 2).

Verbal assent was obtained from participants at the start of the session. Written assent was collected from 7-, 8-, 9-, and 10-year-olds via a PDF form sent to parents. Electronic signatures on the PDF form were collected (n = 26) or parents printed, scanned, and emailed the form back to the researcher (n = 15). A small number of participants over 7 years of age did not return the written assent form, so assent was only collected verbally (n = 4).

Materials

Twelve characters (six boys, six girls) were downloaded from Dreamstime, which is an online community where artists can upload illustrations for others to purchase. All downloaded illustrations were created by the same artist to maximize similarities between characters (i.e., characters only differed in eye color, hair color, and clothing). The characters were displayed on a white background on Microsoft PowerPoint. When each character was described, animations were used to highlight the character. Participants viewed the characters through the screenshare feature on Zoom.

For continuous measures, a scale with three thumbs was used: a green thumbs up, a yellow thumb in the middle, and a red thumbs down. A brown ladder illustration was used for the ladder measure.

Design

The study design included age group (age group: 5- to 7-year-olds vs. 8- to 10-year-olds) as the between-subjects variable and character type (character type: status vs. power vs. neutral rank) as the within-subjects variable. Participants heard a total of two stories. Each story included three characters: a character with status, a character with power, and a control character with neutral rank.

Procedure

At the start of the session, the experimenter ($n = 2$) introduced herself to the participant and ensured proper video and audio quality (i.e., child could see and hear the experimenter). Then, the screenshare feature on Zoom was enabled. To confirm that the participant could see the experimenter's screen, participants were asked to indicate whether they could see the welcome image on the screen (i.e., yellow ducks). The experimenter then explained that she would read two stories. Then, the participant would be asked to answer some questions that had no right or wrong answers.

In each of the two stories (Story A and Story B), participants heard about characters with either status, power, or neutral rank. The social rank descriptions in each story differed slightly, as is done in the literature (e.g., Enright et al., 2020). Story presentation was randomized and characters matched participant gender. Gender neutral names were given to the characters to ensure that the same names could be used for all participants. Characters were presented in one of three randomized orders (e.g., some children first heard about the character with status, while

others first heard about the characters with power or neutral rank). The characters were presented in a novel game context (e.g., Zios). The examples below detail the descriptions provided to children. Appendix A lists the full descriptions given in each of the two stories.

Status Character Description

The following is an example status description: “Everyone on [character A’s] team looks up to [character A]. They want to ask [character A] questions throughout the game and always choose to do what [character A] does. The team respects and values [character A]. Everyone gets a snack during the break, and everyone chooses to eat the same snack as [character A]. Everyone says that [character A] knows everything about playing Zios.”

Power Character Description

The following is an example power description: “Everyone on [character B’s] team has to follow [character B]. They have to ask [character B] before they do anything throughout the game and [character B] has to say it is okay. The team has to follow what [character B] says and they have to listen to [character B]. Everyone gets snacks during the break, but [character B] get more snacks than everyone else. [Character B] says that (s)he knows how to play Zios well.”

Neutral Rank Character Description

The following is an example neutral rank description: “Everyone on [character C’s] team really likes [character C]. They are always cheered on by [character C] throughout the game. The team members always laugh and smile with [character C]. The team likes that [character C] is supportive and happy to help the team. Everyone says that [character C] does not know much about playing Zios.”

Comprehension Check

At the end of each story, participants answered three comprehension check questions. The questions asked about each character's rank (e.g., "Who did I say everyone on their team looks up to: [character X, Y, or Z]?", "Who did I say everyone on their team has to listen to: [character X, Y, or Z]?" and "Who did I say everyone on their team gets cheered on by: [character X, Y, or Z]?"). Feedback (i.e., repetition of rank information) was provided if participants answered any of the comprehension checks incorrectly. Participants were excluded if they required three or more repetitions of a character's description. For Story A, 21.5%, 7.7%, and 20.0% of participants required at least one repetition of status, power, and neutral rank information, respectively. For Story B, 15.4%, 12.3%, and 24.6% of participants required at least one repetition of status, power, and neutral rank information, respectively.

Participants were then administered the status and power measures. Question types were presented in randomized order (i.e., either all status questions or all power questions presented first). Individual questions within each question type (i.e., status, power) were presented in a fixed order.

Status Measures

The status questions involved voluntary conferral through respect, admiration, and social value judgments, rather than mere influence. First, and to measure appreciation, children were asked the following: "Kids talk about someone who is really appreciated by the group. Who do you think that are they talking about: [character X, Y, or Z]?" Children then provided an importance rating for each character: "How important is [character] to the group: really important like the thumbs up, sort of important like the thumb in the middle, or not at all important like the thumbs down?" Then, to determine which character was perceived as the most

important, children were asked the following: “Who do you think is the most important to the group, so everyone really *wants* this person to lead the team: [character X, Y, or Z]?”

Participants were asked to provide a justification (i.e., “Why?”) for why the character that they chose was the most important. Lastly, to examine who children believed was admired, they were asked the following: “Who do you think other people at school admire, they want to be around this person: [character X, Y, or Z]?”

Power Measures

The power questions involved forceful control over outcomes and resources, rather than voluntary conferral that would suggest status. To begin, participants provided an in charge rating for each character: “How much is [character] in charge of controlling what the team does: really in charge like the thumbs up, sort of in charge like the thumb in the middle, or not at all in charge like the thumbs down?” Then, to determine which character was perceived as the most in charge, children were asked the following: “Who do you think is the most in charge of their team, so they take charge even when everyone wants a different leader: [character X, Y, or Z]?” To examine which character children believed made others engage in forceful listening, children were asked the following: “Who do you think everyone has to listen to no matter what, even when they *don't* want to: [character X, Y, or Z]?” Lastly, to measure which character children thought was the boss, they were asked the following: “Who do you think is the boss of their team, so everyone *has* to follow them: [character X, Y, or Z]?”

The remaining question types below were presented in randomized order, except that the trait and affiliation questions were always presented last. Questions within each question type were presented in a fixed order.

General Rank Measures

The general rank questions targeted general influence over others, without explicit details about whether that influence resulted from voluntary conferral (i.e., status) or forceful control (i.e., power).

Leadership Ratings

Children rated each character's leadership with the following question: "What kind of leader is [character]: a good leader like the thumbs up, an okay leader like the thumb in the middle, or a bad leader like the thumbs down?" This measure was included within the general rank measures because leaders can obtain influence through voluntary conferral *or* force.

Ladder

Children were presented with a general rank ladder adapted from the literature (Mandalaywala, Tai, & Rhodes, 2020). The following description was provided for the ladder: "Kids at the top of the ladder always get to pick the games that everyone else plays at recess and the snacks that everyone else eats at snack time. These kids make lots of decisions. Kids at the bottom of the ladder never get to pick the games that anyone plays at recess or the snacks that anyone eats at snack time. Even though these kids don't make lots of decisions, they are still good classmates and they do a good job listening to and following instructions. But you know what? Kids don't have to go just at the top or the bottom. They can go on any of these places in the middle too." Children then answered three practice questions to ensure they understood how to use the ladder: "If someone makes lots of decisions and they pick games and snacks, where do they go on the ladder?", "If someone does not make any decisions and they do not pick games and snacks, where do they go on the ladder?", and "If someone makes some decisions and they sometimes pick games and snacks, where do they go on the ladder?" In total, 93.5% of

participants answered the practice questions correctly and did not require any repetitions of the ladder instructions (i.e., 2 younger children required repetitions). Then, participants were asked to place each character on the ladder with the following question: “Can you tell me where you think [character] should go on the ladder?”

Knowledge Ratings

Children rated each character’s knowledge on a scale. The experimenter told children the following: “For these next questions, we’re going to use this line. Kids who know a lot about [novel game] go over here, where the green check mark is. Kids who know very little about [novel game] go over here, where the red X is. Can you tell me where you think [character X, Y, Z] should go on the line?” As previously noted, knowledge entails social value, which captures a component of status. However, knowledge alone does not necessarily capture all features of status and therefore the knowledge ratings were considered separately from the status questions.

Trait Attribution and Affiliation Ratings

These questions explored children’s general impressions about each character. This allowed for potential biases to be detected that would leave unclear if children were attuned to the dimensions of rank presented in each story or were instead responding with a character that they overwhelmingly liked or disliked.

Trait Attributions

Participants provided a trait attribution for each character. First, participants were asked an open-ended question: “What kind of person is [character]?” If participants did not spontaneously say nice or mean, a follow-up question was administered: “Is [character] nice, mean, or not nice or mean?” Trait (i.e., mean, nice, not nice or mean) presentation was randomized.

Affiliation Ratings

Participants decided how much they wanted to befriend each character: “How much would you like to be friends with [character]: a lot like the thumbs up, sort of like the thumb in the middle, or not at all like the thumbs down?”

Distractor Task

A distractor task was given between the stories as a break to ensure that the content between stories was not muddled together and participants understood that each story involved different characters. The distractor task was a five minute visual search game (i.e., find the hidden objects in a picture) from the Highlights Kids website.

CHAPTER IV: STUDY 1 RESULTS

For measures that required participants to choose between the three characters presented in each story, responses were scored to reflect whether the character consistent with each measure was endorsed (e.g., chose status characters for status questions). See Appendix B for means and standard deviations by age group and story. According to McNemar's tests, each age group's responses did not differ significantly by story for the status and power measures, $ps > .01$ (Bonferroni corrected p-value = .01). As a result, scores were collapsed across stories for the one-way ANOVA analyses below that determined the effect of age group on children's responses. Welch's ANOVA was used if the homogeneity of variances assumption was violated. Additionally, see Appendix C for response distributions for these measures (i.e., percentage of children that chose the status, power, or neutral rank character) by age group and story.

For measures that required participants to provide a rating for each character, scoring is detailed below. For these measures, paired t-tests revealed that responses from each age group did not differ significantly by story, $ps > .01$ (Bonferroni corrected p-value = .01). Therefore, scores were collapsed across stories by character. See Table 1 for collapsed means and standard deviations by age group. Then, 2 (age group: 5- to 7-year-olds vs. 8- to 10-year-olds) x 2 (character: status vs. power vs. neutral rank) mixed ANOVAs were used for analyses. The character variable occasionally violated the sphericity assumption, and a Greenhouse-Geisser correction was used in these instances.

Table 1. Means and Standard Deviations for Importance, In Charge, Leadership, Ladder, and Knowledge Ratings

Measure	5- to 7-year-olds	8- to 10-year-olds
	<i>M (SD)</i>	<i>M (SD)</i>
Importance		
Status	2.94 (1.03)	3.41 (.78)
Power	2.65 (.88)	2.35 (1.01)
Neutral Rank	2.48 (1.09)	2.74 (1.11)
In Charge		
Status	2.71 (1.01)	2.41 (.89)
Power	2.65 (1.43)	3.59 (.99)
Neutral Rank	1.87 (.92)	1.71 (1.00)
Leadership		
Status	3.00 (1.32)	3.47 (.83)
Power	1.97 (1.25)	1.12 (1.34)
Neutral Rank	1.26 (.77)	1.53 (.66)
Ladder		
Status	2.68 (1.11)	3.15 (.93)
Power	2.42 (1.41)	3.23 (1.20)
Neutral	2.00 (.78)	1.68 (1.04)
Knowledge		
Status	2.90 (1.30)	3.62 (.85)
Power	2.94 (1.31)	3.12 (1.18)
Neutral	1.68 (1.25)	1.29 (1.40)

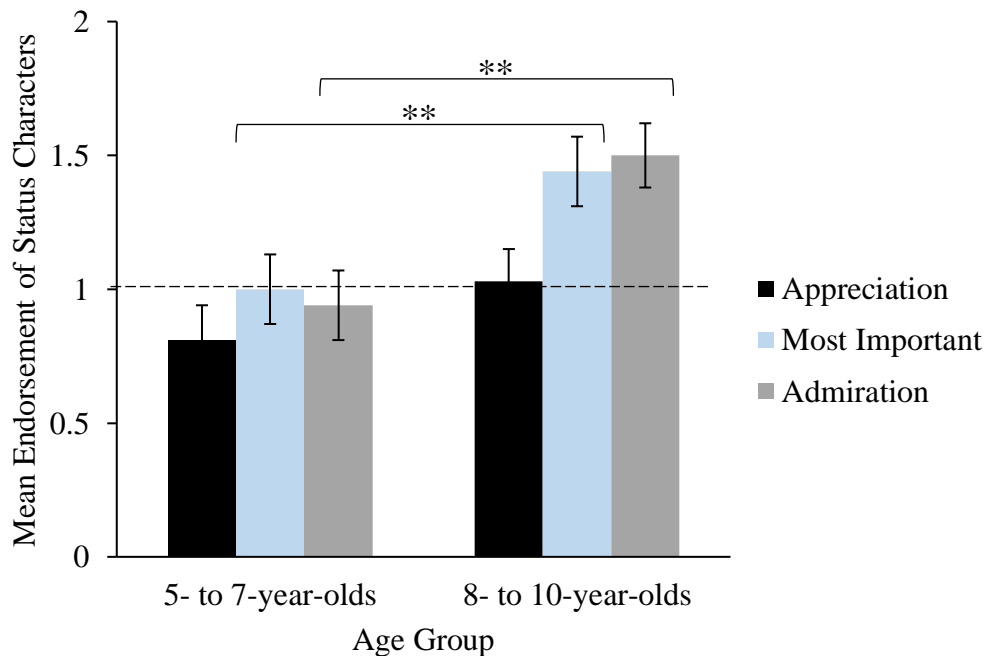
Note. See document for scoring details. In general, scores ranged from 0 - 2 for each story and were collapsed across stories, creating a range of 0 - 4

How Much Did Younger vs. Older Children Differentiate Status and Power?

Status Measures

Unless otherwise specified, scores were coded as follows: 0 = inconsistent (i.e., chose power or neutral rank characters) and 1 = consistent (i.e., chose status characters). Scores were then summed across stories for analyses, with a range of 0 (all inconsistent) – 2 (all consistent) for each question. Figure 1 depicts the patterns detailed below for the appreciation, most important, and admiration measures.

Figure 1. Mean Endorsement of Status Characters for Social Status Measures



Note: Scores ranged from 0 to (inconsistent: power, neutral rank) to 1 (consistent: status) and were summed across stories, creating a range of 0-2. Error bars indicate standard error. ** $p \leq .01$.

Appreciation

Children's claims that the status characters were appreciated did not differ significantly by age group, $F(1, 63) = 1.50, p = .23, \eta^2 = .02$. Tests against chance (score of 1) revealed that the status characters were not systematically chosen as appreciated by younger children ($M = .81, SD = .75, t(30) = -1.44, p = .16, d = .26$), or older children ($M = 1.03, SD = .72, t(33) = .24, p = .81, d = .04$), across stories.

Importance Ratings

Importance ratings for each character were scored as follows: 0 = "not at all," 1 = "sort of," and 2 = "really." A significant effect of character emerged, $F(2, 126) = 10.30, p < .001, \eta^2 = .14$, which was qualified by a significant character x age group interaction, $F(2, 126) = 3.07, p = .050, \eta^2 = .05$. Bonferroni corrected pairwise comparisons revealed that importance ratings for the status characters were significantly higher among older children compared to younger children, $p = .039$. On average, older children rated the status characters as really important, while younger children instead chose sort of important. By contrast, importance ratings did not differ significantly by age group for the power characters, $p = .22$, or the neutral rank characters, $p = .36$. Means from both age groups suggest that the power characters and the neutral rank characters were rated as sort of important. See Table 1.

No other significant effects emerged ($ps > .05$).

Most Important

There was a significant effect of age group, $F(1, 63) = 5.78, p = .019, \eta^2 = .08$, such that older children ($M = 1.44, SD = .75$) chose the status characters as the most important more often than younger children ($M = 1.00, SD = .73$). Younger children's scores did not differ from chance (score of 1), $t(30) = .00, p = 1.00, d = .00$, and therefore they did not systematically

choose the status characters as the most important across stories. By contrast, older children were more likely than expected by chance to choose the status characters as the most important across stories, $t(33) = 3.45, p = .002, d = .59$.

Justifications for Most Important. Children's justifications were coded into six categories. Inter-rater reliability for the codes was almost perfect for Story A, $\kappa = .81, p < .001$, and substantial for Story B, $\kappa = .75, p < .001$. See Table 2 for codes and example responses.

For Story A, justifications were primarily status (23.1%) or trait related (23.1%). Next, approximately 20% of participants used irrelevant justifications (e.g., "I don't know"), 13.8% of participants used knowledge justifications, and 10.8% of participants used power justifications. The fewest percentage of participants (9.2%) used leadership justifications. Chi-square analyses revealed significant differences in justifications by age group, $\chi^2(5, N = 65) = 18.02, p = .003$, Cramer's $V = .53$. Older children (39.4%) used status justifications more often than younger children (6.3%), and a similar pattern arose for trait justifications (30.3% of older children vs. 15.6% of younger children). Conversely, younger children (34.4%) used irrelevant justifications more often than older children (6.1%).

For Story B, justifications referenced traits (29.2%), followed by irrelevant information (21.5%), status (16.9%), knowledge (16.9%), leadership (7.7%), and power (6.2%). Further, justifications differed significantly by age group, $\chi^2(5, N = 64) = 22.62, p < .001$, Cramer's $V = .60$. Older children (33.3%) used trait justifications more frequently than younger children (25.8%). Status justifications were used exclusively by 33.3% of older children, compared to 0% of younger children. By contrast, irrelevant justifications were primarily used by younger children (35.5%), compared to older children (9.1%).

Table 2. Codes and Example Responses for “Most Important” Justifications

Code	Code Descriptions	Example Responses
Status	Participant referenced respect, admirability, and social value as depicted in each story.	<p>“Because everybody wants to eat the same snack as her and I think that means they admire her.”</p> <p>“Because everyone talks about how they wanted to be on her team.”</p> <p>“Because the people look up to him.”</p>
Power	Participant referenced control over outcomes and resources as depicted in each story.	<p>“Because they have to.”</p> <p>“Because... if Emerson says yes then that’s what they have to do.”</p> <p>“Because Emerson gets more food than everyone else and snacks.”</p>
Knowledge	Participant referenced knowledge and/or labeled the character as smart.	<p>“Because she’s really good at playing.”</p> <p>“Because she is a good player and she can help them a lot.”</p> <p>“Because he’s the best at playing the game.”</p>
Leadership	Participant referenced how others follow character but did not explicitly mention force of voluntary deferral.	<p>“Because they all do the same thing as her.”</p> <p>“Because he’s a great leader.”</p> <p>“Because she’s a good leader.”</p>
Trait	Participant referenced some component of character’s personality (e.g., nice, helpful).	<p>“Because she is kind and helpful.”</p> <p>“He is helpful and pretty nice.”</p> <p>“Because she’s nice to everybody.”</p>
Irrelevant	Participant did not provide a justification (e.g., I don’t know) or provided a nonsense justification.	<p>“It’s hard to say.”</p> <p>“Just because.”</p> <p>“I don’t know.”</p>

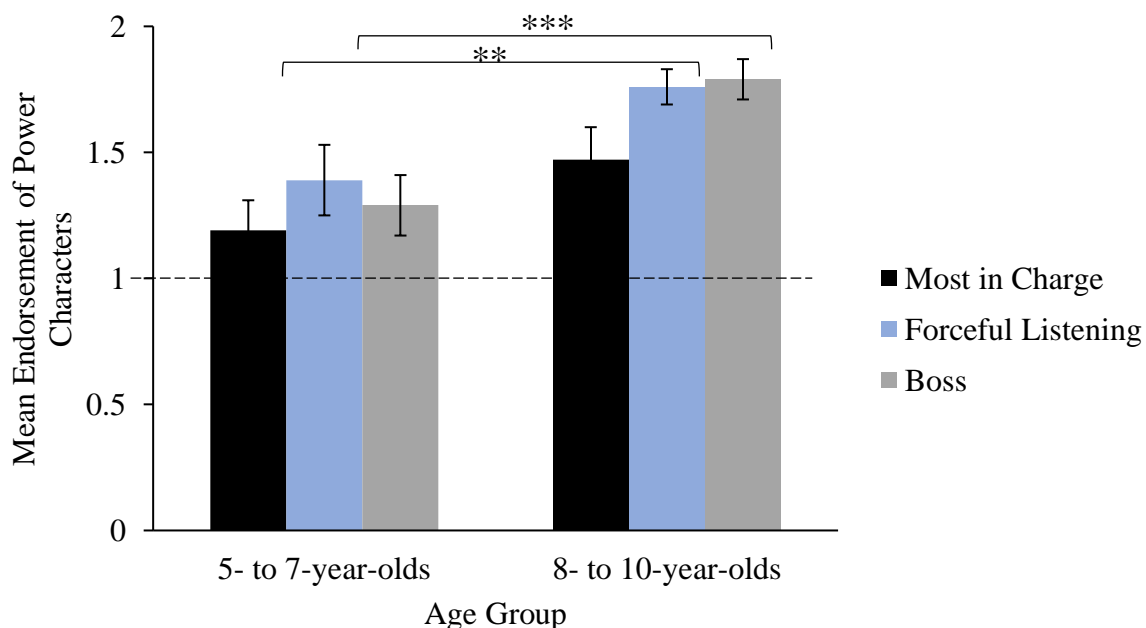
Admiration

A significant effect of age group arose, $F(1, 63) = 10.06, p = .002, \eta^2 = .14$. Older children ($M = 1.50, SD = .71$) endorsed the status characters as admired to a greater extent than younger children ($M = .94, SD = .73$). Tests against chance (score of 1) showed that younger children did not systematically choose the status characters as admired across stories, $t(30) = -.49, p = .63, d = .09$. However, older children were more likely than expected by chance to claim that the status characters were admired across stories, $t(33) = 4.12, p < .001, d = .71$.

Power Measures

Unless otherwise specified, scores were coded as follows: 0 = inconsistent (i.e., chose status or neutral rank characters) and 1 = consistent (i.e., chose power characters). Then, scores were summed across stories for analyses, creating a range of 0 (all inconsistent) – 2 (all consistent) for each question. Figure 2 depicts the patterns detailed below for the most in charge, forceful listening, and boss measures.

Figure 2. Mean Endorsement of Power Characters for Social Power Measures



Note: Scores ranged from 0 (inconsistent: status, neutral rank) to 1 (consistent: power) and were summed across stories, creating a range of 0-2. Error bars indicate standard error. ** $p \leq .01$, *** $p < .001$.

In Charge Ratings

In charge ratings for each character were scored as follows: 0 = “not at all,” 1 = “sort of,” and 2 = “really.” A significant effect of character arose, $F(1.51, 95.17) = 24.08, p < .001, \eta^2 = .28$, and was qualified by a significant character x age group interaction, $F(2, 126) = 6.28, p = .003, \eta^2 = .09$. Bonferroni corrected pairwise comparisons revealed that older children’s in charge ratings for the power characters were significantly higher than younger children’s ratings, $p = .003$. On average, older children rated the power characters as really in charge, but younger children rated the power characters as sort of in charge. Additionally, in charge ratings did not differ significantly by age group for the status characters, $p = .21$, or the neutral rank characters, $p = .49$. Means from both age groups indicate that children rated the status characters as sort of in charge and the neutral rank characters as not at all to sort of in charge. See Table 1.

No other significant effects emerged ($ps > .05$).

Most in Charge

Children’s decisions to choose the power characters as the most in charge did not vary significantly by age group, $F(1, 63) = 2.50, p = .12, \eta^2 = .04$. Tests against chance (score of 1) revealed that younger children ($M = 1.19, SD = .65$) did not systematically choose the power characters as the most in charge across stories, $t(30) = 1.65, p = .11, d = .30$. However, older children ($M = 1.47, SD = .75$) were more likely than expected by chance to choose the power characters as the most in charge across stories, $t(33) = 3.67, p < .001, d = .63$.

Forceful Listening

Welch's ANOVA revealed a significant effect of age group, $F(1, 46.48) = 5.91, p = .019, \eta^2 = .09$. Older children ($M = 1.76, SD = .43$) claimed that others listened forcefully to the power characters more often than younger children ($M = 1.39, SD = .76$). Younger children were more likely than expected by chance (score of 1) to claim that others listened forcefully to the power characters across stories, $t(30) = 2.83, p = .008, d = .51$, but this pattern was stronger among older children, $t(33) = 10.36, p < .001, d = 1.78$.

Boss

Welch's ANOVA indicated a significant effect of age group, $F(1, 55.19) = 12.66, p < .001, \eta^2 = .17$. Older children ($M = 1.79, SD = .48$) chose the power characters as bosses to a greater extent than younger children ($M = 1.29, SD = .64$). Younger children were more likely than expected by chance (score of 1) to select the power characters as bosses across stories, $t(30) = 2.516, p = .017, d = .45$, but this was especially prevalent among older children, $t(33) = 9.68, p < .001, d = 1.66$.

Did Age Differences Persist When Rank Type Was Unspecified and Generalized?

General Rank Measures

Leadership Ratings

Leadership ratings for each character were scored as follows: 0 = "bad leader," 1 = "okay leader," and 2 = "good leader." A significant effect of character emerged, $F(1.65, 103.79) = 53.99, p < .001, \eta^2 = .46$. This was qualified by a significant character x age group interaction, $F(2, 126) = 6.54, p = .002, \eta^2 = .09$. Bonferroni corrected pairwise comparisons indicated that younger children rated the power characters as significantly better leaders than older children, $p = .011$. However, the means from each age group reflect poor to neutral views of the power

characters' leadership. Moreover, leadership ratings did not differ significantly by age group for the status characters, $p = .09$, or the neutral rank characters, $p = .13$. On average, leadership ratings from both age groups were positive for the status characters and poor for the neutral rank characters. See Table 1.

No other significant effects emerged ($ps > .05$).

Ladder

Ladder placements for each character were scored as follows: 0 = "bottom," 1 = "middle," and 2 = "top." There was a significant effect of character, $F(1.69, 106.69) = 19.97$, $p < .001$, $\eta^2 = .21$, which was qualified by a significant character x age group interaction, $F(2, 126) = 4.44$, $p = .014$, $\eta^2 = .07$. Bonferroni corrected pairwise comparisons showed that older children placed the power characters significantly higher on the ladder than younger children, $p = .007$. On average, older children placed the power characters at the top of the ladder, while younger children placed the power characters at the middle of the ladder. Importantly, ladder placements did not differ significantly by age group for the status characters, $p = .07$, or the neutral rank characters, $p = .16$. Older children primarily placed the status characters at the top of the ladder, while younger children instead chose the middle of the ladder. Further, older children placed the neutral rank characters at the bottom of the ladder, but younger children instead chose the middle of the ladder.

A significant effect of age group also arose as well, $F(1, 63) = 7.99$, $p = .006$, $\eta^2 = .11$. Overall, older children ($M = 8.15$, $SD = 1.67$) placed all the characters higher on the ladder than younger children ($M = 7.10$, $SD = 1.27$).

To What Extent Was Knowledge Attributed Solely to Status?

Knowledge ratings for each character were scored as follows: 0 = “a little,” 1 = “in the middle,” and 2 = “a lot.” A significant effect of character arose, $F(2, 126) = 33.86, p < .001, \eta^2 = .35$, which was qualified by a trending character x age group interaction, $F(2, 126) = 2.74, p = .068, \eta^2 = .04$. Bonferroni corrected pairwise comparisons revealed that, compared to younger children, older children rated the status characters as more knowledgeable, $p = .010$. On average, older children rated the status characters’ knowledge as “a lot,” while younger children chose the “middle.” Knowledge ratings did not differ significantly by age group for the power characters, $p = .25$, or the neutral rank characters, $p = .56$. Means from both age groups suggest that the power characters were prescribed between a “middle” amount to “a lot” of knowledge and the neutral rank characters only had “a little” amount of knowledge.

No other significant effects emerged ($ps > .05$).

Did Trait Attributions and Affiliation Ratings Vary by Age Group and Rank?

Trait Attributions

Responses were scored as follows: 0 = “mean,” 1 = “not nice or mean,” and 2 = “nice.” There was a significant effect of character, $F(1.42, 88.08) = 54.73, p < .001, \eta^2 = .47$, which was qualified by a significant character x age group interaction, $F(2, 124) = 10.50, p < .001, \eta^2 = .15$. Bonferroni corrected pairwise comparisons indicated that older children ($M = 3.68, SD = .68$) rated the status characters as significantly nicer than younger children ($M = 3.29, SD = .78$), $p = .046$. Similarly, older children ($M = 3.97, SD = .17$) rated the neutral rank characters as significantly nicer than younger children ($M = 3.33, SD = .80$), $p < .001$. Still, both age groups rated the status and neutral rank characters as nice. Bonferroni corrected pairwise comparisons revealed significant age differences for the power characters as well, $p = .01$, but with a different

pattern: younger children ($M = 2.42$, $SD = 1.52$) rated the power characters as not nice or mean, but older children rated the power characters as mean ($M = 1.50$, $SD = 1.42$). Generally, ratings were less positive for the power characters, but this was especially true for older children.

No other significant effects emerged ($ps > .05$).

Affiliation Ratings

Affiliation ratings for each character were scored as follows: 0 = “not at all,” 1 = “sort of,” and 2 = “a lot.” A significant effect of character emerged, $F(1.42, 124) = 54.73$, $p < .001$, $\eta^2 = .47$. This was qualified by a significant character x age group interaction, $F(2, 124) = 10.50$, $p < .001$, $\eta^2 = .15$. Bonferroni corrected pairwise comparisons showed that older children ($M = 3.68$, $SD = .68$) reported higher desire to befriend the status characters than younger children ($M = 3.29$, $SD = .78$), $p = .046$. This significant age group difference persisted for the neutral rank characters, $p < .001$, as older children ($M = 3.97$, $SD = .17$) reported higher desire to befriend the neutral rank characters than younger children ($M = 3.33$, $SD = .80$). In general, both age groups reported high desire to befriend the status and neutral rank characters. Conversely, Bonferroni corrected pairwise comparisons indicated that older children ($M = 1.50$, $SD = 1.42$) reported little desire to befriend the power characters, while younger children ($M = 2.42$, $SD = 1.52$) reported a middle amount of desire to befriend the power characters, $p = .018$. Both age groups reported limited desire to befriend the power characters overall.

No other significant effects emerged ($ps > .05$).

CHAPTER V: STUDY 1 DISCUSSION

The above study presented children with high status, high power, and neutral rank characters to determine the extent to which distinct forms of social rank are differentiated. Consequently, this allowed for an examination of whether children understand social rank as a multidimensional or unitary concept. This extends previous developmental literature, given that past work presents each form of social rank in isolation or asks children to distinguish between highly and lowly ranked individuals (e.g., Charafeddine et al., 2015; Enright et al., 2020; Gülgöz & Gelman, 2017; Kajanus et al., 2020). Four general patterns arose from the collected data and highlight the limits of children's emergent social rank understanding.

First, and as anticipated, 5- to 7-year-olds struggled to consistently attribute status to only the status characters, which denotes that they did not yet fully recognize how status differs from power and neutral rank information. However, this struggle diminished among 8- to 10-year-olds and suggests enhanced status understanding with age, in line with some recent findings (Cheng et al., 2021; Heck, Bas, & Kinzler, 2022; Kajanus et al., 2020). Second, although children across age groups associated power solely with the power characters, this pattern strengthened among older children, as expected and perhaps due to a more comprehensive understanding of power with age that mirrors past work (e.g., Cheng et al., 2021; Gülgöz & Gelman, 2017; Kajanus et al., 2020). Third, and unexpectedly, children across age groups did not associate knowledge with status exclusively, which entails that social value in the form of knowledge was not sufficient to signify status to children, at least in contexts that depict multiple kinds of social rank concurrently (i.e., status *and* power). Lastly, and as hypothesized, children made fewer positive trait and affiliation judgments about the power characters compared to the status and neutral rank

characters, and this strengthened with age. This implies that children might hold some negative impressions of individuals with power.

Comprehensive Status Understanding Limited to Older Children

Only 8- to 10-year-olds successfully categorized the status characters as the most important and admired, which illustrates improvements in status understanding with age that likely signifies a multidimensional conceptualization of social rank. By contrast, inspection of response frequencies revealed that younger children regarded both the status and power characters as most important (see Appendix C). Further, when asked to provide an importance rating for each character, older children rated only the status characters as “really” important, while younger children rated the status and power characters as “sort of” important. Unlike older children, it is likely that younger children viewed status and power descriptions similarly due to limited consideration of how influence emerged. In turn, younger children likely perceived no distinguishing features between the status versus power characters, suggesting a unitary conceptualization of social rank. This contrasts with past literature that suggests status understanding in infancy and early childhood (e.g., Enright et al., 2020; Margoni et al., 2018; Thomsen, 2020). Still, other research indicates age-related improvements in status understanding (Cheng et al., 2021; Heck, Bas, & Kinzler, 2022; Kajanus et al., 2020), but the current study extends those findings by demonstrating that age-related improvements persist when children must consider multiple types of social rank simultaneously. It is probable that age differences would be minimal and thus younger children would systematically regard status characters as most important in simpler contexts used frequently in past literature, such as a context with only a high status leader and a low status follower (e.g., Enright et al., 2020).

Children's justifications for why they chose specific characters as most important shed further light into age-related differences in how children understand status. Younger children provided irrelevant justifications (e.g., "I don't know") for their decisions more often than older children. Conversely, older children's justifications primarily centered around status (e.g., "Everyone likes to be around her") and traits (e.g., "[Character] is just a nice person"). If older children endorsed the status characters as the most important but failed to provide substantial justification for their decisions, then a limited interpretation of status might be warranted. The fact that older children explained their decisions with reference to status, among other positive characteristics, exemplifies improvement in status understanding and successful application of that understanding with age.

Further, 5- to 7-year-olds viewed the status versus neutral rank characters as similarly admired in some instances (see Appendix C) and rated the status and neutral rank characters as sort of important, implying that they did not distinguish status from the positive characteristics included in the neutral rank character descriptions. However, it is also possible that younger children viewed each character's contribution to the game as similarly meaningful, regardless of influence. In turn, younger children were perhaps hesitant to designate greater admiration or importance to one character over others. Relatedly, and given children's positivity bias (Boseovski, 2010), perhaps young children were motivated to maintain positive impressions of the neutral rank characters, especially given the abundantly positive descriptions provided for the neutral rank characters. However, it is critical to note that both age groups endorsed the status characters as good leaders, but the neutral rank characters as poor to neutral leaders. Further, both age groups placed the status characters on the upper half of the ladder, while the neutral

rank characters were placed on the bottom half of the ladder. This demonstrates that younger children understood that status connoted influence, but neutral rank did not.

Critically, leadership ratings and ladder placements did not necessitate differentiation between status and power, as they were designed to suggest general influence rather than voluntary deferral (i.e., status) or forced following (i.e., power). It follows that younger children would succeed and perform similarly as older children with these measures but be outperformed by older children when status was specifically evoked (i.e., importance ratings). In contrast to status, power understanding was evident even among younger children.

Power Differentiation Emerged Early and Strengthened with Age

Although younger and older children systematically claimed that others forcefully listen to the power characters and that the power characters were the bosses, these patterns were stronger among older children and insinuate age-related improvements in power understanding. This follows past literature which indicates that it is not until about 9 years of age that children's power understanding closely resembles adults (Gülgöz & Gelman, 2017), and by about 8 years of age, children show more regard for how power is acquired (Cheng et al., 2021). As further evidence of age-related improvements, younger children in the present study mostly chose the power characters for the forceful listening and boss measures, but the status characters made up the next highest response category (see Appendix C). In fact, younger children failed to systematically endorse the power character as the most in charge, with nearly a quarter of them instead choosing the status characters. This suggests that younger children's responses to the power measures were likely further exacerbated by their unitary conceptualizations of social rank. Specifically, younger children's responses were likely due to an incomplete understanding of status that prompted perceived overlap between status and power descriptions.

Additionally, 5- to 7-year-olds rated both the power and status characters as sort of in charge, but older children rated only the power characters as really in charge, which provides further evidence of limited power understanding among younger children that provoked some overlap between status and power descriptions. Alternatively, perhaps younger children interpreted the in charge rating as the possible power a character might achieve, rather than actual power depicted in the stories. Therefore, even though the status characters were not systematically endorsed as the ones that evoked forceful listening or as the bosses, they still had the ability to be in charge to the same extent as the power characters. By contrast, it is probable that older children recognized that in charge ratings reflected the forceful control exhibited, rather than possibly exhibited, by the characters. To further investigate this, and as suggested by some researchers (Heck, Shutts, & Kinzler, 2022), it is necessary for future studies to examine whether children across age groups view power as fixed or malleable across time and situations.

Leadership ratings for the power characters were neutral to poor among both age groups, but younger children's ratings were higher (and thus more positive) than older children's ratings, highlighting differences in how children perceive power across age. As mentioned previously, one explanation is that diminished recognition of or attention to the variety of ways leadership and therefore influence can arise led younger children to view the power characters' leadership more positively. Alternatively, perhaps younger children perceived power more positively because forceful following is more evident in their everyday environments through their experiences with parents and teachers (e.g., Laupa, 1991). Rather than interpreting power characteristics negatively, forceful control over others was perhaps interpreted as the norm and the most leader-like among younger children. By contrast, older children were perhaps more likely to think about the negative connotations of power compared to status. Relatedly, past

research establishes that both children and adults comprehend malevolent depictions of power more easily than benevolent depictions of power (Gülgöz & Gelman, 2017; Thomsen, 2020). By extension, older children in the present study potentially perceived power as negatively valenced, which led them to evaluate characters that became influential through power more negatively than those that became influential through status. Of note, older children did not fail to recognize the influence held by the power characters, given that they placed the power characters higher on the ladder than younger children. Rather, older children simply judged the power characters as worse leaders than younger children. More simply, recognition of power was decoupled from evaluations of power among older children. Age related differences were also evident in response to the knowledge measure.

Status and Knowledge Association Stronger in Older Children

Compared to younger children, older children attributed more knowledge to the status characters. However, knowledge was predicted to be the one component of status that younger children would be attuned to, as past literature establishes that children readily recognize who is and is not knowledgeable in specific domains (e.g., Lutz & Keil, 2002). In fact, children also preferentially learn from individuals depicted as prestigious (Chudek et al., 2012). Importantly, the status and power characters in the current study were both described as knowledgeable, but only the status characters' knowledge was depicted through the lens of others because status is dependent upon others' conferral (e.g., Anderson et al., 2015). This distinction was likely only apparent to older children. It is possible that if the status characters were only presented with people described with minimal knowledge, then knowledge ratings for the status characters would be similar across age groups.

Alternatively, perhaps older children's enhanced understanding of status informed their knowledge attributions toward the status characters. In other words, older children were perhaps cognizant of how status is reliant upon others and therefore arises for a reason (i.e., social value due to knowledge). Somewhat relatedly, past work suggests that children associate intellect with highly over lowly ranked individuals only at about 10 years of age (Nancekivell et al., 2023). Given that adults associate status with competence (e.g., Oldmeadow & Fiske, 2007), which can be depicted through knowledge in a particular domain, an association between status and knowledge be interpreted as demonstrating adult-like reasoning. By contrast, younger children in the present study might have instead focused on general influence, without attention to why or how a character obtained influence (e.g., the status character is influential because of his or her knowledge that establishes social value). Children's impressions of the characters were further captured in the affiliation and trait attribution measures.

Positive Trait Attributions and Affiliation Ratings for Everyone but the Power Character

Desire for affiliation and trait attributions about the status and neutral rank characters were increasingly positive with age, but diminished with age for the power characters, suggesting that influence does not always necessitate social desirability and overall positivity. Given that status is dependent upon others' perceptions, it follows that children would report high desire to befriend the status characters and label the status characters as nice. This also implies that if someone is perceived as mean by others, then it is likely that they are not respected, admired, or socially valued by those individuals and the individual likely lacks status. Positive perceptions of the status characters in the current study also follow past literature that showcases children's preferences toward individuals from high status social categories (e.g., Dunham et al., 2014; Enright et al., 2020; Mistry et al., 2015; Newheiser et al., 2014; Shutts et

al., 2016; Yazdi et al., 2020). As detailed below, impressions of the power characters also followed past patterns detected in the literature.

The power characters in the present study were not explicitly labeled as mean or given any other kind of negative label, yet both age groups reported limited desire to befriend them and older children even rated the power characters as mean. This occurred even though children were told at the beginning of each story that “everyone in the class enjoys playing with” (Story A) and “everyone has a good time playing with” (Story B) all three characters. The limited positivity toward the power characters follows past work that suggests children favor prestigious (e.g., status) over dominant (e.g., power) individuals (Cheng et al., 2021; Kajanus et al., 2020; Margoni et al., 2022) and distinguish likeability from popularity (e.g., Lease et al., 2002; Lease et al., 2020). The diminished favoring of individuals with power might arise because children construe forceful control over resources and outcomes negatively. For example, perhaps individuals with power were perceived as bullies, at least when presented concurrently and contrasted with the status characters and neutral rank characters. Consequently, children perhaps found it difficult to believe or endorse the idea that someone with power is friendly or has other positive personality traits, which then impacted friendship desire and trait attributions. Another explanation is that older children’s stronger knowledge of power led to assumptions about the power characters that extended beyond what was presented in the story. For example, perhaps they assumed that the power characters were not elected as leaders, would react negatively toward individuals that did not follow them, or would resist attempts to challenge the established hierarchy.

Importantly, the less than optimal impressions of the power characters contrast with past literature that establishes a positivity bias in children, which peaks in middle childhood and leads

children to maintain positive impressions of others (e.g., Boseovski, 2010). In other words, it is unclear why children disregarded the positive information presented about the power characters (e.g., “everyone in the class enjoys playing with” (Story A) and “everyone has a good time playing with” (Story B), presented for all the characters). Given that the power characters’ descriptions centered on forceful control over outcomes and resources, perhaps the initial positive statements were forgotten due to the potential mismatch in valence. To further explore this, future research should determine if children’s negative impressions of power persist when other forms of social rank are not readily apparent or when individuals with power are explicitly labeled as nice or engage in a series of nice behaviors unrelated to social rank.

Lastly, an inspection of the means for the affiliation ratings and trait attribution measures suggests positivity toward the neutral rank characters among both age groups. However, older children in the present study attributed status appropriately to the status characters, both age groups attributed power appropriately to the power characters, and both age groups recognized that the status and power characters had influence over others. It is therefore reasonable to infer that children did not simply choose the character that they liked the most or felt most positivity toward to answer the questions in the current study. Still, it is possible that other prominent biases in childhood, such as those related to gender, could influence how children use social rank to guide their social decision making. This issue is further explored in Study 2.

CHAPTER VI: STUDY 2 INTRODUCTION

Study 2: The Intersection of Social Status and Gender

Study 2 determined how children use social status cues (i.e., voluntary deferral from others due to respect, admiration, and perceived social value) versus gender cues to inform their impressions of other people. Specifically, children were introduced to two sets of character pairs: a high status girl paired with a low status boy, along with a high status boy paired with a low status girl. As a result, it was possible to not only detect biases for high status or in-group characters, but also a combination of status and gender (e.g., high status boys). Further, this design allowed for a comparison of judgments toward high status boys versus high status girls *and* low status girls versus low status boys, although indirectly. This allowed for further investigation of whether children reported more positive judgments about characters that matched the gender hierarchy present in their social worlds (i.e., boys as high status, girls as low status). The literature described below provides a foundation for speculating about whether children value status, gender, or a combination of both to guide their judgments about others, including consideration for age-related differences.

Status and Gender Among Younger Children

Studies that investigate the role of status in relation to gender on young children's evaluations of others are limited. However, past findings that involve social rank can provide useful information since status is a type of social rank (see Study 1). The developmental literature suggests a general preference among young children for highly over lowly ranked individuals (Dunham et al., 2014; Enright et al., 2020; Newheiser et al., 2014; Yazdi et al., 2020). Although these studies do not explicitly measure status in a manner identical to the present study, an extension of the results would suggest a potential preference among 5- to 7-

year-olds for high status over low status people that could emerge regardless of whether those people are boys or girls. However, there is also a growing literature that considers the role of social rank in conjunction with gender, but it is important to first contextualize those findings within children's broader gender attitudes.

The developmental literature establishes gender as a fundamental social category for children that is central to their social decision making, especially in early childhood (see Halim, 2016, for review). For example, 5-year-olds use gender to make assumptions about and explain a person's preferences (e.g., Martin, 1989; Shutts et al., 2013; Taylor et al., 2009), endorse the idea that gender categories reveal shared, inherent, non-obvious properties that result in within-category similarities between people (e.g., Diesendruck & haLevi, 2006; Gelman et al., 1986; Taylor et al., 2009), and showcase a variety of biases that favor members of their gender in-group (e.g., Albert & Porter, 1983; Martin & Fabes, 2001; Powlishta et al., 1994; Renno & Shutts, 2015; Ruble et al., 2006; Yee & Brown, 1994). In fact, assumptions and beliefs about gender are so entrenched that young children often report less positivity toward people who engage in behaviors that defy gender expectations, at least compared to their stereotypic counterparts (e.g., Blakemore, 2003; Smetana, 1986).

In fact, children's gender expectations in early childhood include some associations with social rank. For example, preschoolers are more likely to designate highly ranked roles to boys over girls (Mandalaywala & Rhodes, 2020; Mandalaywala, Tai, & Rhodes, 2020). Preschoolers also choose boys over girls as more likely to be in charge and therefore in power (Charafeddine et al., 2020). Nevertheless, past work primarily asks children to designate high or low rank to boys and girls, which leaves unclear how children's evaluations compare for boys and girls that are described preemptively as high versus low rank. Importantly, it is unclear if those evaluations

employ a bias in favor of high status individuals, gender in-group individuals, or a combination of both. Since Study 1 illustrated limited status understanding among 5- to 7-year-olds that contrasts with young children's sophisticated understanding of gender (see Ruble et al., 2006, for review), it was hypothesized that 5- to 7-year-olds in Study 2 would primarily rely on gender rather than status to guide their evaluations of others. Specifically, 5- to 7-year-olds were expected to prefer characters that belonged to their gender in-group, regardless of whether those characters were depicted as high or low status. By contrast, both gender and status were expected to impact older children's evaluations of others.

Status and Gender Among Older Children

With age, children exhibit a more comprehensive understanding of status (see Study 1), which coincides with changes in their gender attitudes. By 8 to 9 years of age, children's gender attitudes become more flexible, and they show diminished in-group biases (e.g., Conry-Murray & Turiel, 2012; Halim, 2016; Martin, 1989; Powlisha et al., 1994; Ruble et al., 2006). Despite flexible gender attitudes, older children's judgments about counter-stereotypical people are still not as positive as their judgments about stereotypical people (e.g., Blakemore, 2003). Additionally, past findings indicate that older children's gender knowledge extends to less explicit contexts, such as the recognition of gender-based discrimination at about 8 to 10 years of age (Brown & Bigler, 2004). This expanded gender knowledge in inequality contexts suggests that it is probable that older children begin to recognize a connection between status and gender that results in a status hierarchy in favor of boys. In other words, their judgments about others might reflect a combination of status and gender biases.

Although preschool aged children associate highly ranked roles with boys over girls (e.g., Charafeddine et al., 2020; Mandalaywala, Tai, & Rhodes, 2020), work with older children

suggests that a bias in favor of boys in social rank contexts does not emerge until middle to late childhood. For example, past findings indicate that children's gender in-group biases are not replaced with a general bias in favor of boys in leadership roles until 9 years of age (Santhanagopalan et al., 2022). Further, it is only in late elementary school that girls associate "acting like a leader" with men over women and children associate jobs depicted with women workers as less important than those depicted with men (Liben & Bigler, 2002; Liben et al., 2001). As a result, older children might recognize that status hierarchies often favor boys and use this association to guide their evaluations of others. Consequently, and rather than merely favoring gender in-group characters, older children will recognize that high status girls defy gender expectations, but high status boys do not because boys are *usually* high status. Thus, older children might merge their status and gender beliefs to prefer high status boys overall.

The Current Study

The main goal of Study 2 was to determine the extent to which children use status versus gender cues to guide their evaluations of others. Five- to 10-year-olds were presented with girls and boys described as either high or low status. Specifically, they were exposed to a high status boy paired with a low status girl, along with a high status girl paired with a low status boy. Then, children answered a variety of preference questions that required them to choose between characters (e.g., which character was to blame for a team loss, which character was the best player) or provide a rating for each character (e.g., how smart is each character, what kind of leader is each character).

Of main interest were the preference, status attribution, and general rank attribution measures (adapted from Study 1). An interaction between age and the gender of the high status character in each story was predicted. Five- to 7-year-olds were expected to prioritize gender

over status, such that they would primarily prefer gender in-group characters regardless of whether those characters were high or low status. These patterns were anticipated because younger children's knowledge about status was likely be less sophisticated than their knowledge about gender. By contrast, 8- to 10-year-olds were expected to show a preference most strongly in favor of high status boys. Due to their more comprehensive understanding of both status and gender, older children were expected to merge their status and gender beliefs and thus use a status hierarchy that ranked boys over girls to guide their evaluations.

The present study also included two supplementary measures to further explore children's impressions of the characters. Children were asked to report how much they wanted to befriend each character, in addition to making trait attributions about each character. Both age groups were expected to show generally positive views of the characters, although this positivity might be greater for high over low status characters. General positivity was anticipated due to the positivity bias children exhibit in past literature (see Boseovski, 2010, for review). Specifically, children seek to maintain positive views of others, so explicit dislike or negativity toward the characters was not projected, regardless of character gender or status.

Lastly, at the end of the study children were asked a variety of questions to probe their awareness of gender norms surrounding leadership (e.g., "Are boys or girls usually leaders?"), given potential implications for their beliefs about status in relation to gender. This also included questions about children's moral evaluations of individuals that break gender norms about leadership, adapted from past literature (e.g., Conry-Murray & Turiel, 2012). Older children were expected to exhibit a bias in favor of boys in leadership positions and diminished positivity for individuals that break gender norms about leadership, given older children's enhanced understanding of status and gender.

CHAPTER VII: STUDY 2 METHOD

Participants

An a priori power analysis for an “ANOVA: Repeated measures, between factors” statistical test was conducted on G*Power to determine appropriate sample size. The following parameters were used: effect size $f = .25$, $\alpha = .05$, 80% power, 4 groups (age group, gender), and 18 measurements (to represent each initial outcome measure), and a correlation of .3 (same correlation used for Study 1). This yielded a total sample size of 64. It is important to note that the project design necessitated binary logistic regression analyses for repeated measures, which can be achieved with Generalized Estimating Equations (GEE; see Zeger et al., 1988). However, a power analysis for GEE could not be conducted, given the lack the parameters available prior to testing (see Nancekivell et al., 2020, for similar issues). Further, G*Power’s logistic regression test is only designed for a single outcome.

Participants were recruited from a database of families interested in contributing to developmental research ($n = 51$). Similar to Study 1, the COVID-19 pandemic severely restricted recruitment opportunities. Consequently, families were also recruited through word of mouth (e.g., Facebook, Twitter, family, friends; $n = 9$) and ChildrenHelpingScience.com ($n = 10$).

A total of 70 children participated via Zoom. Two children were excluded after failing the comprehension check questions ($n = 1$; 5-year-old boy) and continuously talking over the experimenter ($n = 1$; 7-year-old boy). Data from 68 children were analyzed: 34 younger children (5- to 7-year-olds; 18 girls and 16 boys; $M = 6.00$ years, $SD = .82$ years) and 34 older children (8- to 10-year-olds; 17 girls and 17 boys; $M = 8.97$ years, $SD = .87$ years). Participants were compensated with a \$10 Amazon e-gift card for their participation.

According to parent reports, the sample was 57.4% White, 10.3% Black, 4.4% Asian, 1.5% Middle Eastern or North African, 16.2% mixed race, and 10.3% preferred not to respond. Additionally, 7.4% of the sample identified as Hispanic or Latinx. Parents also reported family income: 35.3% reported over \$120,000, 14.7% reported \$90-\$120,000, 22.1% reported \$60-\$90,000, 7.4% reported \$25,000-\$40,000, 1.5% reported \$15,000-\$25,000, and 19.1% preferred not to respond.

Parental consent was obtained primarily via Qualtrics (n = 54). Anyone who did not complete parental consent via Qualtrics (e.g., could not open link, requested another form of signature) was sent a PDF version of the consent form to fill out electronically or print, scan, and email to the researcher (n = 15). Verbal consent was obtained from parents who were unable to sign the PDF form successfully (n = 1).

Also, verbal assent was obtained from all participants prior to starting the activity. For children above 7 years of age, written assent was also collected via Qualtrics (n = 28). Parents were instructed to review the assent form with their child. Parents who did not complete written assent with their child via Qualtrics were sent a PDF version of the assent form to fill out electronically or print, scan, and email back to the researcher (n = 8). Some parents did not return the either version of the written assent form, so only verbal assent was obtained (n = 9).

Materials

Four illustrations (two boys, two girls) were downloaded from Dreamstime, which is an online community of stock photos and illustrations. Illustrations from the same artist were used to ensure consistency in character features (i.e., the only differences between characters were hair color, hair style, and shirt color). Characters were presented on one of two illustrated outdoor backgrounds (i.e., at the park). Backgrounds were also downloaded from Dreamstime.

The characters were displayed on Microsoft PowerPoint, which allowed for animations to emphasize each character. Characters were shown via the screenshare feature on Zoom.

The thumb illustrations and ladder from Study 1 were used for Study 2.

Design

The study incorporated a mixed 2 (age group: 5- to 7-year-olds vs. 8- to 10-year-olds) x 2 (participant gender: boys vs. girls) x 2 (high status character gender: boy vs. girl) design. Age group and participant gender were between-subjects variables. High status character gender was a within-subjects variable. This design ensured that children heard one story that included a high status girl paired with a low status boy and one story that included a high status boy paired with a low status girl.

Procedure

To begin, participants were greeted and introduced to the experimenter on Zoom. Audio and video quality were confirmed prior to beginning the experiment (i.e., child could see and hear the experimenter). Then, the experimenter shared her screen. To ensure that the screensharing feature worked properly, participants verified if they could see the welcome image on the screen (i.e., yellow ducks). Participants were then told that they were going to listen to two stories about children who were just like them, followed by some questions that had no right or wrong answers.

The experimenter then read two stories. Stories were presented in randomized order. Status information in each story was also presented in randomized order (e.g., some participants heard about the low status character first, others heard about the high status character first). Status descriptions were equivalent across stories (i.e., all high status characters were described identically, and all low status characters were described identically). These followed the status

descriptions that children from Study 1 comprehended. To limit the influence of pre-existing gender knowledge, the characters in each story played a novel game (e.g., Dax).

High Status Girl Story

The following is an example story with a high status girl and low status boy. To describe the high status girl, the experimenter said the following: “Paula is a girl [add just like you for girl participants]. She is the leader of her team...The boys and girls on the team want to follow Paula. They want to be like Paula and look up to Paula. The boys and girls on the team say that Paula is really needed to the team. They respect Paula. Paula knows a lot about Dax.” To describe the low status boy, the experimenter said the following: “Derek is a boy [add just like you for boy participants]. He is on Paula’s team and follows Paula...The boys and girls on the team say that Derek is a good follower. They think Derek does a nice job going along with instructions. The boys and girls on the team say that Derek is a good listener. They include Derek. Derek knows some things about Dax.” See Appendix D for full stories.

Participants were asked two comprehension checks at the end of the story to ensure that they understood each character’s status description (e.g., “Who did I say is the leader of the team: Paula or Derek?” and “Who did I say follows the leader: Paula or Derek?”). If children responded to a comprehension check incorrectly, feedback was provided (i.e., “Remember....”) and the character’s description was repeated a maximum of three times. If a participant answered a comprehension check incorrectly after three repetitions of a character’s description, the participant was excluded. In total, 91% of participants did not require any repetitions.

Participants were then asked a series of questions in a fixed order. Some questions were forced choice and required the participants to choose between the characters in the story. Following the example above, this meant choosing between Paula (high status girl) or Derek

(low status boy). Other questions required participants to provide a rating for each character. Therefore, and following the example above, they provided a rating for Paula (high status girl) and a rating for Derek (low status boy). The questions are described below in a manner that follows the example story above (i.e., character names).

Upset

Participants chose which character was most likely to become upset after a negative event during the novel game (“Who do you think gets more upset if something bad happens during the game: Paula or Derek?”). This question was adapted from past work about children’s hostile versus benevolent attitudes about women (Hammond & Cimpian, 2021).

Blame: Loss

Participants were asked which character was responsible for a team loss in the novel game context (“If the team loses the game, do you think that it is because of Paula or Derek?”).

Blame: Win

Participants decided which character was responsible for a team win in the novel game context (“If the team wins the game, do you think that it is because of Paula or Derek?”).

Ability

Participants assessed who they believed was the best player in the novel game context (“Who do you think is the best player: Paula or Derek?”).

Knowledge

Participants chose who they believed was the most knowledgeable character in the novel game context (“Who do you think knows the most about the game: Paula or Derek?”).

New Person Prediction

Participants predicted which character a new person would follow (“A new person joins the game. Who do you think that the new person will follow: Paula or Derek?”). Participants also provided justifications (i.e., “Why?”).

Smartness

Participants provided a smartness rating for each character (“How smart is Paula: really smart like the thumbs up, sort of smart like the thumb in the middle, or not at all smart like the thumbs down?”).

Status Attribution Measures

Although comprehension checks were administered to ensure children understood each character’s status description, the questions below do not involve merely assigning one character as a leader or follower, but instead involve admiration, respect, and social value that is voluntarily conferred onto another person. Further, and unlike the comprehension checks, children did not receive feedback for their answers.

Admiration

Participants chose which character they believed was the most admired (“Who do you think that other people at school admire, so they want to be around this person: Paula or Derek?”).

Importance Ratings

Participants rated each character’s importance (“How important is Paula to the team: really important like the thumbs up, sort of important like the thumb in the middle, or not at all important like the thumbs down?”).

Most Important

Participants were asked which character they perceived as the most important (“Who do you think is the most important to the team: Paula or Derek?”).

General Rank Attribution Measures

Leadership Quality

Participants evaluated each character’s leadership ability (“Is Paula a good leader like the thumbs up, an okay leader like the thumb in the middle, or a bad leader like the thumbs down?”).

Ladder

Participants placed each character on a social rank ladder adapted from Mandalaywala, Tai, and Rhodes (2020) and identical to Study 1 (“Can you tell me where you think Paula should go on the ladder?”).

Supplementary Measures: Trait Attributions and Affiliation Ratings

Trait Attributions

Participants provided a trait rating for each character. This was first posed as an open-ended question (“What kind of person is Paula?”). If participants did not spontaneously say nice or mean, a follow-up question was administered (“Is Paula nice, mean, or not nice or mean?”). The presentation of each trait label (mean, nice, not nice or mean) was randomized.

Affiliation Ratings

Participants decided how much they wanted to befriend each character (“How much would you like to be friends with Paula: a lot like the thumbs up, sort of like the thumb in the middle, or not at all like the thumbs down?”).

Distractor Task

Following the above questions, a brief distractor task was administered to give participants a break and limit any confusion between the first and second story. Participants were given five minutes to complete a visual search game (i.e., find the hidden objects in a picture) via the Highlights Kids website.

High Status Boy Story

Once participants finished the distractor task, the second story was administered. The second story presented children with a new gender and status combination. Following the first story example with a high status girl and low status boy, the second story instead included a high status boy and low status girl. The same questions described above were then administered.

After both stories and subsequent questions, children completed four additional measures.

Leadership Preference

Participants were presented with the high status characters from each story (i.e., high status girl, high status boy). Then, they heard a brief reminder about the characters (“Remember, [high status girl] is the leader of her team and [high status boy] is the leader of his team. Now, I’m going to ask you a question about [high status girl] and [high status boy].”). Character presentation order for this question followed story presentation order. Then, children chose which character they perceived as the best leader (“Who do you think is the best leader: [high status girl] or [high status boy]?”).

Gender Norms About Leadership

The following questions assessed children’s moral judgments about individuals that violate gender-based leadership expectations. These questions were adapted from the moral development literature (e.g., Conry-Murray & Turiel, 2012; D’Esterre et al., 2022).

Gender Norm Knowledge

To assess whether children associated a specific gender category with leadership, participants were asked the following: “Are boys or girls usually leaders?” Gender categories were presented in randomized order. Importantly, the acceptability, rule legitimacy, and non-normative preference judgments described below were dependent upon each participant’s answer to the gender norm knowledge question.

Acceptability

Participants rated how acceptable it was for members of the unexpected and therefore norm-defying gender category to be leaders. For example, if a child claimed that boys were usually leaders, the child was asked the following: “Do you think it is okay or not okay for girls to be leaders: definitely ok, a little ok, both, a little not ok, or definitely not ok?”

Rule Legitimacy

Participants judged the acceptability of a rule that only allowed members of the expected and therefore norm-adhering gender category to be leaders. For example, if a child claimed that boys were usually leaders, the child was asked the following: “The teacher says that there is a rule that only boys can be leaders. Is that rule ok or not ok: definitely ok, a little ok, both, a little not ok, or definitely not ok?”

Non-Normative Preference Judgment

Participants were asked to decide between a boy leader or girl leader. The question was posed in a manner such that the person of the unexpected and therefore norm-defying gender category had greater interest in being a leader than the person of the expected and therefore norm-adhering gender category. For example, if a child claimed that boys were usually leaders,

the child was asked the following: “If a girl loves being a leader more than a boy, then who should be the leader?”

CHAPTER VIII: STUDY 2 RESULTS

Measures administered for each story were analyzed with either GEE or mixed ANOVAs. Where GEEs were conducted, all scoring conformed to the following: 0 = low status character and 1 = high status character. Analyses with GEE included the following predictors: age group (5- to 7-year-olds vs. 8- to 10-year-olds), participant gender (boys vs. girls), and gender of the high status character in the story (girl vs. boy), and all possible interactions. Model fit indices (QIC vs. QICC) were not included because GEE does not have a likelihood function that allows the indices to be compared (Agresti, 2011). To further examine any significant interactions, Chi-square analyses were conducted (see Lapan et al., 2016 for similar follow-up tests). Bonferroni corrections were computed for follow-up comparisons to minimize type I error, as has been done in the literature (Courchesne et al., 2021; Delevatti et al., 2018; Nobre et al., 2022). Unless otherwise noted, continuous measures were analyzed with a 2 (age group: 5- to 7-year-olds vs. 8- to 10-year-olds) x 2 (participant gender: boys vs. girls) x 2 (character status: high vs. low) x 2 (character gender: boys vs. girls) mixed ANOVA. Bonferroni corrections were computed for follow-up comparisons.

See Table 3 for means and standard deviations by age group for continuous measures.

Table 3. Means and Standard Deviations for Smartness, Importance, Leadership Quality, and Ladder Ratings

Measure	High Status Girl Story		High Status Boy Story	
	5- to 7-year-olds	8- to 10-year-olds	5- to 7-year-olds	8- to 10-year-olds
	<i>M (SD)</i>	<i>M (SD)</i>	<i>M (SD)</i>	<i>M (SD)</i>
High Status Character				
Smartness	1.59 (.66)	1.74 (.51)	1.56 (.61)	1.82 (.39)
Importance	1.68 (.59)	1.88 (.41)	1.44 (.75)	1.91 (.29)
Leader Quality	1.82 (.52)	1.85 (.44)	1.68 (.64)	1.88 (.33)
Ladder	1.74 (.62)	1.85 (.44)	1.50 (.75)	1.94 (.24)
Low Status Character				
Smartness	1.27 (.67)	1.47 (.51)	1.18 (.72)	1.44 (.56)
Importance	1.24 (.74)	1.27 (.57)	1.35 (.73)	1.24 (.55)
Leader Quality	1.47 (.71)	1.44 (.56)	1.21 (.73)	1.38 (.60)
Ladder	1.12 (.73)	1.03 (.46)	1.24 (.74)	1.03 (.58)

Note. Responses were scored as 0 = not at all for smartness and importance, bad leader, and the bottom of ladder to 2 = really for smartness and importance, good leader, and the top of the ladder. Responses ranged from 0 to 2 for each question.

Did Character Preferences Vary by Age Group, Status, and Character Gender?

Upset

A GEE analysis revealed a significant effect of age group, $\beta = -1.55$, Wald $\chi^2 = 4.35$, $SE = .74$, $p = .037$. To investigate this further, scores were collapsed across the high status girl and high status boy stories, creating a range of 0 (i.e., low status characters chosen for both stories) to 2 (i.e., high status characters chosen for both stories). A t-test against chance (score of 1) indicated that older children ($M = 1.68$, $SD = .54$) were more likely than expected by chance to choose the high status characters as most likely to get upset, $t(33) = 7.37$, $p < .001$, $d = 1.27$. However, younger children's ($M = 1.03$, $SD = .83$) responses did not differ significantly from chance, $t(33) = .21$, $p = .838$, $d = .04$.

No other significant effects or interactions emerged ($ps > .05$).

Blame: Loss

A GEE analysis indicated no significant effects of age group, participant gender, or the gender of the high status character in each story ($ps > .05$). No significant interactions arose ($ps > .05$). To investigate children's general response patterns, Chi-square goodness of fit tests were used. For the high status girl story ($M = .34$, $SD = .48$), 66.2% of children blamed the low status boy for a team loss, $\chi^2(1, N = 68) = 7.12$, $p = .008$, Cohen's $w = .32$. For the high status boy story ($M = .52$, $SD = .50$), only 48.5% of children blamed the low status girl for a team loss, $\chi^2(1, N = 68) = .06$, $p = .808$, Cohen's $w = .03$. Thus, children systematically blamed the low status boy over the high status girl for a team loss, but were unsystematic when shown a low status girl versus high status boy.

Blame: Win

A GEE analysis showed an interaction between participant gender and the gender of the high status character, $\beta = 1.45$, Wald $\chi^2 = 4.77$, $SE = .66$, $p = .029$.

For the high status girl story, no significant differences arose as a function of participant gender, $\chi^2 (1, N = 68) = 2.18$, $p = .140$, Cramer's $V = .18$. Girls ($M = .77$, $SD = .43$) systematically attributed a team win to the high status girl, $\chi^2 (1, N = 35) = 10.31$, $p = .001$, Cohen's $w = .54$. Conversely, boys ($M = .61$, $SD = .50$) were unsystematic, $\chi^2 (1, N = 33) = 1.49$, $p = .223$, Cohen's $w = .21$.

For the high status boy story, no significant differences arose as a function of participant gender, $\chi^2 (1, N = 68) = 1.32$, $p = .250$, Cramer's $V = .14$. Boys ($M = .76$, $SD = .44$) systematically attributed a team win to the high status boy, $\chi^2 (1, N = 33) = 8.76$, $p = .003$, Cohen's $w = .52$, but girls ($M = .63$, $SD = .49$) were unsystematic, $\chi^2 (1, N = 35) = 2.31$, $p = .128$, Cohen's $w = .26$.

No other significant effects or interactions emerged ($ps > .05$).

Ability

A GEE analysis showed a significant interaction between participant gender and the gender of the high status character, $\beta = 2.18$, Wald $\chi^2 = 7.33$, $SE = .80$, $p = .007$.

For the high status girl story, responses did not differ significantly by participant gender, $\chi^2 (1, N = 68) = 2.26$, $p = .133$, Cramer's $V = .18$. Girl participants ($M = .80$, $SD = .41$) systematically chose the high status girl as the best player in the novel game context, $\chi^2 (1, N = 35) = 12.60$, $p < .001$, Cohen's $w = .60$. Boy participants ($M = .64$, $SD = .49$) were unsystematic, $\chi^2 (1, N = 33) = 2.46$, $p = .117$, Cohen's $w = .27$.

For the high status boy story, responses did not differ significantly by participant gender, $\chi^2(1, N = 68) = 5.21, p = .022$ (Bonferroni corrected p-value: $p = .008$), Cramer's $V = .28$. Boy participants ($M = .85, SD = .36$) systematically chose the high status boy as the best player in the novel game context, $\chi^2(1, N = 33) = 16.03, p < .001$, Cohen's $w = .70$. However, girl participants ($M = .60, SD = .50$) were unsystematic, $\chi^2(1, N = 35) = 1.40, p = .237$, Cohen's $w = .20$.

No other significant effects or interactions emerged ($ps > .05$).

Knowledge

A GEE analysis revealed no significant effects of age group, participant gender, or the gender of the high status character in each story ($ps > .05$). No significant interactions arose ($ps > .05$). To investigate children's general response patterns, Chi-square goodness of fit tests were used. For the high status girl story, 88.2% of children ($M = .88, SD = .33$) claimed that the high status girl was the most knowledgeable about the novel game, $\chi^2(1, N = 68) = 39.77, p < .001$, Cohen's $w = .76$. For the high status boy story, 88.2% of children ($M = .88, SD = .33$) claimed that the high status boy was the most knowledgeable about the novel game, $\chi^2(1, N = 68) = 39.77, p < .001$, Cohen's $w = .76$. In sum, children rated the high status characters as the most knowledgeable.

New Person Prediction

A GEE analysis showed a significant effect of high status character gender, $\beta = -1.09$, Wald $\chi^2 = 3.97, SE = .55, p = .046$. For the high status girl story ($M = .66, SD = .48$), 66.2% of participants claimed that a new person who joined the novel game would follow the high status girl, $\chi^2(1, N = 68) = 7.12, p = .008$, Cohen's $w = .32$. The trend strengthened for the high status boy story ($M = .75, SD = .44$), as 75% of participants claimed that a new person who joined the novel game would follow the high status boy, $\chi^2(1, N = 68) = 17.00, p < .001$, Cohen's $w = .50$.

No other significant effects or interactions emerged ($ps > .05$).

Justifications for New Person Prediction

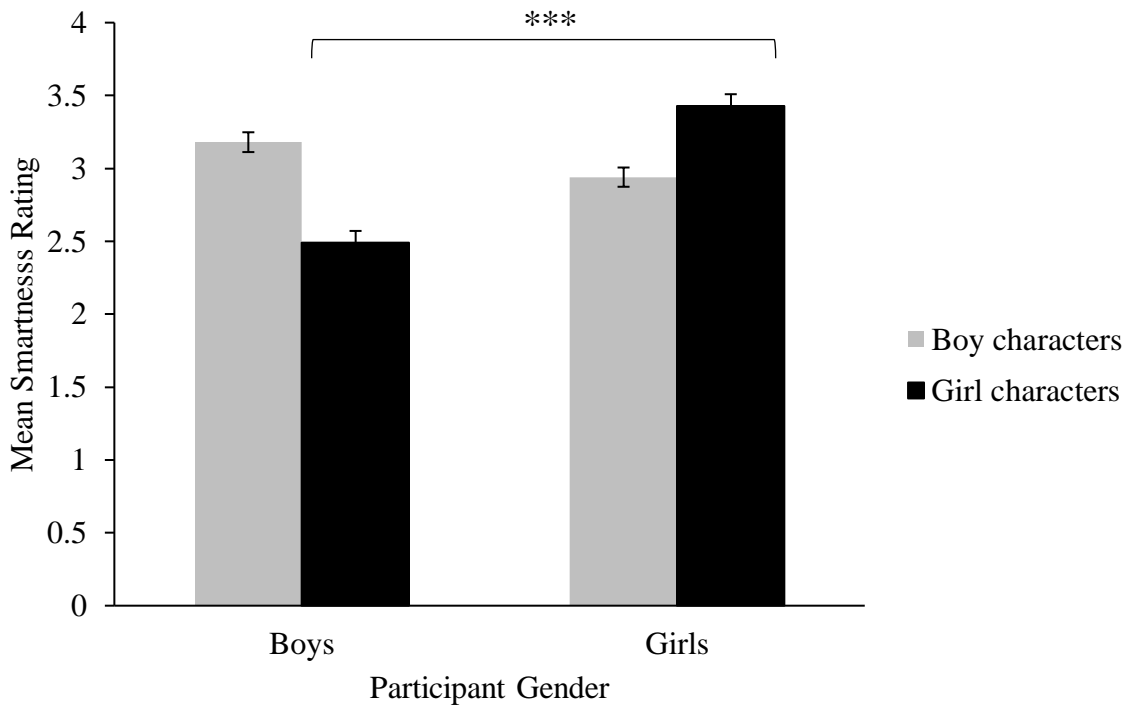
Justifications were coded into the categories listed in Table 4. Inter-rater reliability was nearly perfect for the high status girl story, $\kappa = .89, p < .001$, and the high status boy story, $\kappa = .86, p < .001$. Justifications did not differ significantly by age group for the high status girl story, $\chi^2(10, N = 68) = 15.54, p = .11$, Cramer's $V = .48$, or high status boy story, $\chi^2(7, N = 68) = 10.53, p = .16$, Cramer's $V = .39$. Significant differences also did not arise as a function of participant gender for the high status girl story, $\chi^2(10, N = 68) = 10.74, p = .38$, Cramer's $V = .40$, or the high status boy story, $\chi^2(7, N = 68) = 5.55, p = .59$, Cramer's $V = .29$. For the high status girl story, 58.8% of participants used leadership to justify who a new person would follow, 11.8% (8 participants, 7 of which were younger children) did not provide a substantial justification, and 10.3% used the fact that a character was a follower to justify their prediction. For the high status boy story, 58.8% of participants used leadership justifications, 14.7% (10 participants, 9 of which were younger children) did not provide a substantial justification, and 8.8% used a follower justification. Remaining codes were used by 5 participants or less.

Table 4. Codes and Example Responses for “New Person Prediction” Justifications

Code	Code Descriptions	Example Response
Leadership	Participant mentioned that the character was a leader or is heavily involved in decision-making.	“Because she is the best leader.”
Status	Participant mentioned that the character is respected, admired, or valued by others.	“Because people respect her and they want to follow her.”
Follower	Participant labeled the chosen character as a follower.	“Because Derek follows Paula.”
Help	Participant stated that the chosen character is a helper and/or helps other. Unclear if help is due to leadership or following.	“Because she could help the people on her team win.”
Knowledge / Competence	Participant referenced the character’s knowledge.	“Because she knows the most stuff about the game and she's good at it.”
Lack of Knowledge / Competence	Participant referenced the character’s lack of knowledge.	“Because he doesn't know a lot.”
Mistakes	Participant claimed that the character made a mistake. Unclear if mistake is due to lack of knowledge or leadership.	“Because he makes a mistake when Paula tells him what to do.”
Niceness/Positive Traits	Participant gave the chosen character a positive personality trait that is not explicitly related to status or rank, such as niceness.	“Because he's nice.”
Meanness/Negative Traits	Participant gave the chosen character a negative personality trait that is not explicitly related to status or rank, such as meanness.	“Because he’s mean.”
Gender	Participant mentioned the chosen character’s gender.	“Because I don't like girls.”

Code	Code Descriptions	Example Response
Game Outcome	Participant claimed that the chosen character was responsible for a game outcome, such as winning or losing.	“Because he helps the team win or lose the game.”
Fairness	Participant referenced turn taking, sharing, or equality.	“Because Paula got to be the leader last time so maybe Derek should get a chance.”
Irrelevant	Participant did not provide a justification or provided a nonsense justification.	“Because” or “I don’t know.”

Figure 3. Mean Smartness Ratings by Participant Gender and Character Gender



Note. Responses ranged from 0 to (not at all smart) to 2 (really smart) and were summed across stories, creating a range of 0-4. Error bars indicate standard error. *** $p < .001$.

Smartness

Answers were scored as follows: 0 = “not at all smart,” 1 = “sort of smart,” and 2 = “really smart.” A mixed ANOVA indicated a significant effect of participant gender, $F(1, 64) = 5.93$, $p = .018$, $\eta^2 = .09$, which was qualified by a significant participant gender by character gender interaction, $F(1, 64) = 16.58$, $p < .001$, $\eta^2 = .21$. See Figure 3. Smartness ratings for the boy characters did not differ significantly between boy ($M = 3.18$, $SD = .81$) and girl participants ($M = 2.94$, $SD = .87$), $p = .240$. However, for the girl characters, girl participants ($M = 3.43$, $SD = .70$) reported higher smartness ratings than boy participants ($M = 2.49$, $SD = 1.15$), $p < .001$.

A significant effect of age group also emerged, $F(1, 64) = 8.88$, $p = .004$, $\eta^2 = .12$. Older children’s smartness ratings ($M = 6.47$, $SD = 1.21$) were higher than younger children’s

smartness ratings ($M = 5.59$, $SD = 1.35$). There was also a significant effect of character status, $F(1, 64) = 18.09$, $p < .001$, $\eta^2 = .22$. Smartness ratings for high status characters ($M = 3.35$, $SD = .86$) were higher than smartness ratings for low status characters ($M = 2.68$, $SD = 1.00$).

No other significant effects or interactions emerged ($ps > .05$).

Did Status Attributions Vary by Age Group, Status, and Character Gender?

Status Attribution Measures

Admiration

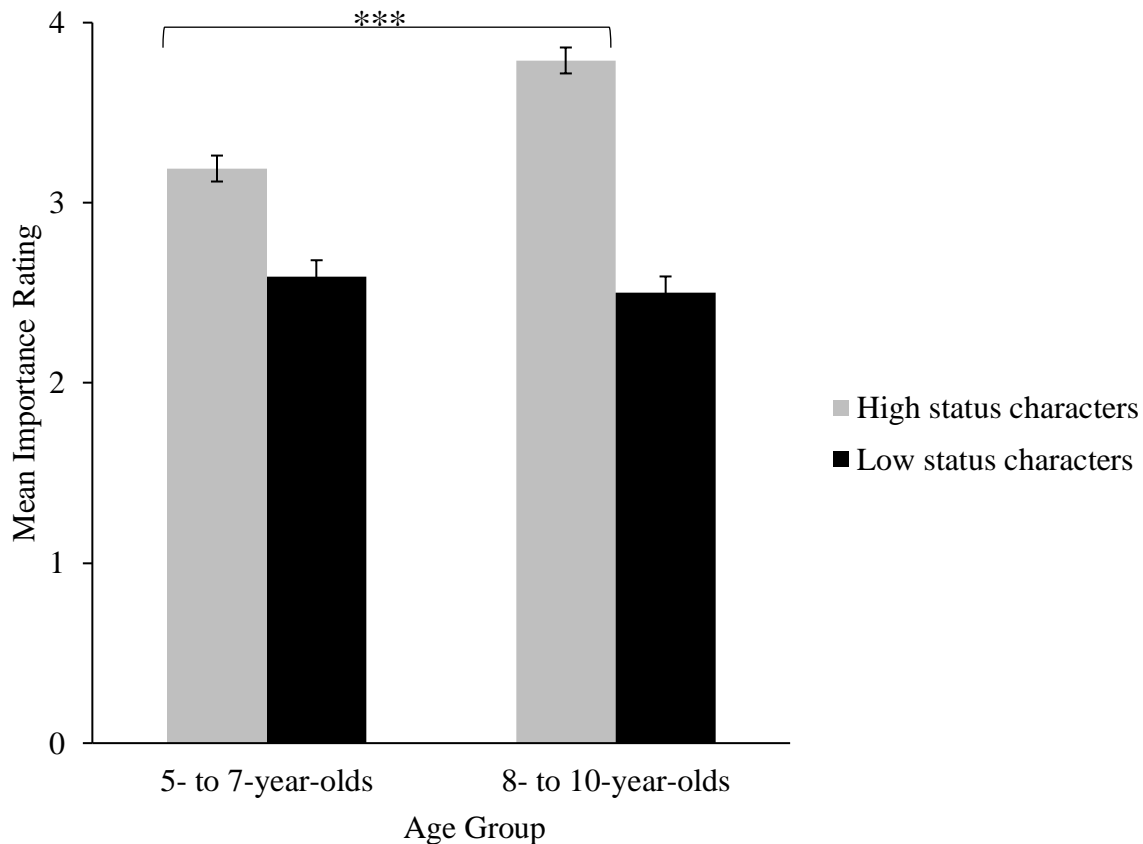
A GEE analysis showed a significant interaction between participant gender and the gender of the high status character, $\beta = 1.72$, Wald $\chi^2 = 5.47$, $SE = .74$, $p = .019$.

For the high status girl story, admiration judgments did not differ significantly by participant gender, $\chi^2(1, N = 68) = 3.22$, $p = .064$, Cramer's $V = .22$. Girl participants ($M = .83$, $SD = .38$) systematically claimed that the high status girl was admired, $\chi^2(1, N = 35) = 15.11$, $p < .001$, Cohen's $w = .66$. Responses from boy participants ($M = .64$, $SD = .49$) were unsystematic, $\chi^2(1, N = 33) = 2.46$, $p = .117$, Cohen's $w = .27$.

For the high status boy story, admiration judgments did not differ significantly by participant gender, $\chi^2(1, N = 68) = 1.93$, $p = .17$, Cramer's $V = .17$. Boy participants ($M = .76$, $SD = .44$) systematically claimed that the high status boy was admired, $\chi^2(1, N = 33) = 8.76$, $p = .003$, Cohen's $w = .52$. Girl participants ($M = .60$, $SD = .50$) were unsystematic, $\chi^2(1, N = 35) = 1.40$, $p = .24$, Cohen's $w = .20$.

No other significant effects or interactions emerged ($ps > .05$).

Figure 4. Mean Importance Ratings by Age Group and Character Status



Note. Scores ranged from 0 to (not at all important) to 2 (really important) and were summed across stories, creating a range of 0-4. Error bars indicate standard error. *** $p < .001$.

Importance Ratings

Answers were scored as follows: 0 = “not at all important,” 1 = “sort of important,” and 2 = “really important.” A mixed ANOVA revealed a significant effect of character status, $F(1, 64) = 30.63, p < .001, \eta^2 = .32$, qualified by a character status by age group interaction, $F(1, 64) = 5.56, p = .021, \eta^2 = .08$. See Figure 4. Importance ratings for the low status characters did not differ between younger ($M = 2.59, SD = 1.10$) and older children ($M = 2.50, SD = .99$), $p = .756$. However, older children’s ($M = 3.79, SD = .54$) importance ratings for the high status characters were higher than younger children’s ($M = 3.19, SD = 1.09$) importance ratings, $p = .001$.

There was also a significant effect of participant gender, $F(1, 64) = 4.88, p = .031, \eta^2 = .07$. Importance ratings by girl participants ($M = 6.34, SD = 1.33$) were higher than ratings by boy participants ($M = 5.64, SD = 1.41$).

No other significant effects or interactions emerged ($ps > .05$).

Most Important

A GEE analysis indicated no significant effects of age group, participant gender, or the gender of the high status character in each story ($ps > .05$). No significant interactions arose ($ps > .05$). To investigate children's general response patterns, Chi-square goodness of fit tests were used. For the high status girl story ($M = .88, SD = .33$), 88.2% of children reported that the high status girl was the most important, $\chi^2(1, N = 68) = 39.77, p < .001, \text{Cohen's } w = .76$. For the high status boy story ($M = .78, SD = .42$), 77.9% of children reported that the high status boy was the most important, $\chi^2(1, N = 68) = 21.24, p < .001, \text{Cohen's } w = .56$.

Did General Rank Attributions Vary by Age Group, Status, and Character Gender?

Leadership Quality

Answers were scored as follows: 0 = "bad leader," 1 = "okay leader," and 2 = "good leader." A mixed ANOVA showed a significant effect of participant gender, $F(1, 64) = 14.47, p < .001, \eta^2 = .18$. This was qualified by a significant participant gender by character gender interaction, $F(1, 64) = 8.06, p = .006, \eta^2 = .11$. Leadership quality ratings for the boy characters did not differ significantly between boy ($M = 3.18, SD = .81$) and girl participants ($M = 3.29, SD = .93$), $p = .607$. However, ratings for the girl characters were significantly higher among girl participants ($M = 3.60, SD = .50$) than boy participants ($M = 2.64, SD = 1.11$), $p < .001$.

A significant of character status was also found, $F(1, 64) = 36.163, p < .001, \eta^2 = .36$, but it was qualified by a significant character status by character gender interaction, $F(1, 64) =$

7.01, $p = .010$, $\eta^2 = .10$. Leadership quality ratings for high status boys ($M = 1.78$, $SD = .51$) and high status girls ($M = 1.84$, $SD = .47$) did not differ significantly, $p = .531$. However, there were marginal differences between leadership quality ratings for the low status characters, $p = .063$: low status boys ($M = 1.46$, $SD = .63$) received higher leadership quality ratings than low status girls ($M = 1.29$, $SD = .67$).

No other significant effects or interactions emerged ($ps > .05$).

Ladder

Answers were scored as follows: 0 = bottom, 1 = middle, 2 = top. A mixed ANOVA revealed a significant participant gender by character gender interaction, $F(1, 64) = 19.57$, $p < .001$, $\eta^2 = .23$. Ladder placements for the girl characters were significantly higher among girl participants ($M = 3.34$, $SD = .64$) than boy participants ($M = 2.49$, $SD = .87$), $p < .001$. By contrast, ladder placements for the boy characters were significantly higher among boy participants ($M = 3.06$, $SD = .70$) than girl participants ($M = 2.54$, $SD = 1.09$), $p = .022$.

A significant effect of character status also arose, $F(1, 64) = 66.61$, $p < .001$, $\eta^2 = .51$. This was qualified by a significant character status by age group interaction, $F(1, 64) = 6.93$, $p = .011$, $\eta^2 = .10$. Ladder placements for the low status characters did not vary significantly by age group, $p = .170$. However, older children placed the high status characters significantly higher on the ladder than younger children, $p = .007$.

No other significant effects or interactions emerged ($ps > .05$).

Did Trait and Affiliation Ratings Vary by Age Group, Status, and Character Gender?

Trait Attributions

Answers were scored as follows: 0 = “mean,” 1 = “not nice or mean,” and 2 = “nice.” No significant differences arose between judgments of low status characters (low status boy: $M =$

1.78, $SD = .54$; low status girl: $M = 1.82$, $SD = .49$), $t(67) = -.57$, $p = .57$, or judgments of high status characters (high status boy: $M = 1.81$, $SD = .57$; high status girl: $M = 1.82$, $SD = .46$), $t(67) = .19$, $p = .85$. Therefore, trait judgments were collapsed across character status, creating a range of 0 (both characters as mean) to 4 (both characters as nice).

A mixed 2 (age group: 5- to 7-year-olds vs. 8- to 10-year-olds) x 2 (participant gender: boys vs. girls) x 2 (character status: high vs. low) ANOVA revealed a significant character status by age group interaction, $F(1, 64) = 4.95$, $p = .030$, $\eta^2 = .07$. Older children ($M = 3.79$, $SD = .54$) made significantly more positive trait attributions for the low status characters than younger children ($M = 3.41$, $SD = .99$), $p = .036$. By contrast, trait attributions for the high status characters did not differ significantly between older children ($M = 3.62$, $SD = .74$) and younger children ($M = 3.65$, $SD = .69$), $p = .886$. Means from both age groups suggest generally positive (i.e., nice) trait attributions.

There was also a significant effect of participant gender, $F(1, 64) = 4.50$, $p = .038$, $\eta^2 = .07$. Trait attributions by girl participants ($M = 7.54$, $SD = 1.04$) were significantly higher than those made by boy participants ($M = 6.91$, $SD = 1.44$), $p = .038$. Means from boy and girl participants suggest generally positive (i.e., nice) trait attributions.

No other significant effects or interactions emerged ($ps > .05$).

Affiliation Ratings

Answers were scored as follows: 0 = “not at all,” 1 = “sort of,” and 2 = “a lot.” A mixed ANOVA showed a significant effect of participant gender, $F(1, 64) = 6.17$, $p = .016$, $\eta^2 = .09$, which was qualified by a significant participant gender by character gender interaction, $F(1, 64) = 17.75$, $p < .001$, $\eta^2 = .22$. Desire to befriend boy characters did not differ significantly between boy ($M = 3.09$, $SD = 1.28$) and girl participants ($M = 2.80$, $SD = 1.16$), $p = .351$.

However, desire to befriend girl characters was significantly higher among girl participants ($M = 3.66$, $SD = .54$) compared to boy participants ($M = 2.46$, $SD = 1.25$), $p < .001$.

A significant effect of age group also emerged, $F(1, 64) = 5.63$, $p = .021$, $\eta^2 = .08$. It was qualified by a significant character status by age group interaction, $F(1, 64) = 10.29$, $p = .002$, $\eta^2 = .14$. Desire to befriend low status characters was higher among older children ($M = 3.32$, $SD = .77$) than younger children ($M = 2.56$, $SD = 1.02$), $p < .001$. Desire to befriend high status characters did not differ significantly between younger ($M = 3.03$, $SD = .83$) and older children ($M = 3.12$, $SD = 1.04$), $p = .632$.

No other significant effects or interactions emerged ($ps > .05$).

Were High Status Boys and High Status Girls Preferred to a Similar Extent?

Leadership Preference

Answers were scored as follows: 0 = high status girl and 1 = high status boy. A binary logistic regression analysis was conducted with age group, participant gender, and an age group by participant gender interaction as predictors. The overall model was significant, $\chi^2(3, N = 68) = 15.95$, $p = .001$, Nagelkerke $R^2 = .28$. There was a significant effect of participant gender, $\beta = 2.35$, $Wald = 8.44$, $SE = .81$, $p = .004$, $OR = 10.50$. Boy participants were more likely than girl participants to choose the high status boy as the best leader. Tests against chance (score of .5) revealed that boy participants ($M = .73$, $SD = .45$) were more likely than expected by chance to choose boy leaders, $t(32) = 2.89$, $p = .007$, $d = .50$. Conversely, girl participants ($M = .26$, $SD = .44$) were more likely than expected by chance to choose girl leaders, $t(34) = 3.24$, $p = .003$, $d = .55$.

No other significant effects or interactions emerged ($ps > .05$).

Did Children Show Awareness of and Endorse Gender Norms About Leadership?

Gender Norm Knowledge

Answers were scored as follows: 0 = boys and 1 = girls. Some participants spontaneously answered “both” for this question. Since “both” was not a given option, these participants required additional prompting (e.g., “If you had to choose...”; $n = 20$). A part of this group of participants retained their response (i.e., “both”) despite multiple prompts ($n = 15$). These participants were excluded from analyses for the gender norm knowledge, acceptability, rule legitimacy, and non-normative preference judgment questions.

A binary logistic regression analysis was used with age group, participant gender, and an age group by participant gender interaction as predictors. The overall model was significant, $\chi^2(3, N = 54) = 13.68, p = .003$, Nagelkerke $R^2 = .36$. There was a significant effect of participant gender, $\beta = -2.40, Wald = 4.18, SE = 1.17, p = .041, OR = .09$. Tests against chance (score of .5) revealed that boy participants ($M = .04, SD = .20$) were more likely than expected by chance to say that boys are usually leaders, $t(24) = 11.50, p < .001, d = 2.30$. Responses from girl participants ($M = .31, SD = .47$) did not differ significantly from chance, $t(24) = -2.17, p = .039$ (Bonferroni corrected p-value: $p = .025$), $d = .40$.

There was also a significant effect of age group, $\beta = 1.87, Wald = 4.06, SE = .93, p = .044, OR = .15$. Tests against chance (score of .5) indicated that older children ($M = .07, SD = .26$) claimed that boys were usually leaders and this differed significantly from chance, $t(27) = 8.65, p < .001, d = 1.63$. However, responses from younger children ($M = .308, SD = .471$) did not differ significantly from chance, $t(25) = 2.08, p = .05$ (Bonferroni corrected p-value: $p = .025$), $d = .41$.

No other significant effects or interactions emerged ($ps > .05$).

Acceptability

Answers were scored as follows: 1 = “definitely not ok,” 2 = “a little not ok,” 3 = “both,” 4 = “a little ok,” and 5 = “definitely ok.” A 2 (age group: 5- to 7-year-olds vs. 8- to 10-year-olds) x 2 (participant gender: boys vs. girls) between-subjects ANOVA revealed a significant effect of age group, $F(1, 50) = 12.90, p < .001, \eta^2 = .21$. Compared to younger children ($M = 3.04, SD = 1.61$), older children ($M = 4.39, SD = 1.17$) claimed that it was more acceptable for a member of a non-normative gender category to be a leader (i.e., girls, if a participant said that boys are usually leaders; boys, if a participant said that girls are usually leaders).

No other significant effects or interactions emerged ($ps > .05$).

Rule Legitimacy

Answers were scored identically to the acceptability question. A 2 (age group: 5- to 7-year-olds vs. 8- to 10-year-olds) x 2 (participant gender: boys vs. girls) between-subjects ANOVA revealed a significant effect of age group, $F(1, 50) = 15.10, p < .001, \eta^2 = .23$. Compared to older children ($M = 1.68, SD = 1.31$), younger children ($M = 3.27, SD = 1.64$) claimed that it was more okay for a teacher to enforce a rule that only allowed members of a normative gender category to be leaders (i.e., boys, if a participant said that boys are usually leaders; girls, if a participant said that girls are usually leaders).

No other significant effects or interactions emerged ($ps > .05$).

Non-Normative Preference Judgment

Answers were scored as follows: 0 = non-normative gender and 1 = normative gender. A binary logistic regression analysis was used with age group, participant gender, and an age group by participant gender interaction as predictors. The overall model was significant, $\chi^2(3, N = 54) = 12.41, p = .006$, Nagelkerke $R^2 = .32$. There was a significant effect of participant gender, $\beta =$

2.13, $Wald = 4.89$, $SE = .96$, $p = .027$, $OR = 8.40$. Compared to boy participants, girl participants were more likely to choose a non-normative leader over a normative leader. Tests against chance (score of .5) reflected that girl participants ($M = .10$, $SD = .31$) were more likely than expected by chance to choose a non-normative leader, $t(28) = 6.89$, $p < .001$, $d = 1.28$. Responses from boy participants ($M = .32$, $SD = .48$) did not differ significantly from chance, $t(24) = -1.89$, $p = .07$, $d = .38$.

No other significant effects or interactions emerged ($ps > .05$).

CHAPTER IX: STUDY 2 DISCUSSION

Study 2 investigated how status cues (i.e., high status, low status) compare with gender cues to guide children's impressions of others. Interestingly, this allowed for an examination of the extent to which children endorse and perpetuate a status hierarchy that favors boys over girls, given that this inequality is found among adults (e.g., Rudman et al., 2012). Three patterns emerged. First, and unexpectedly, evaluations by 5- to 10-year-olds revealed a selective same-gender bias. Children preferred characters from their same gender, but only when those characters were described as high status. This suggests that gender in-group biases (e.g., Ruble et al., 2006; Shutts, 2015) and preferences for highly over lowly ranked people (e.g., Ahl & Dunham, 2019; Dunham et al., 2014; Enright et al., 2020; Newheiser et al., 2014; Yazdi et al., 2020) established in separate lines of literature produce additive effects when gender and social rank (i.e., status for Study 2) differences are presented simultaneously, which is more reflective of real-world experiences. Second, and in line with past work (e.g., Santhanagopalan et al., 2022), a bias in favor of boys arose in some instances. However, and as predicted, only older children explicitly associated leadership with boys. Third, and as anticipated, children exhibited neutral to positive trait attributions and affiliation judgments, regardless of character gender or status.

Selective Same-Gender Bias: Children Preferred High Status, Same-Gender Characters

Rather than the gender in-group bias expected among 5- to 7-year-olds, along with a bias in favor of high status boys expected among 8- to 10-year-olds, both age groups preferred high status members of their gender in-group category. Thus, children merged their status and gender biases to produce a selective same-gender bias, rather than a bias in favor of high status boys. Children claimed that high status, gender in-group characters were responsible for team wins, the

best players, and the most admired. Importantly, since high status, out-group gender characters were not chosen systematically for these measures, children were not merely biased in favor of high status characters. This contrasts with past findings that reveal a bias in favor of highly ranked individuals (e.g., Dunham et al., 2014; Enright et al., 2020; Newheiser et al., 2014; Yazdi et al., 2020). Relatedly, since low status, gender in-group characters were also not chosen systematically for these measures, 5- to 10-year-olds were not merely biased in favor of characters from their gender in-group, although past findings show this bias among young children in leadership contexts that evoke social rank (Santhanagopalan et al., 2022). However, when asked whether they would rather follow a high status girl or a high status boy, participants from the present study selected the character from their gender in-group. This finding is not discussed further, given that both characters were high status, so it is unclear if these decisions were guided by a gender in-group bias or the *selective* same-gender bias.

The selective same-gender bias likely arose due to the abundance of positive characteristics associated with high status, gender in-group characters. As mentioned previously, children prefer members of their gender in-group, in addition to high status people, so the combination of both features should produce an overwhelming preference. In fact, participants lacked systematicity when characters had only one feature (e.g., high status, out-group gender character versus low status, gender in-group character). Thus, both status and gender, along with their associated positive connotations, needed to be presented simultaneously (high status, gender in-group character) for the selective same-gender bias to arise.

A problem with the above interpretation is that it requires an understanding of status and its positive connotations across age groups, but Study 1 suggested a limited understanding of status among 5- to 7-year-olds. However, Study 1 presented status in the same context as power

and neutral rank. By contrast, the present study presented only status information (i.e., two characters per story: high status vs. low status), which likely facilitated younger children's comprehension. The present study also contrasted status with gender, such that children saw a boy and girl pair, while Study 1 presented children with gender in-group characters only. It is probable that Study 2 facilitated children's understanding of status by providing multiple features that made the characters easier to distinguish. This is further discussed in the General Discussion.

Additionally, it is important to note that girls occasionally showed a gender in-group bias rather than a selective same-gender bias, suggesting that girls prioritize gender over status in some contexts. In the present study, girl participants provided higher smartness ratings, higher leadership ratings, and higher affiliation ratings than boy participants for girl characters. However, smartness, leadership, and affiliation ratings for boy characters did not differ between boy and girl participants. One possibility is that girl participants were making up for and trying to rectify patterns they see in the outside world that favor boys over girls in status contexts. For example, children associate high status roles (e.g., scientist) more often with men over women, and girls perceive leadership qualities as masculine characteristics, perhaps due to who they often see in those roles (Liben & Bigler, 2002; Miller et al., 2018). As a result, perhaps girls in the present study were motivated to eradicate gender-based disparities by forming especially positive impressions of the girl characters, regardless of character status.

Further evidence of enhanced positivity toward gender in-group characters among girl participants was also present in the moral evaluation measures. Girls selected a leader from a non-normative gender category (e.g., girls) with strong leadership interest over someone from a normative gender category (e.g., boys) with less leadership interest, while boys made unsystematic decisions. Thus, girls gave greater significance to interest in a role, while boys

were guided by interest and adherence to gender norms. In fact, boys in the present study also claimed that boys are usually leaders, while girls' decisions did not differ significantly from chance. Past literature shows that children tend to maintain the status quo (see Roberts, 2022, for review), yet children from disadvantaged groups are more likely to challenge inequalities than those from advantaged groups (e.g., Rizzo & Killen, 2020). Given that existent gender norms about leadership favor boys over girls, it follows that boys from the present study were motivated to maintain or adhere to those norms, while girls instead challenged those norms.

Another exception to the selective same-gender bias was evident in overall improvement in status understanding with age, in line with findings from Study 1. Eight- to 10-year-olds more often claimed that the high status characters were likely to be upset from a mistake, while 5- to 7-year-olds were as likely to choose the high status or low status characters. These findings imply that, at least in some contexts, 8- to 10-year-olds prioritized status over and above gender or gender in combination with status. The ability to prioritize status over gender, or gender in combination with status, when applicable is perhaps only attainable when children have a substantial understanding of status.

Alternatively, it is possible that the mistake measure was perceived through a negative lens, which led both age groups to discount their selective same-gender bias. The measures that implicated a selective same-gender bias were positively valenced (e.g., the questions were about winning, admiration, best player) and depicted social value, which is a critical component of status. By contrast, one does not necessarily have to be valuable in order to be upset after a team loss, which perhaps led older children to choose the low status characters over the high status characters. Conversely, and due to their limited understanding of status, it is possible that younger children perceived equal contribution among all group members, which led them to be

as likely to choose the high status or low status characters as upset after a mistake. Regardless, negative valence cannot explain performance on additional measures, such as why older children attributed more importance to the high versus low status characters and placed the high status characters higher on the ladder than younger children. Thus, it is more probable that older children's performance is reflective of enhanced status understanding with age that allowed them to discern when to value status versus gender, or status in combination with gender.

Importantly, both age groups rated the high status characters as smarter than the low status characters, chose the high status characters as the most important and most knowledgeable, and blamed a game loss on the low status characters. Combined with the selective same-gender bias findings, these results hint at the notion that younger children did not completely disregard or fail to comprehend status information. Rather, younger children were unable to use status information consistently to guide their social decision making, at least to the same extent as older children. Past literature establishes some understanding of status by preschool age (e.g., Enright et al., 2020). The present work suggests that status understanding is not unilaterally present across contexts and highlights the importance of using a variety of measures that can more comprehensively capture how children understand status, including when it is prioritized or combined with other valuable social cues (e.g., gender). Indeed, a group of measures reflected a preference for high status boys, regardless of participant age.

Limited Evidence of Bias in Favor of High Status Boys

There was some evidence that children were aware of a connection between status and gender that favors boys over girls, but contrary to expectation it was evident across age groups rather than only among older children. Specifically, children across age groups assumed that a new person would follow a high status character over a low status character, but this was

especially evident when the high status character was a boy rather than a girl. One explanation for this is that the selective same-gender bias described above was limited to instances that evoked children's personal impressions, rather than a third party's impressions. Past work indicates that children have at least some idea of how boys are usually associated with status, such as by following preference patterns they pick up on in their environments, including who is most often selected for high status or leadership roles (e.g., Heck et al., 2023). This knowledge was strong enough to make assumptions about a third party's beliefs, but not necessarily children's own impressions in the present study. Interestingly, children's justifications for why a new person would follow the chosen character centered mostly on leadership, rather than gender, which indicates that children might not willingly acknowledge the association between gender and status. Further evidence of a growing association between gender and status was evident in children's leadership ratings for the low status characters.

Leadership ratings by 5- to 10-year-olds were similar for high status boys and high status girls, but low status boys were rated more highly than low status girls (although marginally), providing some indirect evidence of an existent connection between status and gender. Leadership ratings for the low status characters required children to make assumptions about the potential capabilities of the low status characters, especially since the low status character descriptions did not convey the characters as leaders. By contrast, the high status characters were described as leaders, which likely led children to rate them highly on leadership, regardless of character gender. Consequently, children's ratings for the low status characters probably illustrated children's beliefs about who is more capable of succeeding in a position for which they are not necessarily qualified. Higher ratings for low status boys over low status girls therefore imply that boys can do less and have weaker qualifications than girls, yet still be

judged as better leaders. In fact, by 6 years of age, children associate brilliance with boys over girls (Bian et al., 2017). Further, work with adults illustrates that men are often prescribed with agentic characteristics that better align with high status, leadership positions (e.g., Rudman et al., 2012). Thus, it follows that children in the present study perhaps assumed that boys do not need as many qualifications as girls for a high status, leadership role. In sum, children across age groups attributed leadership to boys over girls, but only when those attributions could be expressed indirectly (i.e., who a third party would follow or leadership ratings for low status characters). In fact, when children were directly asked whether boys or girls are usually leaders, only older children illustrated explicit knowledge of a status hierarchy in favor of boys.

As anticipated, older children claimed that boys are usually leaders, but younger children's claims were unsystematic, suggesting that explicit acknowledgment of a status hierarchy in favor of boys is only apparent with age. This is in line with past findings that suggest a bias in favor of boys in leadership contexts at about 9 years of age (e.g., Santhanagopalan et al., 2022) and only older children associate acting like a leader as a masculine characteristic (Liben & Bigler, 2002). Still, it is important to note that a group ($n = 15$; 8 younger children, 6 older children) of participants in the present study refused to choose whether boys or girls are usually leaders. This provides further support for the idea that children across age groups did not willingly acknowledge that the status hierarchy favors boys over girls. Consequently, the association between gender and status was the most evident with less direct measures (i.e., who a third party would follow or leadership ratings for low status characters).

Despite recognition of a status hierarchy in favor of boys, older children's responses to the moral evaluation measures suggest that recognition does not equate to perpetuating the hierarchy. Older children claimed that it was fine for members of a non-normative gender

category (e.g., girls) to be leaders and a rule that only members of a normative gender category (e.g., boys) could be leaders was “not okay.” Thus, older children acknowledged the status hierarchy in favor of boys, yet they also combatted that hierarchy. This follows past work that suggests greater flexibility in children’s gender attitudes with age (e.g., Halim et al., 2014; Ruble et al., 2006), and extends that work by illustrating flexibility in status-related contexts.

Conversely, younger children claimed that it was “sort of okay” for a member of a non-normative (e.g., girls) to be a leader and it was “sort of okay” for a rule to exist that only members of a normative gender category (e.g., boys) could be leaders. This is surprising, as past studies reveal that even 5-year-olds perceive rules about gender norms negatively and view gender norms as a matter of personal choice (e.g., Conry-Murray & Turiel, 2012). However, past work probes children about gender norms that are readily acknowledged by preschool age, such as gender norms about toys and clothing (e.g., Halim, 2016). By contrast, younger children in the present study did not readily acknowledge that boys are usually leaders. Perhaps younger children track and observe general patterns about gender and status in their social worlds (e.g., “I see boys chosen as leaders frequently”) but have not yet reached substantial conclusions about those patterns that would allow them to make explicit claims about who is usually a leader (e.g., “Boys are usually leaders, rather than girls”). In turn, they might not gauge why a status hierarchy in favor of boys is problematic, leading to judgments that endorse inequality. The supplementary measures from the present study provide additional insight into children’s perceptions of boys and girls with either high or low status.

Positive Trait Attributions and Affiliation Ratings for High and Low Status Characters

The positivity bias (Boseovski, 2010) was manifested through a variety of measures that revealed generally positive views of the characters in the present study, regardless of age group,

character gender, or character status. Although children rated the high status characters as really important, they also rated the low status characters as sort of important. Similarly, low status characters were not construed as bad leaders, but decent leaders and worthy of middle ladder placement. Thus, it is important to recognize that children did not have an overwhelmingly negative view of the low status characters. Their impressions of the low status characters were simply not as positive as their impressions of the high status characters.

Nevertheless, the reason for diminished positivity toward the low status characters is important to consider. Past research suggests that children generally prefer highly ranked over lowly ranked individuals (e.g., Shutts et al., 2016), although positivity toward lowly ranked characters arises on some occasions. For example, children are more likely to befriend lowly ranked characters when social rank was attributed to structural rather than inherent reasons (e.g., Hussak & Cimpian, 2018; Peretz-Lange & Muentener, 2021). However, children provide inherent reasons for status disparities when no alternative explanation is provided (e.g., Hussak & Cimpian, 2015). As the present study did not explicitly divulge why status differences arose between the characters, it is possible that children assumed the differences arose due to inherent reasons. Perhaps this led to some hesitation about befriending the low status characters compared to the high status characters. It will be important for future research to probe children about why status disparities arise (e.g., “Why do you think X is the leader, rather than Y?”).

It is also critical to note that older children reported more positive trait attributions and reported higher desire to befriend the low status characters than younger children, providing further support for enhanced status understanding with age that was evident in Study 1. Specifically, older children understood that *lacking* status is not necessarily negative. By contrast, both age groups reported similarly positive trait attributions and high desire to befriend

the high status characters. It is likely that older children recognized that it was more realistic or common to be low status rather than high status, which implicated positive trait and affiliation judgments toward the low status characters. In support of this, past work illustrates that, with age, children associate status with small, rare groups (Heck, Bas, & Kinzler, 2022). Thus, as children get older, they recognize that it is often a small, limited number of individuals that ultimately obtain status over others (e.g., Magee & Galinsky, 2008; Yu et al., 2019; Zitek & Tiedens, 2012). Despite this, past work also finds that children tend to rank themselves as high status (Mandalaywala, Tai, & Rhodes, 2020). Consequently, perhaps older children in the present study viewed themselves as high status while simultaneously recognizing that the position is rare and therefore it is likely that their friends and peers are low status, which prompted positive trait and affiliation judgments about the low status characters.

By extension, future research should manipulate high versus low status descriptions with positive and negative trait labels (e.g., Croce & Boseovski, 2020) to determine whether children prioritize status or trait information to guide their social decision making. Indeed, this future line of work could be combined with the findings from Study 1 to determine whether children's conceptualizations of status and power vary as a function of whether someone is described with a positive or negative trait label. Some work suggests that children and adults more readily recognize negative illustrations of power rather than positive illustrations of power (Gülgöz & Gelman, 2017), but how this extends to status or contexts that present status and power remains in question. To further advance the literature, the general discussion below further integrates patterns found in Study 1 and Study 2.

CHAPTER X: GENERAL DISCUSSION

This dissertation was the first to explore whether 5- to 10-year-olds distinguish between status versus power and therefore conceptualize social rank as a multidimensional, rather than unitary, concept (Study 1). Also, this dissertation explored whether children's evaluations of other people are driven by biases about status, gender, or a combination of both (Study 2). The examination of whether children illustrated a combination of status and gender biases, rather than one bias over the other, provided a novel contribution to the developmental literature. The discussion below considers patterns from both studies. This integration is presented in the context of general developmental skills that provide further insight into why children illustrated the patterns obtained. Real world implications for these findings are also discussed.

New Insights About Social Rank Understanding Across Development

Five- to 10-year-olds attributed good leadership ability and appropriate ladder placement to the status (Study 1 and 2) and power (Study 1) characters across studies, yet 5- to 7-year-olds failed to systematically claim that the status characters (Study 1) were admired or the most important, suggesting that a recognition of influence does not imply the ability to distinguish between status, power, or even generally positive information (i.e., neutral rank characters). Further, the mere detection of influence does not imply a multidimensional conceptualization of social rank. The inability to choose the status characters for the status measures systematically shows that younger children struggled to recognize why or how status is distinct from power and generally positive information (i.e., neutral rank characters), at least in a context that provided other kinds of social cues that perhaps overlap with children's understanding of status (i.e., power or generally positive information). In turn, Study 1 adds to the existent literature by

illustrating that only older children successfully distinguish status and power, which denotes a multifaceted conceptualization of social rank.

One explanation for 5- to 7-year-olds' lack of systematicity on the status measures in Study 1 is that they assumed that any kind of positive information (i.e., neutral rank character) was indicative of status, perhaps due to the positivity bias. As mentioned previously, children overextend positive characteristics across domains (e.g., Cain et al., 1997), although this dissipates with age. However, positivity does not fully explain all of children's response patterns. Past findings suggest that children interpret neutral behaviors as positive (see Boseovski, 2010). By contrast, 5- to 7-year-olds from Study 1 rated the neutral rank characters as poor leaders, but the status characters as good leaders. If children were simply interpreting positive characteristics as indicative of status in Study 1, then one would expect the neutral rank characters to be judged as good leaders. Additionally, positivity cannot fully explain children's negativity toward the power characters in Study 1. If positivity drove 5- to 7-year-olds' responses, then one would expect positive evaluations about the power characters due to younger children's unitary conceptualizations of social rank that muddles their ability to distinguish status from power.

An alternative explanation is that 5- to 7-year-olds misunderstood the status questions in Study 1 due to limits in mental state understanding. For example, the admiration question required higher order mental state understanding that children do not reach until middle childhood (e.g., Miller, 2009; Perner & Wimmer, 1985). This required inferences about what *others* thought about the presented characters (e.g., "Who do you think other people at school admire, they want to be around this person?"), which implies who do you think that *they* think is admirable), rather than personal impressions (e.g., "Who do *you* think is the most admired?").

Accordingly, perhaps younger children responded with who they believed was the most admired, rather than prioritizing others' beliefs and perceptions, which are a central component of status.

If 5- to 7-year-olds misunderstood the status questions, then it is unclear why they exhibited a selective same-gender bias in Study 2 by choosing high status, gender in-group characters as admired and the most important. However, Study 2 presented a high versus low status character pair, rather than multiple forms of social rank (i.e., status, power) or positive information (i.e., neutral rank character). If the high versus low status context facilitated children's detection of status for Study 2, then 5- to 7-year-olds' struggles in response to the status questions for Study 1 are potentially explained by a unitary conceptualization of social rank that made differences between multiple forms of social rank (i.e., status, power) unclear, in addition to misinterpretations of the status questions due to limited mental state understanding.

In contrast to the status questions, younger children systematically chose the power characters for the forceful listening and boss measures, exhibiting that younger children's struggles were limited to the status questions. Indeed, past work uses similar power questions with children as young as 3 years of age (e.g., Charafeddine et al., 2020; Gülgöz & Gelman, 2017). One possibility is that the cues provided for power were less abstract than the cues provided for status (e.g., "The team respects and values [CHARACTER]" for status vs. "Everyone gets snacks during the break, but [CHARACTER] get more snacks than everyone else" for power). Diminished need for abstract reasoning potentially facilitated younger children's understanding of power in comparison to status, as suggested by other researchers (Heck, Bas, & Kinzler, 2022). Additionally, perhaps the power questions were more direct than the status questions, at least in terms of mental state understanding required (e.g., "Who do you think other people at school admire, they want to be around this person?" vs. "Who do you think

is the boss of their team, so everyone has to follow them?”). However, this explanation is not applicable to all the power questions (i.e., “Who do you think everyone has to listen to no matter what, even when they don’t want to?”), suggesting that something above and beyond mental state understanding drove younger children’s systematic responses to the power questions. In fact, the status characters made up the next most frequent response category (see Appendix C) for the forceful listening and boss measures. Thus, younger children who struggled with those questions likely perceived an overlap between status and power information, providing evidence of a unitary, rather than multidimensional, conceptualization of social rank in early childhood.

Status, Gender, and a Budding Bias in Favor of High Status Boys

The present dissertation not only provided new insight about whether children conceptualize social rank as unitary or multidimensional, but also unveiled that 5- to 10-year-olds compounded their gender in-group biases with biases in favor of high status people to systematically favor high status, gender in-group characters (Study 2). This suggests that even though status might not be as psychologically salient to children as gender, at least according to the factors outlined by Developmental Intergroup Theory (Bigler & Liben, 2007), 5- to 10-year-olds still perceived status as meaningful enough to contribute to their social decision making.

The selective same-gender bias likely arose in Study 2 due the presentation of high versus low status character pairs. Therefore, Study 2 only required children to recognize which character had influence, rather than distinguish between different methods of obtaining influence (Study 1). Consequently, and in contrast to Study 1, successful detection of status in Study 2 was obtainable regardless of whether children could distinguish status from power and therefore conceptualize social rank as multidimensional. In turn, children across age groups were likely better able to detect status via the character pairs presented in Study 2 compared to the characters

in Study 1. To provide another point of contrast, children were presented with boy and girl character pairs (Study 2), rather than characters of the same gender (Study 1). Perhaps this further facilitated status detection, as gender is a psychologically salient, relevant, and automatic way that children categorize and therefore detect differences between people by early childhood (Bigler & Liben, 2007; Weisman et al., 2015). Consequently, enhanced status detection in Study 2 potentially led children to combine their biases in favor of high status people with biases in favor of gender in-group people to illustrate a selective same-gender bias. As previously mentioned, the selective same-gender bias also potentially arose due to the overabundance of positive characteristics for the preferred characters (i.e., high status, gender in-group).

Importantly, a bias in favor of boys in high status positions arose occasionally in Study 2. Thus, the gender hierarchy found among adults that reprimands women in highly ranked positions (e.g., Eagly & Karau, 2002) likely begins in childhood and contributes to how children form impressions of other people. Although the bias in favor of boys was not overwhelmingly apparent across all measures in Study 2, it arose across age groups and implies that children decided between employing a bias in favor of high status boys or the selective same-gender bias. A potential explanation is that children are aware of the gender hierarchy that favors boys over girls, but do not yet feel the need to perpetuate it across contexts. As mentioned in the Study 2 discussion, the bias in favor of boys was evident in 5- to 10-year-olds' predictions about a third-party's beliefs. Therefore, children might only show an endorsement of the gender hierarchy if asked about another person's behaviors or thoughts, rather than their own judgments. This differentiation between their own and others' thoughts involves a critical component of mental state understanding that is often achieved by 4 to 5 years of age (Wellman & Liu, 2004).

Additional contextual factors could also lead children to showcase a bias in favor of high status boys. For example, Study 2 presented status based inequalities between girl and boy character pairs but did not specify why those inequalities arose (e.g., why is the leader followed and respected by the team, why is the follower a good listener?). A reason for inequality could likely change whether children show a bias in favor of high status boys, a selective same-gender bias, a bias in favor of the high status characters, or a bias in favor of gender in-group characters. For example, if character pairs are from the same gender category, then it is likely that children will simply show a bias in favor of the high status characters, following past work (e.g., Dunham et al., 2014; Enright et al., 2020). By contrast, a gender in-group bias might be elicited if gender is presented as the reason for the inequality (e.g., “He is the leader *because* he is a boy”), particularly if children are driven to perpetuate inequalities that maintain privilege for their own group (e.g., Rizzo & Killen, 2020; Roberts, 2022). However, if younger children are more outcome-focused (e.g., who is the leader, rather than why or how this person became the leader) than older children, then reasons for inequality are likely less relevant.

The presentation of a gender-typed context could also exacerbate or strengthen the bias in favor of high status boys, particularly among 5- to 7-year-olds. Since young children perceive gender as an immutable social category and assume category members share non-obvious properties (e.g., Taylor et al., 2009), it is possible 5- to 7-year-olds perceive boys as less than optimal leaders for a group of girls, compared to a group of boys. Similarly, one could also argue that 5- to 7-year-olds might choose a boy to lead over an equally qualified girl in domains that are boy-typed (e.g., Liben & Bigler, 2002; Martin & Ruble, 2004; Ruble et al., 2006), such as leading a football team. Additional cues could also be presented to mitigate the bias in favor of boys, such as the introduction of a girl that is an expert in a boy-typed domain (Boseovski et al.,

2016). Critically, children exhibit flexible gender attitudes as they progress through middle childhood (e.g., Ruble et al., 2006), so the impact of a gender-typed context might be less relevant to 8- to 10-year-olds.

The framing of high status or other highly ranked roles could also impact whether children illustrate a bias in favor of boys. Descriptions with communal characteristics could be perceived as better aligned with girls than the agentic characteristics often associated with status, power, and social rank (e.g., Eagly & Karau, 2002; Heck et al., 2021; Rudman et al., 2012). Thus, a bias in favor of high status girls might arise if status descriptions include terminology that more explicitly convey warmth and other communal traits. Conversely, a bias in favor of boys might be especially likely if status descriptions center on competence, assertiveness, and other agentic characteristics. These manipulations might be especially relevant for children that perceive gender as an immutable category or frequently engage in gender-typing that encourages adherence to gender roles. Additionally, and in connection with Study 1, a manipulation of power with gender could perhaps elicit a persistent bias in favor of high power boys compared to high power girls if character descriptions centered on agency. However, and as further discussed below, children displayed negative evaluations about the power characters in Study 1, which brings to question whether children would favor *any* high power character, regardless of gender.

A bias in favor of boys in high status roles has implications for girls' interest in high status or highly ranked positions. Specifically, children might perceive leadership or other high status, highly ranked positions as “for” boys, which might minimize girls' interests and perceived qualifications. Indeed, similar patterns are established in the adult literature (Burns et al., 2001; Fox & Lawless, 2014; Heck et al., 2021) and by mid to late elementary school, children view leadership as a masculine role (Liben & Bigler, 2002). One way to combat this

involves a presentation of high status, highly ranked roles with identity focused (e.g., “be a leader”) rather than action focused (e.g., “doing leadership”) terms (see Lei et al., 2019, for similar reasoning in a STEM context). However, extensions to high power roles are less clear due to children’s generally negative impressions about the power characters in Study 1.

Negative Attributions About the Power Characters

Although children reported positive trait attributions and high desire to befriend the characters in both studies, this positivity diminished in response to the power characters in Study 1, especially among older children. In other words, a potential overextension of positivity was not applicable to all forms of social rank. Notably, if one were to only inspect the trait attribution and affiliation measures, one might infer that children conceptualize social rank as multidimensional due to a differentiation between the status and power characters. However, this interpretation would be best supported with qualitative data that detailed whether children’s affiliation and trait ratings arose due to status and power differences (e.g., he is nice *because* he is respected and valued, or he is mean *because* he forces everyone to follow him). Since this data is not available for Study 1, it is uncertain whether children’s trait attributions and affiliation ratings can be explained solely due to perceived distinctions between status and power.

Additional, although indirect, evidence of negativity about the power characters is illustrated in findings from Study 2. Specifically, the low status characters in Study 2 were perceived less positively than the high status characters, especially among 5- to 7-year-olds. However, an inspection of the means from Study 1 and Study 2 indicates that the power characters from Study 1 were perceived the *least* positively. In other words, children valued a *lack* of influence (low status characters, Study 2) over *forceful* influence (power characters, Study 1). So, influence alone was not enough to elicit positive evaluations. Again, this provides

further evidence that any potential association between social rank and positivity is limited to status.

As mentioned in the Study 1 discussion, it is possible that children perceived the power characters negatively, despite a lack of explicitly negative character descriptions (i.e., this person is mean, this person is a bully). Past work differentiates benevolent and malevolent depictions of power (e.g., permission granting versus denial, equal versus unequal distribution of resources) and suggests that children and adults detect malevolent power more easily than benevolent power (Gülgöz & Gelman, 2017). The power descriptions provided in Study 1 include a mixture of benevolence (e.g., “[CHARACTER] has to say it is okay,” rather than “[CHARACTER] has to say it is *not* okay”) and malevolence (e.g., “[CHARACTER] get more snacks than everyone else,” rather than “[CHARACTER] gives out the snacks and makes sure everyone gets the same amount of snack”). Thus, it is possible that the malevolent descriptions were especially salient to children, especially due to a heavy contrast with the status and neutral rank character descriptions. Future work should determine if negativity about power characters persists if power is depicted benevolently. If children struggle to detect benevolent power, it might suggest that power is first conceptualized through a negative lens. It will therefore be important to examine the age that children successfully comprehend benevolent power, along with potential consequences for children’s abilities to distinguish status and power.

Negativity toward the power characters also has implications for whether children perceive leaders that arise through status, rather than power, as more legitimate. Status relies upon others’ perceptions and deference (e.g., Magee & Galinsky, 2008). Therefore, to obtain status, there must be at least some consensus among people that the individual is respectable, admirable, and socially valuable, as conveyed in the status descriptions for Study 1 (e.g.,

“Everyone on [CHARACTER’s] team looks up to [CHARACTER].”). It is possible that this led children to interpret the status characters as particularly deserving or legitimate, at least compared to the power characters. In fact, perceived deservedness and legitimacy is especially important to consider in combination with gender, given that research with adults finds that women’s legitimacy in highly ranked roles is often questioned more than men’s legitimacy (e.g., Vial et al., 2016). In turn, it is possible that children’s diminished positivity toward individuals with power might be especially strong when the powerful individual is a girl, rather than a boy.

Perceptions of deservedness and legitimacy might also impact the methods that children use to obtain leadership positions or other highly ranked roles, especially among girls. To minimize negativity and backlash, girls might be more willing to pursue leadership positions that arise through status rather than power due to greater alignment with their gender roles (e.g., Eagly & Karau, 2002; Eagly & Wood, 2012). Conversely, girls might be less motivated to obtain a power-based position, given the negative impressions children showcased toward the power character in Study 1, along with the lack of congruence between those negatively valenced behaviors and their gender roles (e.g., Eagly & Karau, 2002; Eagly & Wood, 2012).

Limitations and Future Directions

Future research should first aim to establish reliable and validated measures for probing children’s beliefs about social rank, with specific attention to status and power. A limitation of the present dissertation is that although older children responded appropriately to most of the presented status and power measures in Study 1, some answers lacked systematicity across both age groups. This occurred for the appreciation question (status measure) and the most in charge question (power measure). Although the present dissertation cannot speak to why this occurred, one potential explanation is that children did not want to choose the same character repeatedly.

However, continuous measures were embedded within the status and power measures to ensure that children had the opportunity to make judgments about each of the presented characters. These kinds of problems could be avoided with better understanding and agreement in the developmental literature about how children conceptualize social rank (e.g., multidimensional vs. unitary), which can subsequently impact what kinds of measures are used to examine social rank. The first step is to recognize status and power as distinct concepts that might not necessarily be distinguished across childhood, as illustrated by this dissertation and other recent work (Cheng et al., 2021; Heck, Shutts, & Kinzler, 2022).

Additionally, researchers should test the limits of children's selective same-gender bias, in addition to the occasional bias in favor of highly ranked boys. One way to better investigate this is by exploring whether children view boys as the default for leadership or other highly ranked positions, given similar patterns among adults (e.g., Heck et al., 2021; Koenig et al., 2011; Schyns et al., 2013). For example, researchers could present a gender androgynous character with high or low status or power characteristics, and subsequently ask children to categorize the character as a boy or girl. A step further might involve manipulating whether status and power characteristics are presented in a girl- or boy-typed domain, which could influence children's gender categorizations. Researchers should also determine ways to compare children's impressions about high status girls and high status boys that go beyond simply illustrating a gender in-group bias, as this comparison was indirect in the current dissertation.

Lastly, researchers should work to further uncover what developmental skills underlie social rank conceptualizations and how children value social rank in comparison to gender. For example, future work can include measures of mental state understanding to examine any associations with children's ability to distinguish status and power. Additional developmental

abilities beyond those discussed in this dissertation might also be relevant. For example, cognitive flexibility entails the ability to switch successfully between two or more mental sets or ignore a prepotent response in favor of another (see Jacques & Marcovitch, 2010, for review). Thus, cognitive flexibility might allow children to better integrate social rank and gender information, particularly among young children with strong gender biases.

Conclusion

The present dissertation was the first to compare explicitly children's understanding of status versus power. This revealed that a unitary conceptualization of social rank in early childhood that is overtaken by a multidimensional conceptualization of social rank in middle childhood through the ability to distinguish status and power. The present dissertation also extends the current developmental literature by providing evidence that 5- to 10-year-olds compound their biases in favor of high status people with their gender in-group biases to systematically prefer high status, gender in-group people. Further, children occasionally illustrated a bias in favor of high status boys, which implies a budding acknowledgment of the gender hierarchy endorsed by adults. Moreover, and across studies, children revealed mostly positive evaluations for all characters, except those depicted as powerful. The above patterns hold implications for what factors drive children's impressions of leaders, including whether children choose to perpetuate or rectify rank-based inequalities. These patterns also provide insight into why children might perceive themselves or others as more or less suited for highly ranked roles, which can help inform ways to help children combat gender inequality in leadership positions and other highly ranked roles.

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APPENDIX A: STUDY 1, FULL STORIES

Story and Character	Description
Story A, Introduction	Here are [CHARACTER], [CHARACTER], and [CHARACTER]. They're playing a game called Zios with their friends. Everyone in the class enjoys playing with them. First, I'll tell you about [CHARACTER's] team.
Story A, Status	Everyone on [CHARACTER'S] team looks up to [CHARACTER]. They want to ask [CHARACTER] questions throughout the game and always choose to do what [CHARACTER] does. The team respects and values [CHARACTER]. Everyone gets snacks during the break, and everyone chooses to eat the same snack as [CHARACTER]. Everyone says that [CHARACTER] knows everything about playing Zios.
Story A, Power	Everyone on [CHARACTER'S] team has to follow [CHARACTER]. They have to ask [CHARACTER] before they do anything throughout the game and [CHARACTER] has to say it is okay. The team has to follow what [CHARACTER] says and they have to listen to [CHARACTER]. Everyone gets snacks during the break, but [CHARACTER] get more snacks than everyone else. [CHARACTER] says that (s)he knows how to play Zios well.
Story A, Neutral	Everyone on [CHARACTER'S] team really likes [CHARACTER]. They are always cheered on by [CHARACTER] throughout the game. The team members always laugh and smile with [CHARACTER]. The team likes that [CHARACTER] is supportive and happy to help the team. Everyone says that [CHARACTER] does not know much about playing Zios.

Story and Character	Description
Story B, Introduction	Here are [CHARACTER], [CHARACTER], and [CHARACTER]. They're playing a game called Dax with their friends. Everyone has a good time playing with [CHARACTER], [CHARACTER], and [CHARACTER]. First, I'll tell you about [CHARACTER's] team.
Story B, Status	During the game, everyone on [CHARACTER's] team wants to follow [CHARACTER] because [CHARACTER] helps plan what moves to do and makes sure everyone gets along. When [CHARACTER] uses a new color ball for the game, everyone wants to also use the same color. During the break, everyone listens to [CHARACTER's] ideas for the game and they want to be like [CHARACTER]. At the end of the game, everyone gets prizes and talks about how [CHARACTER] is really needed to the team. Everyone says that [CHARACTER] knows everything about Dax.
Story B, Power	During the game, everyone on [CHARACTER's] team has to follow [CHARACTER] because [CHARACTER] decides what everyone has to do. When [CHARACTER] tells everyone what color ball to use, everyone has to follow what [CHARACTER] says and use that color. During the break, everyone has to ask [CHARACTER] about what to do next and [CHARACTER] has to say what moves are okay. At the end of the game, everyone gets prizes but [CHARACTER] grabs the prizes and gets more than everyone else. [CHARACTER] says that (s)he knows how to play Dax well.
Story B, Neutral	During the game, everyone on [CHARACTER's] team has a lot of fun playing with [CHARACTER]. Everyone is always excited when [CHARACTER] comes around. Everyone thinks that [CHARACTER] knows how to make people feel happy and the team likes that [CHARACTER] is a good teammate and is always excited to play. However, [CHARACTER] does not know much about playing Dax.

Note. Character descriptions ended with either “Now, I’ll tell you about [NEXT CHARACTER’s] team,” or if character was presented last in the story, “Now, I’m going to ask you some questions

APPENDIX B: MEANS AND STANDARD DEVIATIONS FOR SOCIAL STATUS AND SOCIAL POWER MEASURES BY AGE

GROUP AND STORY

Question	Story A		Story B	
	5- to 7-year-olds	8- to 10-year-olds	5- to 7-year-olds	8- to 10-year-olds
	<i>M (SD)</i>	<i>M (SD)</i>	<i>M (SD)</i>	<i>M (SD)</i>
Social Status				
Appreciation	.32 (.48)	.41 (.50)	.48 (.51)	.62 (.49)
Most Important	.35 (.49)	.68 (.48)	.65 (.49)	.76 (.43)
Admiration	.39 (.50)	.71 (.46)	.55 (.51)	.79 (.41)
Social Power				
Most in Charge	.61 (.50)	.79 (.41)	.58 (.50)	.68 (.48)
Forceful Listening	.71 (.46)	.88 (.33)	.68 (.48)	.88 (.33)
Boss	.65 (.49)	.88 (.33)	.65 (.49)	.91 (.29)

Note. Social status measures were coded as follows: 0 = inconsistent (i.e., chose power or neutral rank characters) and 1 = consistent (i.e., chose status characters). Social power measures were coded as follows: 0 = inconsistent (i.e., chose status or neutral rank characters) and 1 = consistent (i.e., chose power characters).

APPENDIX C: RESPONSE DISTRIBUTIONS FOR SOCIAL STATUS AND SOCIAL POWER MEASURES BY AGE GROUP

AND STORY

Question	Story A						Story B					
	5- to 7-year-olds			8- to 10-year-olds			5- to 7-year-olds			8- to 10-year-olds		
	Status	Power	Neutral	Status	Power	Neutral	Status	Power	Neutral	Status	Power	Neutral
Social Status												
Appreciation	32.3%	25.8%	41.9%	41.2%	5.9%	52.9%	48.4%	25.8%	25.8%	61.8%	2.9%	35.3%
Most Imp.	35.5%	38.7%	25.8%	67.6%	8.8%	23.5%	64.5%	25.8%	9.7%	76.5%	8.8%	14.7%
Admiration	38.7%	19.4%	41.9%	70.6%	5.9%	23.5%	54.8%	19.4%	25.8%	79.4%	2.9%	17.6%
Social Power												
Most Charge	29.0%	61.3%	9.7%	20.6%	79.4%	0.0%	25.8%	58.1%	16.1%	14.7%	67.6%	17.6%
Force	19.4%	71.0%	9.7%	5.9%	88.2%	5.9%	16.1%	67.7%	16.1%	8.8%	88.2%	2.9%
Boss	19.4%	64.5%	16.1%	11.8%	88.2%	0.0%	25.8%	61.3%	12.9%	5.9%	91.2%	2.9%

Note. “Most Imp.” refers to the “Most Important” question. “Most Charge” refers to the “Most in Charge” question. “Lis., Force”

refers to the “Forceful Listening” question.

APPENDIX D: STUDY 2, FULL STORIES

Status and Gender Combination Presented	Description
High Status Girl, Low Status Boy	<p>Paula and Derek are playing Dax with their team. Dax is a game for boys and girls. Paula is a girl. She is the leader of her team. Derek is a boy. He is on Paula’s team and follows Paula.</p> <p>The boys and girls on the team want to follow Paula. They want to be like Paula and look up to Paula. The boys and girls on the team say that Paula is really needed to the team. They respect Paula. Paula knows a lot about Dax.</p> <p>The boys and girls on the team say that Derek is a good follower. They think Derek does a nice job going along with instructions. The boys and girls on the team say that Derek is a good listener. They include Derek. Derek knows some things about Dax.</p>
Low Status Boy, High Status Girl	<p>Derek and Paula are playing Dax with their team. Dax is a game for boys and girls. Derek is a boy. He is on Paula’s team and follows Paula. Paula is a girl. She is the leader of her team.</p> <p>The boys and girls on the team say that Derek is a good follower. They think Derek does a nice job going along with instructions. The boys and girls on the team say that Derek is a good listener. They include Derek. Derek knows some things about Dax.</p> <p>The boys and girls on the team want to follow Paula. They want to be like Paula and look up to Paula. The boys and girls on the team say that Paula is really needed to the team. They respect Paula. Paula knows a lot about Dax.</p>
High Status Boy, Low Status Girl	<p>Everett and Monica are playing Zeb with their team. Zeb is a game for girls and boys. Everett is a boy. He is the leader of his team. Monica is a girl. She is on Everett’s team and follows Everett.</p> <p>The boys and girls on the team want to follow Everett. They want to be like Everett and look up to Everett. The boys and girls on the team say that Everett is really needed to the team. They respect Everett. Everett knows a lot about Zeb.</p>

Continued on next page.

Status and Gender Combination Presented	Description
High Status Boy, Low Status Girl, continued	The boys and girls on the team say that Monica is a good follower. They think Monica does a nice job going along with instructions. The boys and girls on the team say that Monica is a good listener. They include Monica. Monica knows some things about Zeb.
Low Status Girl, High Status Boy	<p>Monica and Everett are playing Zeb with their team. Zeb is a game for girls and boys. Monica is a girl. She is on Everett's team and follows Everett. Everett is a boy. He is the leader of his team.</p> <p>The boys and girls on the team say that Monica is a good follower. They think Monica does a nice job going along with instructions. The boys and girls on the team say that Monica is a good listener. They include Monica. Monica knows some things about Zeb.</p> <p>The boys and girls on the team want to follow Everett. They want to be like Everett and look up to Everett. The boys and girls on the team say that Everett is really needed to the team. They respect Everett. Everett knows a lot about Zeb.</p>

Note. Add “just like you” after introduction of character that matches participant gender (e.g., “Monica is a girl, just like you” for girls and “Everett is a boy, just like you” for boys). Each participant received one story with a high status girl and one story with a high status boy.